

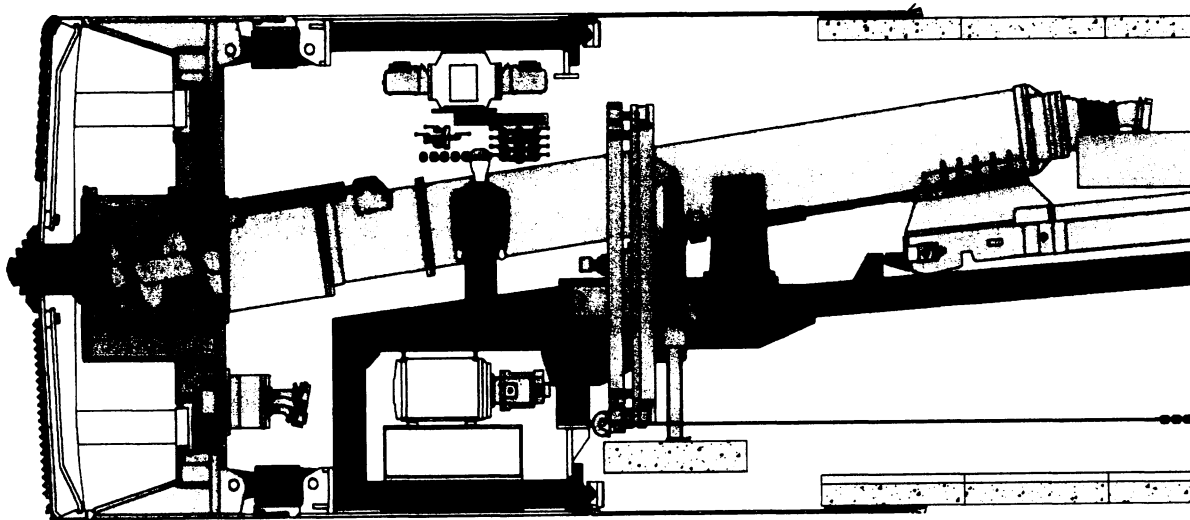
**PUBLIC**

# Modifications to the Ocean Express Pipeline Project

*Environmental Assessment*

AES Ocean Express, L.L.C

Docket No. CP02-090-003



Earth Pressure Balance Tunnel Boring Machine – Main Structure

FEB 16 2005  
February 2005

Federal Energy Regulatory Commission  
Office of Energy Projects  
Washington, DC 20426

Minerals Management Service  
Gulf of Mexico OCS Region  
New Orleans, LA 70123



FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:  
OEP/DG2E/Gas 3  
AES Ocean Express, L.L.C.  
Docket No. CP02-090-003

TO THE PARTY ADDRESSED:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) and the Mineral Management Service (MMS) have prepared this Environmental Assessment (EA) to discuss the environmental impacts of the Modifications to the Ocean Express Pipeline Project proposed by AES Ocean Express, L.L.C. (Ocean Express) in the above referenced docket. The proposed project is located in Broward County, Florida; State Waters of Florida; and Federal Waters of the United States.

This EA has been prepared to comply with the requirements of the National Environmental Policy Act (NEPA), the Council of Environmental Quality (CEQ) regulations for implementing NEPA (Title 40, Code of Federal Regulations [CFR], sections 1500-1508), and the Commission's regulations (18 CFR 380). The staff concludes that approval of this proposal would not constitute a major Federal action significantly affecting the quality of the human environment. The EA also evaluates alternatives to the proposal, including system alternatives; major route alternatives; and route variations.

The FERC prepared this EA to address the potential environmental impacts of the proposed modifications. The original project was addressed by the *Final Environmental Impact Statement for the Ocean Express Pipeline Project* (FEIS) issued on November 28, 2003. The modified project would use the same methodologies for deepwater construction and onshore construction. However, the landfall portion of the pipeline would be installed in a 14,000-foot tunnel instead of the two HDD segments and associated direct pipelay on the seafloor. The tunnel amendment would also incorporate minor route changes to accommodate the methodology. These minor route changes would result in a slight decrease in the length of the landfall portion and thus the overall project length.

Approximately 95 percent of the original project analyzed in the FEIS is relatively unchanged, with the exception of the 2-inch increase in pipeline diameter. The tunnel amendment would increase the pipeline diameter for the modified project from 24 inches to 26 inches and internally coat the pipeline to allow increased flow rates. Ocean Express does not propose to increase the certificated capacity (842,000 dekatherms/day). Ocean Express proposes to install a pressure reducing station inside the new tunnel to reduce the onshore Maximum

Allowable Operating Pressure (MAOP) to 1,480 pounds per square inch gauge (psig) or less from the certificated 2,200 psig. The modifications include an access building at the tunnel shaft at the Dania Beach Boulevard Traffic Circle with a gas vent.

**Comment Procedures and Public Meetings**

Any person wishing to comment on the EA may do so. To ensure consideration prior to a Commission decision on the proposal, it is important that we receive your comments before the date specified below. **Please carefully follow these instructions to ensure that your comments are received in time and properly recorded:**

- Send an original and two copies of your comments to:  
  
Magalie R. Salas, Secretary  
Federal Energy Regulatory Commission  
888 First St., N.E., Room 1A  
Washington, DC 20426;
- Reference Docket No. CP02-090-003;
- Label one copy of your comments for the attention of Gas Branch 3, PJ11.3; and
- **Mail your comments so that they will be received in Washington, DC on or before March 18, 2005.**

Please note that we are continuing to experience delays in mail deliveries from the U.S. Postal Service. As a result, we will include all comments that we receive within a reasonable time frame in our environmental analysis of the project. **However, the Commission strongly encourages electronic filing of any comments or interventions to this proceeding.** See 18 CFR 385.2001(a)(1)(iii) and the instructions on the Commission's web site at <http://www.ferc.gov> under the "e-Filing" link and the link to the User's Guide. Before you can file comments you will need to create a free account which can be created online.

The EA has been placed in the public files of the FERC and is available for public inspection at:

Federal Energy Regulatory Commission  
Public Reference and Files Maintenance Branch  
888 First Street, N.E., Room 2A  
Washington, DC 20426  
(202) 502-8371

Additional information about the project is available from the Commission's Office of External Affairs, at 1-866-208-FERC or on the FERC Internet website ([www.ferc.gov](http://www.ferc.gov)) using the eLibrary link. Click on the eLibrary link, click on "General Search" and enter the docket number excluding the last three digits in the Docket Number field. Be sure you have selected an appropriate date range. For assistance with eLibrary, the eLibrary helpline can be reached at 1-

866-208-3676, TTY (202) 502-8659 or [FERCOnlineSupport@ferc.gov](mailto:FERCOnlineSupport@ferc.gov). The eLibrary link on the FERC Internet website also provides access to the texts of formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission now offers a free service called eSubscription which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries and direct links to the documents. Go to the eSubscription link on the FERC Internet website.

Magalie R. Salas,  
Secretary

## CONTENTS

|            |                                                            |            |
|------------|------------------------------------------------------------|------------|
| <b>1.0</b> | <b>INTRODUCTION .....</b>                                  | <b>1-1</b> |
| 1.1        | OVERVIEW.....                                              | 1-1        |
| 1.1.1      | The Original Proposal (AES Project).....                   | 1-3        |
| 1.1.2      | The New Proposal (Modified Project) .....                  | 1-3        |
| 1.2        | PURPOSE AND NEED OF THIS DOCUMENT .....                    | 1-4        |
| 1.3        | PUBLIC REVIEW .....                                        | 1-6        |
| 1.4        | PERMITS.....                                               | 1-7        |
| 1.5        | NON-JURISDICTIONAL FACILITIES.....                         | 1-8        |
| <b>2.0</b> | <b>PROPOSED ACTION .....</b>                               | <b>2-1</b> |
| 2.1        | PROPOSED FACILITIES .....                                  | 2-1        |
| 2.2        | LAND REQUIREMENTS .....                                    | 2-2        |
| 2.2.1      | Onshore Segment of the Project.....                        | 2-2        |
| 2.2.2      | Offshore Segment of the Project .....                      | 2-8        |
| 2.3        | CONSTRUCTION PROCEDURES .....                              | 2-9        |
| 2.3.1      | Offshore Construction Procedures .....                     | 2-10       |
| 2.3.2      | Onshore Construction Procedures .....                      | 2-27       |
| 2.3.3      | Aboveground Facility Construction Procedures .....         | 2-28       |
| 2.4        | HYDROSTATIC TESTING .....                                  | 2-28       |
| 2.5        | ENVIRONMENTAL TRAINING AND MONITORING .....                | 2-30       |
| 2.6        | OPERATION AND MAINTENANCE PROCEDURES .....                 | 2-32       |
| <b>3.0</b> | <b>ENVIRONMENTAL ANALYSIS .....</b>                        | <b>3-1</b> |
| 3.1        | GEOLOGY.....                                               | 3-1        |
| 3.2        | SOILS AND SEDIMENTS .....                                  | 3-3        |
| 3.3        | WATER RESOURCES.....                                       | 3-4        |
| 3.3.1      | Groundwater Resources .....                                | 3-4        |
| 3.3.2      | Onshore Surface Water Resources .....                      | 3-5        |
| 3.3.3      | Marine Water Resources .....                               | 3-5        |
| 3.4        | FISHERY RESOURCES, BENTHIC COMMUNITIES, AND WILDLIFE ..... | 3-8        |
| 3.4.1      | Direct Impacts .....                                       | 3-9        |
| 3.4.2      | Indirect Impacts.....                                      | 3-12       |
| 3.4.3      | Inadvertent Impacts.....                                   | 3-14       |
| 3.4.4      | Essential Fish Habitat.....                                | 3-15       |
| 3.4.5      | Additional Mitigation.....                                 | 3-17       |
| 3.5        | VEGETATION COMMUNITIES .....                               | 3-18       |
| 3.6        | PROTECTED, THREATENED, AND ENDANGERED SPECIES .....        | 3-18       |
| 3.7        | LAND USE, RECREATION, AND VISUAL RESOURCES.....            | 3-19       |
| 3.7.1      | Offshore.....                                              | 3-20       |
| 3.7.2      | Onshore .....                                              | 3-21       |

## CONTENTS

---

|        |                                                                                        |      |
|--------|----------------------------------------------------------------------------------------|------|
| 3.7.3  | Coastal Zone.....                                                                      | 3-23 |
| 3.7.4  | Conclusions.....                                                                       | 3-24 |
| 3.8    | CULTURAL RESOURCES.....                                                                | 3-24 |
| 3.9    | SOCIOECONOMICS.....                                                                    | 3-25 |
| 3.10   | AIR QUALITY AND NOISE.....                                                             | 3-26 |
| 3.10.1 | Air Quality.....                                                                       | 3-26 |
| 3.10.2 | Noise.....                                                                             | 3-27 |
| 3.11   | RELIABILITY AND SAFETY.....                                                            | 3-29 |
| 3.12   | CUMULATIVE IMPACTS.....                                                                | 3-30 |
| 4.0    | ALTERNATIVES.....                                                                      | 4-1  |
| 5.0    | FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS.....                                      | 5-1  |
| 5.1    | SUMMARY OF THE STAFF'S ENVIRONMENTAL ANALYSIS OF THE PROPOSED<br>MODIFIED PROJECT..... | 5-1  |
| 5.1.1  | Geology.....                                                                           | 5-1  |
| 5.1.2  | Soils and Sediments.....                                                               | 5-2  |
| 5.1.3  | Water Resources.....                                                                   | 5-2  |
| 5.1.4  | Fishery Resources, Benthic Communities, and Wildlife.....                              | 5-3  |
| 5.1.5  | Vegetation Communities.....                                                            | 5-4  |
| 5.1.6  | Protected, Threatened, and Endangered Species.....                                     | 5-5  |
| 5.1.7  | Land Use, Recreation, and Visual Resources.....                                        | 5-5  |
| 5.1.8  | Cultural Resources.....                                                                | 5-6  |
| 5.1.9  | Socioeconomics.....                                                                    | 5-7  |
| 5.1.10 | Air Quality and Noise.....                                                             | 5-7  |
| 5.1.11 | Alternatives.....                                                                      | 5-7  |
| 5.2    | FERC'S STAFF RECOMMENDED MITIGATION.....                                               | 5-8  |

## LIST OF TABLES

|               |                                                                                                         |      |
|---------------|---------------------------------------------------------------------------------------------------------|------|
| Table 1-1     | Ocean Express Pipeline Project Summary of Proposed and Previously Authorized<br>Project Facilities..... | 1-2  |
| Table 2.1-1   | Ocean Express Pipeline Project Summary of Project Facilities.....                                       | 2-6  |
| Table 2.2-1   | Ocean Express Pipeline Project Land Requirements for Pipeline and Aboveground<br>Facilities.....        | 2-7  |
| Table 2.4-1   | Ocean Express Pipeline Project Hydrostatic Test Water Discharge Locations.....                          | 2-29 |
| Table 3.4.4-1 | Summary of Quantitative Impacts to Essential Fish Habitat with Tunneling Method..                       | 3-16 |
| Table 3.12-1  | Summary of Cumulative Impacts to Similar Resources in the Ocean Express Project<br>Area.....            | 3-32 |

## LIST OF FIGURES

|                  |                                                        |      |
|------------------|--------------------------------------------------------|------|
| Figure 2.1-1     | AES Ocean Express Proposed Route.....                  | 2-3  |
| Figure 2.1-2     | AES Ocean Express Proposed Onshore Route (1 of 2)..... | 2-4  |
| Figure 2.1-2     | Ocean Express Onshore Proposed Route (2 of 2).....     | 2-5  |
| Figure 2.3.1.2-1 | Nearshore Construction .....                           | 2-12 |
| Figure 2.3.1.2-2 | Tunnel Entrance Shaft Caisson.....                     | 2-13 |
| Figure 2.3.1.2-3 | Profile of the Proposed Nearshore Tunnel.....          | 2-15 |
| Figure 2.3.1.2-4 | Earth Pressure Balance TBM.....                        | 2-18 |

## LIST OF APPENDICES

|            |                                                                                                     |
|------------|-----------------------------------------------------------------------------------------------------|
| Appendix A | Distribution                                                                                        |
| Appendix B | U.S. Army Corps of Engineers – Department of the Army Permit<br>[Permit No. SAJ-2001 6355 (IP-SLN)] |
| Appendix C | List of Earth Pressure Balance Tunnels (from Ocean Express)                                         |
| Appendix D | Literature Cited                                                                                    |

## CONTENTS

---

### ACRONYMS AND ABBREVIATIONS

|             |                                                                    |
|-------------|--------------------------------------------------------------------|
| ADCP        | Acoustic Doppler Current Profiler                                  |
| AES Project | originally certificated AES Ocean Express Project                  |
| BEST        | The Bahamas Environment, Science, and Technology Commission        |
| BSL         | below sea level                                                    |
| CEQ         | Council on Environmental Quality                                   |
| Certificate | Certificate of Public Convenience and Necessity                    |
| CFR         | Code of Federal Regulations                                        |
| COE         | U.S. Army Corps of Engineers                                       |
| Commission  | Federal Energy Regulatory Commission                               |
| CZMA        | Coastal Zone Management Act                                        |
| dBA         | Decibels on the A-weighted scale                                   |
| DOT         | U.S. Department of Transportation                                  |
| DPEP        | Broward County Department of Planning and Environmental Protection |
| DPPV        | dynamically positioned pipelay barge                               |
| EA          | Environmental Assessment                                           |
| ECMVP       | Environmental Construction Monitoring and Verification Plan        |
| EEZ         | Exclusive Economic Zone                                            |
| EFH         | Essential Fish Habitat                                             |
| EI          | Environmental Inspector                                            |
| EIA         | Environmental Impact Assessment                                    |
| EIS         | Environmental Impact Statement                                     |
| EPA         | U.S. Environmental Protection Agency                               |
| ERP         | Environmental Resource Permit                                      |
| FAA         | Federal Aviation Administration                                    |
| FEIS        | Final Environmental Impact Statement                               |
| FDEP        | Florida Department of Environmental Protection                     |
| FDOT        | Florida Department of Transportation                               |
| FERC        | Federal Energy Regulatory Commission                               |
| FGT         | Florida Gas Transmission                                           |
| FPL         | Florida Power and Light                                            |
| FSW         | feet of seawater                                                   |
| HDD         | horizontal directional drill                                       |
| ICW         | Intracoastal Waterway                                              |

## ACRONYMS AND ABBREVIATIONS

|                  |                                                                                     |
|------------------|-------------------------------------------------------------------------------------|
| LNG              | liquefied natural gas                                                               |
| MAOP             | Maximum Allowable Operating Pressure                                                |
| MMS              | Minerals Management Service                                                         |
| MOA              | Memorandum of Agreement                                                             |
| modified project | AES Ocean Express Project with incorporation of tunnel modification                 |
| MOT              | Maintenance of Traffic                                                              |
| MP               | milepost                                                                            |
| MTBM             | microtunnel boring machine                                                          |
| N/A              | not applicable                                                                      |
| NAAQS            | National Ambient Air Quality Standards                                              |
| NEPA             | National Environmental Policy Act                                                   |
| NGA              | Natural Gas Act                                                                     |
| NMAG             | Nearshore Maneuvering and Anchoring Guidelines                                      |
| NOAA-Fisheries   | National Oceanic and Atmospheric Administration – National Marine Fisheries Service |
| NOI              | Notice of Intent                                                                    |
| NPDES            | National Pollution Discharge Elimination System                                     |
| NSWCCD           | Naval Surface Water Center, Carderock Division                                      |
| NTU              | Nephelometric Turbidity Unit                                                        |
| Ocean Express    | AES Ocean Express, L.L.C.                                                           |
| OEP              | Office of Energy Projects                                                           |
| PB               | pipelay barge                                                                       |
| PD               | Preliminary Determination                                                           |
| Plan             | FERC's January 2003 Upland Erosion Control, Revegetation, and Maintenance Plan      |
| Procedures       | FERC's January 2003 Wetland and Water Body Construction and Mitigation Procedures   |
| RMP              | Revised Milepost                                                                    |
| SFWMD            | South Florida Water Management District                                             |
| SHPO             | State Historic Preservation Officer                                                 |
| SPCC             | Spill Prevention, Containment, and Countermeasures                                  |
| TBM              | tunnel boring machine                                                               |
| TMP              | Tunnel Milepost                                                                     |
| USFWS            | U.S. Fish and Wildlife Service                                                      |

## **1.0 INTRODUCTION**

### **1.1 OVERVIEW**

The staff of the Federal Energy Regulatory Commission (FERC or Commission) and the Mineral Management Service (MMS) have prepared this Environmental Assessment (EA) to discuss the environmental impacts of the Modifications to the Ocean Express Pipeline Project proposed by AES Ocean Express, L.L.C. (Ocean Express) in Broward County, Florida; State Waters of Florida; and Federal Waters of the United States. This EA has been prepared to comply with the requirements of the National Environmental Policy Act (NEPA), the Council of Environmental Quality (CEQ) regulations for implementing NEPA (Title 40, Code of Federal Regulations [CFR], sections 1500-1508), and the Commission's regulations (18 CFR 380).

On January 29, 2004, the FERC issued a certificate of public convenience and necessity to Ocean Express for the Ocean Express Pipeline Project in Docket No. CP02-090-001 (AES Project). On September 9, 2004 (and supplements on September 15, 2004 and September 20, 2004), Ocean Express filed a modification to the AES Project to substitute tunnel construction methodology for the previously authorized horizontal directional drill (HDD) technology to install the nearshore portion of the pipeline, as well as certain design changes for the natural gas pipeline between the United States and the Bahamas (modified project). A summary of the proposed project facilities for the AES Project and the modified project is provided in Table 1-1.

On April 10, 2003, the FERC issued a Preliminary Determination on Non-Environmental Issues (PD) that concurred that energy demands are increasing in south Florida and Ocean Express has demonstrated a public need for the AES Project to provide a relatively clean fuel supply to south Florida to address those needs. The purpose of the tunnel modification is to avoid impacts to sensitive marine resources in the nearshore waters of south Florida, especially coral, coral reefs, and hardbottom communities. In addition, the modification would allow Ocean Express to complete the project in a more timely manner and provide flexibility in delivering gas to south Florida.

## 1.0 INTRODUCTION

| <b>Table 1-1</b><br><b>Ocean Express Pipeline Project</b><br><b>Summary of Proposed and Previously Authorized Project Facilities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                   |                                         |                                   |                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------|-----------------------------------|------------------------|
| Facility <sup>a</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Pipeline Diameter | Approximate Length (miles) <sup>b</sup> | Milepost <sup>c</sup>             | Location/ Jurisdiction |
| <b>Offshore Segment:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                   |                                         |                                   |                        |
| Pipeline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 26-inch*          | 43.0                                    | MP 0.0 to RMP 43.0                | U.S. Federal Waters    |
| Pipeline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 26-inch*          | 4.3 <sup>d</sup>                        | RMP 43.0 to TMP 47.5 <sup>e</sup> | Florida State Waters   |
| <b>Onshore Segment:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                   |                                         |                                   |                        |
| Pipeline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 26-inch*          | 6.0                                     | TMP 47.5 to 53.6                  | Broward County         |
| Pipeline <sup>g</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 20-inch           | 0.7                                     | FPL MP 0.0 to 0.35                | Broward County         |
| Aboveground Facilities <sup>f</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | N/A <sup>g</sup>  | N/A                                     | TMP 53.6 & TMP 47.5*              | Broward County         |
| Underground Facilities <sup>h</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | N/A               | N/A                                     | TMP 47.5*                         | Broward County         |
| <b>Total New Pipeline: 54.32 miles<sup>i</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                   |                                         |                                   |                        |
| <b>Notes:</b> N/A = Not applicable<br><br>* Denotes project facilities or characteristics included in the proposed modification that would differ from the certificated facilities.<br>* Project facilities include pipeline and associated facilities.<br>* Approximate length provided in statute miles.<br>* "MP" refers to Milepost; "RMP" refers to Revised Milepost; and "TMP" refers to Tunnel Milepost.<br>* Approximate mileage based on land survey records as reported by the Florida Department of Environmental Protection.<br>* Includes dual 20-inch lateral lines to the FPL Fort Lauderdale Power Plant.<br>* The term "Aboveground Facilities" for purposes of this table includes the proposed meter stations, mainline shutoff valve and pig launching/receiving station located at TMP 53.62; and the tunnel shaft/access building and gas vent at TMP 47.5.<br>* N/A indicates not applicable.<br>* The term "Underground Facilities" for purposes of this table includes the pressure reducing station and mainline shutoff valve at TMP 47.5 (located inside the tunnel) proposed in association with the modification.<br>* Does not include 40.4 miles of non-jurisdictional pipeline that would be constructed in waters between the Bahamas and the EEZ.<br>* Milepost represents the seaward extent of Florida State Waters (RMP 43.0) to the tunnel entry at the Dania Beach Traffic Circle (TMP 47.5). |                   |                                         |                                   |                        |

### **1.1.1 The Original Proposal (AES Project)**

The AES Project consists of a new 24-inch diameter interstate natural gas pipeline, and certain ancillary facilities, that would extend approximately 54.5 miles from a receipt point at the Exclusive Economic Zone (EEZ) boundary between the United States and the Bahamas to two delivery points in Broward County, Florida: one at an interconnection with the existing Florida Gas Transmission System (FGT) pipeline at the Florida Power and Light (FPL) Fort Lauderdale Power Plant, and one at an interconnection with the FPL gas line that serves the FPL Fort Lauderdale plant.

The deepwater portion of the pipeline would be laid on the seafloor extending 44.6 miles west from the EEZ. The nearshore portion of the pipeline would extend approximately 3.0 miles from the end of the direct lay to the onshore landfall site at the Dania Beach Boulevard Traffic Circle. As previously certificated, the nearshore portion of the pipeline would be installed in three segments including two HDD segments totaling over 8,000 feet long, connected by an approximately 9,000-foot section of pipe laid directly on the seafloor. From the landfall site, the onshore pipeline would primarily be installed by trenching, although HDD and boring methodology would be used to cross sensitive resources, such as the Intracoastal Waterway (ICW) and West Lake Park, and major transportation infrastructure, such as Interstate 95 and U.S. Route 1.

### **1.1.2 The New Proposal (Modified Project)**

The modified project would use the same methodologies for deepwater construction and onshore construction. However, the landfall portion of the pipeline would be installed in a 14,000-foot tunnel instead of the two HDD segments and associated direct pipelay on the seafloor.

The tunnel amendment would also incorporate minor route changes to accommodate the methodology. These minor route changes would result in a slight decrease in the length of the landfall portion and thus the overall project length. During the Final Environmental Impact Statement (FEIS) assessment, a portion of the proposed route was revised to address concerns by the U.S. Navy. The

## 1.0 INTRODUCTION

---

proposed route in the FEIS was presented by milepost or MP extending from the EEZ for 40.2 miles; and the revised route was presented by revised milepost (RMP) from RMP 40.2/MP 40.2 to the onshore terminus of the AES Project. Since the tunnel modification would reduce the length of the proposed route, the milepost designations for the modified project in this EA will use MP from the EEZ (MP 0.0) to MP 40.2, revised milepost from RMP 40.2 to the beginning of the amended route under the tunnel amendment (RMP 44.0), and tunnel milepost (TMP) from the beginning of the amended route (TMP 44.0) to the onshore terminus of the modified project (TMP 53.6).

Approximately 95 percent of the original project analyzed in the FEIS is relatively unchanged, with the exception of the 2-inch increase in pipeline diameter. The tunnel amendment would increase the pipeline diameter for the modified project from 24 inches to 26 inches (MP 0.0 to TMP 53.6), and internally coat the pipeline to allow increased flow rates. Ocean Express does not propose to increase the certificated capacity (842,000 dekatherms/day). Ocean Express proposes to install a pressure reducing station inside the new tunnel to reduce the onshore Maximum Allowable Operating Pressure (MAOP) to 1,480 pounds per square inch gauge (psig) or less from the certificated 2,200 psig. The modifications include an access building at the tunnel shaft at the Dania Beach Boulevard Traffic Circle with a gas vent.

## 1.2 PURPOSE AND NEED OF THIS DOCUMENT

The FERC prepared this EA to address the potential environmental impacts of the tunnel amendment to supplement our *Final Environmental Impact Statement for the Ocean Express Pipeline Project* (Ocean Express FEIS or our FEIS) issued on November 28, 2003. This EA will be used by the Commission to determine whether the proposed project modifications are in the public convenience and necessity. The FERC has primary responsibility for assessing environmental impacts to onshore resources and State Waters under section 7 of the Natural Gas Act (NGA) and part 157 and part 284 of the Commission's regulations. MMS has primary responsibility for offshore analysis in waters of the United States, and coordination with the U.S. Army Corps of Engineers (COE). The FERC is the lead agency and the MMS is a federal cooperating agency for this project because the MMS has jurisdiction by

law as well as special expertise regarding the potential environmental impacts associated with the portion of the proposed project that would be installed on the Outer Continental Shelf.

Our environmental analysis conducted for the Ocean Express FEIS identified potential impacts of the AES Project, assessed reasonable alternatives to the proposed action, recommended mitigation measures to minimize environmental impacts, and facilitated public involvement in identifying significant environmental impacts. We concluded that construction and operation of the AES Project would not result in significant environmental impacts with strict adherence to:

- Ocean Express' Environmental Construction Monitoring and Verification Plan (ECMVP);
- FERC's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan);
- FERC's Wetland and Waterbody Construction and Mitigation Procedures (Procedures);
- FERC's recommendations included in the Ocean Express FEIS and the Order Issuing Presidential Permit And NGA Sections 3 and 7 Authorizations; and
- Pertinent federal, state, and local regulations and permits.

Ocean Express' ECMVP for the AES Project incorporated the requirements of FERC's Plan and Procedures to protect upland, wetland, and waterbodies from significant impacts during construction and operation of the AES Project. The pertinent portions of the ECMVP were included in our FEIS. Subsequent to issuing the FEIS, the FERC Certificate was issued, which identified 28 requirements that were previously recommended in the FEIS to further minimize and avoid environmental impacts.

Ocean Express has revised its ECMVP as part of its tunnel modification and the pertinent aspects of the revision are discussed in this EA. Therefore, the purpose of this EA is to assess whether any new or additional impacts would be associated with the tunnel amendment, and, if so, to identify appropriate mitigation measures to avoid or minimize those impacts that may be significant.

## 1.0 INTRODUCTION

---

This EA primarily focuses on the potential change in construction impacts to the nearshore marine environment since that is the portion of the proposed project which would experience the greatest degree of modification. Ocean Express designed the proposed tunnel construction installation to further minimize the potential for direct and indirect impacts, and the risk of inadvertent impacts to sensitive marine resources, particularly the hardbottom and coral reef resources that occur in the nearshore environment of the project area. Tunnel construction methods are described in Section 2.0, "Proposed Action," and potential marine impacts are summarized primarily in Section 3.3, "Water Resources," and Section 3.4, "Fishery Resources, Benthic Communities, and Wildlife" of this EA.

Onshore, the modifications associated with tunnel construction would be limited to the magnitude and duration of construction impacts within the Dania Beach Boulevard Traffic Circle; associated alterations in traffic, air emissions, and noise; and potential land use impacts associated with a concrete fabrication plant and sediment disposal. These potential impacts are primarily discussed in Section 3.7, "Land Use, Recreation, and Visual Resources," and Section 3.10, "Air Quality and Noise."

## 1.3 PUBLIC REVIEW

As part of the FEIS process, the FERC held public scoping meetings, site visits, numerous interagency meetings, and a public DEIS comment meeting. In response to Ocean Express filing its modified application, the FERC issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed Modifications to the Ocean Express Pipeline Project and Request for Comments on Environmental Issues* (NOI) on November 15, 2004. The notice, which included a description of the modified project and ancillary facilities (e.g., the proposed concrete fabrication plant), was sent to landowners, individuals, organizations, and government entities that expressed an interest in the original project and received a copy of our FEIS for the project. No new landowners are affected by the proposed modifications. It was also sent to all identified potential right-of-way grantors. The distribution list is provided in Appendix A. In response to the NOI, we received one public comment letter and two agency comment letters. The public and agency comments were generally in favor of the modified project since

it would reduce impacts to the nearshore environment relative to the originally proposed project. In addition, the comments requested that potential tunnel construction impacts be assessed, and the results of that assessment be provided publicly. The comments and our responses have been incorporated into this public EA.

#### **1.4 PERMITS**

The modified project would need to obtain the federal, state, and local permits identified in our FEIS. Since the FEIS was issued in November 2003, the AES Project received its certificate of public convenience and necessity from the Commission on January 29, 2004 (FERC Certificate).

On March 8, 2004, the State Historic Preservation Officer (SHPO) stated that the reports for the AES Project were complete and sufficient in accordance with the Florida State Administrative Code (Chapter 1A-46), and that the SHPO maintained no objection to the methods proposed by Ocean Express.

On July 2, 2004, the State of Florida completed its coastal zone consistency determination, and found the AES Project to be consistent with the coastal management program. On January 24, 2005, the State of Florida determined that the portion of the modified project in Federal Waters was consistent with the Coastal Zone Management Program. The Florida Department of Environmental Protection (FDEP) is continuing to evaluate the remainder of the proposed project in State Waters and onshore as part of its Environmental Resource Permit (ERP) process.

On January 4, 2005, we discussed the proposed modifications with the U.S. Fish and Wildlife Service (USFWS) staff in Vero Beach, Florida and they indicated that they did not consider the actions proposed for the modified project to alter in any way the USFWS concurrence of effects to threatened and endangered species, dated February 24, 2004.

On January 10, 2005, the COE issued its Department of the Army Permit for the modified project under section 404 of the Clean Water Act, and section 10 of the Rivers and Harbor Act of 1899 (Permit

## 1.0 INTRODUCTION

---

No. SAJ-2002-6555 (IP-SLN)). The permit identified 76 special permit conditions primarily associated with protecting sensitive marine resources and the waters of the United States, and is included in Appendix B.

On January 11, 2005, the Naval Surface Warfare Center, Carderock Division (NSWCCD) notified FERC that the U.S. Navy has no objections to the tunnel amendment.

On January 28, 2005, the FDEP issued a Consolidated Notice of Intent to Issue Environmental Resource Permit Modification and Public Easement to Use Sovereign Submerged Lands for the Ocean Express project. The attached draft ERP includes over 100 permit requirements to avoid and minimize environmental impacts potentially associated with the modified project. The ERP issuance will be determined upon completion of the public review process.

## 1.5 NON-JURISDICTIONAL FACILITIES

The non-jurisdictional facilities associated with the AES Project consist of 40.4 miles of 26-inch-diameter pipeline that extend from a LNG facility on Ocean Cay in the Bahamas to the EEZ boundary between the Bahamas and the U.S.; an LNG terminal, LNG tank farm, regasification and sendout system; and ancillary structures. Ocean Express submitted an environmental impact assessment (EIA) to the Bahamas Environment, Science and Technology (BEST) Commission. The BEST Commission has completed its review and forwarded the project to the Bahamian Cabinet for further review. These facilities would be located within the jurisdiction of the Bahamian government and are not considered further in this EA.

## **2.0 PROPOSED ACTION**

### **2.1 PROPOSED FACILITIES**

As described in the FEIS and certificated by the Commission, the originally proposed AES Project would consist of a new 24-inch-diameter interstate natural gas pipeline, and certain ancillary facilities, that would extend approximately 54.5 miles from a receipt point on the EEZ boundary between the United States and the Bahamas to two delivery points in Broward County, Florida, one at an interconnection with the existing FGT pipeline at the FPL Fort Lauderdale Power Plant, and the other at an interconnection with the FPL gas line that serves the FPL Fort Lauderdale plant. Ocean Express' proposed tunnel amendment reflects the incorporation of tunnel construction methodology for the nearshore portion of its pipeline, as well as certain other design changes. Ocean Express developed the proposed modifications to address concerns for sensitive marine habitats traversed by the project, the local gas markets demand for peak period deliverability, and certain delays that it has encountered in meeting its proposed construction schedule.

The use of the tunnel construction methodology would allow Ocean Express to construct the nearshore portion of the pipeline using an approximately 14,000-foot-long tunnel, with certain minor route changes to accommodate the methodology, as opposed to the HDDs that the Commission has already approved. Ocean Express also proposes to increase the internal pipeline diameter from 24 inches to 26 inches and internally coat the pipeline, to reduce internal friction and allow for increased hourly flow rates, but does not propose to increase the certificated capacity (842,000 dekatherms/day) of its pipeline. Additionally, Ocean Express proposes to install a pressure reducing station inside the tunnel to reduce the onshore MAOP to 1,480 psig or less, from the certificated MAOP of 2,200 psig. An aboveground tunnel shaft/access building and gas vent would also be installed at the Dania Beach Boulevard Traffic Circle.

No onshore alignment construction changes would be required in association with the proposed modifications. Ocean Express has slightly revised its proposed nearshore route to accommodate the

## **2.0 PROPOSED ACTION**

---

tunnel installation methodology and to minimize construction activities outside the tunnel, which would be initiated from the Dania Beach Boulevard Traffic Circle (TMP 47.5). The revised nearshore route would reduce the length of the proposed pipeline by approximately 0.5 mile, but would not differ substantively in alignment from the route of the AES Project. Seaward of the tunnel exit point, an approximately 0.8-mile-long segment of pipeline would extend to a tie-in with the previously authorized route at TMP 44.0/RMP 44.0. East of this point, the offshore route would be unchanged by the proposed modifications. The proposed increase in pipeline diameter would not significantly affect the onshore or offshore construction procedures described in the FEIS, except for that segment of the project associated with the proposed tunnel construction methodology. Consequently, the description of the proposed action provided in Section 2.0, "Proposed Action," is limited to that segment of the project that would be affected by the proposed modifications (TMP 44.0 to TMP 47.5).

The general location of the currently proposed pipeline and associated ancillary facilities are depicted in Figures 2.1-1, 2.1-2, and summarized in Table 2.1-1.

## **2.2 LAND REQUIREMENTS**

The land requirements of the offshore and onshore portions of the proposed project are summarized in Table 2.2-1. This summary identifies land requirements during construction and operation of the pipeline and associated facilities, as currently proposed.

### **2.2.1 Onshore Segment of the Project**

Construction of the proposed tunnel would be initiated from the Dania Beach Boulevard Traffic Circle (TMP 47.5), and the onshore route and construction methods would be consistent with that which was described in the FEIS in association with the previously proposed landfall HDD installation. Fabrication of concrete tunnel liner segments for the proposed tunnel would require construction of a temporary concrete segment fabrication batch plant, which would occupy approximately 12 acres. Although Ocean Express expects to site the temporary concrete segment fabrication

# **Non-Internet Public**

## **Facility Location Maps Pages 2-3, 2-4, 2-5**

**Public access for the above information is available only  
through the Public Reference Room, or by e-mail at  
[public.referenceroom@ferc.gov](mailto:public.referenceroom@ferc.gov).**

**2.0 PROPOSED ACTION**

| <b>Table 2.1-1</b><br><b>Ocean Express Pipeline Project</b><br><b>Summary of Project Facilities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                          |                                               |                                                                |                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------------------------------|----------------------------------------------------------------|------------------------------|
| <b>Facility<sup>a</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Pipeline Diameter</b> | <b>Approximate Length (miles)<sup>b</sup></b> | <b>Milepost<sup>c</sup></b>                                    | <b>Location/Jurisdiction</b> |
| <b>Offshore Segment:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                          |                                               |                                                                |                              |
| New Pipeline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 26-inch                  | 43.0                                          | MP 0.0 to 40.2<br>RMP 40.2 to 43.0                             | U.S. Federal Waters          |
| New Pipeline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 26-inch                  | 4.3                                           | RMP 43.0 to 44.0 <sup>d</sup><br>TMP 44.0 to 47.5 <sup>e</sup> | Florida State Waters         |
| <b>Onshore Segment:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                          |                                               |                                                                |                              |
| New Pipeline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 26-inch                  | 6.0                                           | TMP 47.5 to 53.6                                               | Broward County               |
| New Pipeline <sup>d</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 20-inch (2)              | 0.35 + 0.35                                   | FPL MP 0.0 to 0.35                                             | Broward County               |
| Aboveground Facilities <sup>e</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | N/A                      | N/A                                           | TMP 47.5 and TMP 53.6                                          | Broward County               |
| Underground Facilities <sup>f</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | N/A                      | N/A                                           | TMP 47.5                                                       | Broward County               |
| <b>Total New Pipeline 54.3 miles<sup>g</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                          |                                               |                                                                |                              |
| <b>Notes:</b> N/A = Not applicable<br><sup>a</sup> Project facilities include pipeline and associated facilities.<br><sup>b</sup> Approximate length provided in statute miles.<br><sup>c</sup> "MP" refers to Milepost; "RMP" refers to Revised Milepost; and "TMP" refers to Tunnel Milepost.<br><sup>d</sup> Includes dual 20-inch lateral lines to the FPL Fort Lauderdale Power Plant.<br><sup>e</sup> The term "Aboveground Facilities" for purposes of this table includes the tunnel shaft/access building and gas vent at TMP 47.5 proposed in association with the modification and the proposed meter stations, mainline shutoff valve, and pig launching/receiving station located at TMP 53.62.<br><sup>f</sup> The term "Underground Facilities" for purposes of this table includes the pressure reducing station and mainline shutoff valve at TMP 47.5 (located inside the tunnel shaft) proposed in association with the modification.<br><sup>g</sup> Does not include 40.4 miles of nonjurisdictional pipeline that would be constructed in waters between the Bahamas and the EEZ.<br><sup>h</sup> Mileposts extend from the seaward extent of Florida State Waters (RMP 43.0) to the tunnel entry at the Denis Beach Traffic Circle (TMP 47.5) |                          |                                               |                                                                |                              |

## 2.0 PROPOSED ACTION

| <b>Table 2.2-1</b><br><b>Ocean Express Pipeline Project</b><br><b>Land Requirements for Pipeline and Aboveground Facilities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                               |                                   |                                                              |                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------|--------------------------------------------------------------|-----------------------------------------------------------|
| <b>Facility (Number of Sites)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Right-of-Way Cross Section (feet)</b>      | <b>Approximate Length (miles)</b> | <b>Approximate Area Affected During Construction (acres)</b> | <b>Approximate Area Affected During Operation (acres)</b> |
| Offshore Federal Waters Pipeline-Direct Lay Segment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 200                                           | 43.0                              | 1,042 <sup>a</sup>                                           | 1,042 <sup>a</sup>                                        |
| Offshore State Waters Pipeline-Direct Lay Segment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 25                                            | 1.8                               | 453 <sup>b</sup>                                             | 5.2 <sup>c</sup>                                          |
| Nearshore Tunnel Crossing <sup>d</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 25                                            | 2.7                               | 8.3 <sup>d</sup>                                             | 8.3 <sup>d</sup>                                          |
| Onshore Pipeline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Construction (30, 40, or 55)<br>Permanent (4) | 8.0                               | 22.6                                                         | 3.0                                                       |
| FPL MPs 0.0 to 0.35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Construction (45)<br>Permanent (8)            | 0.35                              | 3.0                                                          | 0.25                                                      |
| Additional Temporary Work Spaces <sup>e</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | N/A                                           | N/A                               | 36.0                                                         | 0.0                                                       |
| Underground Facilities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | N/A                                           | N/A                               | 0.0 <sup>f</sup>                                             | <0.1                                                      |
| Aboveground Meter Stations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | N/A                                           | N/A                               | 0.7                                                          | 0.25                                                      |
| <b>Onshore Approximate Total Area:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                               |                                   | <b>62.3</b>                                                  | <b>3.5</b>                                                |
| <b>Approximate Total Area:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                               |                                   | <b>1,565.5</b>                                               | <b>1,059.0</b>                                            |
| <b>Notes:</b><br><sup>a</sup> Acreage based on 200-foot-wide construction right-of-way and permanent easement in Federal Waters.<br><sup>b</sup> Acreage includes a 200-foot-wide construction right-of-way and approximately 320 acres of additional temporary construction workspace and designated vessel mooring areas.<br><sup>c</sup> Acreage based on 25-foot-wide permanent easement in State Waters.<br><sup>d</sup> Acreage based on 25-foot-wide construction right-of-way and permanent easement in State Waters.<br><sup>e</sup> Includes additional onshore work areas, pipe storage, and contractor yards not accounted for in the construction right-of-way.<br><sup>f</sup> Construction of the underground facilities would occur in areas already accounted for in the temporary workspace areas. |                                               |                                   |                                                              |                                                           |

## **2.0 PROPOSED ACTION**

---

batch plant in existing light industrial or industrial zoned land within Port Everglades, Ocean Express has not yet identified a specific location for that facility or completed environmental surveys of the site.

Therefore, we recommend that:

- **Prior to construction, Ocean Express should identify the specific location, size, and configuration of the concrete fabrication plant, and file with the Director of OEP, for review and approval, all pertinent information on the proposed site including sensitive resources present, agency consultation, survey results, potential impacts, and appropriate mitigation, as necessary. The filing shall also include documentation demonstrating that Ocean Express has received all federal, state, and local approvals for operation of the facility.**

Ocean Express has not proposed any alignment changes to the onshore portion of the project. Ocean Express has further indicated that it does not anticipate that the increase in diameter of the pipeline from 24 inches to 26 inches would affect the size of the onshore construction or permanent rights-of-way. A pressure reducing station and shutoff valve would be located underground within the tunnel entrance shaft at the Dania Beach Traffic Circle (TMP 47.5). A newly proposed tunnel shaft utility/access building and gas vent would service these facilities and would occupy an area less than 0.1 acre during operation of the proposed project. With the exception of the tunnel shaft utility/access building and gas vent, the aboveground facilities associated with the proposed project would be identical to the certificated project.

### **2.2.2 Offshore Segment of the Project**

The alignment and land requirements of the offshore portion of the pipeline in Federal Waters would not be affected by the proposed modifications. As described in the FEIS, the portion of the pipeline in Federal Waters would be constructed within a permanent, 200-foot-wide right-of-way grant that would encompass approximately 1,042 acres. The offshore portion of the pipeline in State Waters east of the tunnel exit point would be constructed within a 200-foot-wide construction right-of-way. The

---

**2.0 PROPOSED ACTION**

---

tunnel section of the pipeline would be constructed in State Waters within a 25-foot-wide right construction right-of-way, though tunnel construction from the project landfall to the tunnel exit point would not result in any direct seafloor impacts. Additional offshore contingency temporary construction work areas would be required to accommodate designated vessel mooring areas, anchoring and movement of construction and support vessels, and pre-fabrication of the pipestring that would be used to connect the tunnel section of the pipeline with the offshore direct lay section of the pipeline. In total, the offshore construction work areas in State Waters would encompass approximately 461.3 acres.

Following construction, permanent easements would be retained in State Waters (25 feet wide) and Federal Waters (200 feet wide) for operation and maintenance purposes and would encompass approximately 1,056 acres. The actual area of seafloor affected during operation in Federal and State Waters would be much less than this area. The section of the pipeline extending from the tunnel exit point (TMP 44.8) to a water depth of 200 feet of sea water (FSW; approximate RMP 44.3) would be covered with articulated concrete mats to provide protective cover and on-bottom stability, as described in the FEIS. The approximately 0.4-mile-long mat covered section of the pipeline would impact an area of the seafloor approximately 9 feet in width, encompassing approximately 0.5 acre, which is comparable to the area affected by concrete mat installation that was described in the FEIS. The tunnel section of the pipeline would not result in any seafloor impacts during operation. The seafloor disturbance for the direct lay portion of the pipeline with no cover would theoretically be limited to the diameter of the proposed pipeline and would encompass approximately 11.7 acres. Actual impacts would likely be less and would be determined by post-construction field surveys.

### **2.3 CONSTRUCTION PROCEDURES**

As described in the FEIS, the pipeline facilities would be designed, constructed, operated, and maintained in accordance with the DOT regulations under 49 CFR Part 192, "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards;" 18 CFR 380.15, "Site and Maintenance Requirements;" and other applicable federal and state regulations. Ocean Express has submitted a general

## **2.0 PROPOSED ACTION**

---

Spill Prevention, Containment, and Countermeasures (SPCC) Plan for the management of hazardous materials, such as fuels, lubricants, and coolants, used during construction. Site-specific plans would be developed for each construction spread once contractors have been selected.

Ocean Express currently proposes to initiate construction of the tunnel and nearshore portion of the project in the first quarter of 2005. It is expected that construction of the tunnel and microtunnel exit portions of the project would last approximately 16 months. Deepwater pipeline construction would commence following completion of tunneling activities and would be completed in approximately three to four months. Onshore construction would also be initiated following completion of tunneling activities and would be completed in approximately six months. Ocean Express currently anticipates that the proposed project would be placed in service in 2007 or early 2008.

### **2.3.1 Offshore Construction Procedures**

#### **2.3.1.1 General Offshore Construction Procedures**

As described in the FEIS, the nearshore segment of the proposed project would traverse three reef systems referred to as Reef 1, Reef 2-Inner and Reef 2-Outer, and Reef 3. The nearshore segment of the AES Project would have been constructed using two HDDs, referred to as the landfall and the offshore HDD, which would be separated by a direct pipelay segment between Reef 2-Inner and Reef 2-Outer. The proposed tunnel modification would replace this HDD installation approach with the currently proposed tunnel construction methodology to accomplish installation of the nearshore segment of the pipeline. As now proposed, a tunnel would extend from the project landfall at the Dania Beach Boulevard Traffic Circle (TMP 47.5/RMP 48.0), as proposed with the certificated HDD installation approach, to an exit point a minimum of 200 feet east of Reef 3 (RMP 44.8). Seaward of the tunnel exit point, an approximately 0.8-mile-long segment of pipeline would extend to a tie-in with the previously authorized route at RMP 44.0/TMP 44.0. Thus, the tunnel modification would only affect that segment of the certificated project between TMP 44.0 and TMP 47.5. The offshore route east of TMP 44.0 would be unchanged by the proposed modifications. Likewise, the proposed increase in pipeline diameter from 24-

to 26 inches would not affect the proposed deepwater installation procedures, and pipeline construction would be accomplished as described in the FEIS.

The details of the proposed offshore pipeline construction plans and procedures are provided in Ocean Express' ECMVP and Florida Nearshore Installation Methods (dated January 2005). Ocean Express revised these documents to reflect the proposed tunnel modification, as well as additional resource agency consultation since receipt of the FERC Certificate.

#### **2.3.1.2 Specialized Offshore Construction Procedures**

The nearshore portion of the pipeline would be installed beneath the seafloor within an approximately 2.7-mile-long tunnel. A tunnel boring machine (TBM) would be used to construct a watertight 13.6-foot-diameter, concrete segment-lined tunnel. The concrete segment-lined tunnel would extend approximately 2.6 miles from an entry point at the Dania Beach Traffic Circle (TMP 47.5) to a point approximately 650 feet west of the tunnel exit point (TMP 44.9). A microtunnel boring machine (MTBM) would then be used to construct a smaller, 42-inch-diameter tunnel from that point to the tunnel exit (TMP 44.8). Figure 2.3.1.2-1 depicts the proposed nearshore pipeline including the tunnel alignment.

Tunnel excavation would be initiated on dry land from a tunnel entrance shaft caisson that would be constructed at the Dania Beach Traffic Circle (TMP 47.5). The caisson would measure 140-feet-deep by 40-feet-wide with 24-inch-thick, steel reinforced concrete walls. The caisson would be fabricated on-site in a series of form, pour, strip, and excavate cycles. The caisson would be flooded during construction to eliminate hydrostatic pressure differentials. Once constructed to the designed elevation, an initial concrete bottom plug would be poured, the caisson would be dewatered and any leaks would be sealed. The final concrete caisson floor would be poured to the TBM launch elevation, approximately 125 feet below sea level (BSL), once the caisson was dewatered, and all subsequent construction activities would be conducted in dry conditions. A drawing of the proposed tunnel entrance shaft caisson is provided in Figure 2.3.1.2-2.

# Non-Internet Public

Maps and Figures  
Pages 2-12, 2-13

Public access for the above information is available only  
through the Public Reference Room, or by e-mail at  
[public.referenceroom@ferc.gov](mailto:public.referenceroom@ferc.gov).

## 2.0 PROPOSED ACTION

---

Once caisson construction is complete, a block of soil at the TBM launch site would be grouted from inside the caisson by drilling out through the caisson and injecting reinforcing grout. This grouted exit block, which would measure approximately 35 feet long and 10 feet wider and taller than the TBM, would aid in the TBM exit from the caisson. A portal seal block would then be poured to receive shaft seals that would prevent flooding of the entrance shaft from groundwater seepage during launch of the TBM. The TBM would then be assembled at the base of the entrance shaft and initiate excavation activities. The TBM would progress for approximately 2.6 miles (13,500 feet) along a moderately inclining, 0.05 percent slope to TMP 44.9 (Figure 2.3.1.2-3). Once the TBM reaches TMP 44.9, it would initiate a short vertical curve or dive to remove the TBM from the staging area for the microtunnel section of the tunnel. All salvageable components would be removed from the TBM, including all fluids and hydraulic oils would be removed, and the remaining structure of the TBM would be entombed in concrete, consistent with the COE permit issued to Ocean Express (Special Condition #39; Appendix B).

A concrete-encased, steel launch tube would then be assembled within the eastern end of the main tunnel to align and guide the MTBM. Once the launch tube is installed, the MTBM would be assembled and boring of the microtunnel would be initiated. As the MTBM progressed, sections of carrier pipe would be welded together and jacked forward to maintain the integrity of the bore. Once the MTBM progressed to the tunnel exit point, a valved flange bulkhead would be placed on the last end of the carrier pipe. Divers would disconnect the MTBM from the carrier pipe, and the MTBM would then be recovered to a surface support vessel.

Following tunnel construction, the offshore pipeline would be installed in three distinct segments. Segment 1 of the pipeline would be assembled within the main tunnel by welding together sections of pipe that would be delivered to the tunnel through the tunnel entrance shaft. The completed microtunnel would provide a conduit for installation of Segment 2 of the pipeline, which would be pre-assembled,



## 2.0 PROPOSED ACTION

---

placed on the seafloor, and pulled back into the tunnel. Segment 2 of the pipeline would connect Segment 1 with Segment 3, which would consist of the offshore, direct lay portion of the pipeline.

Segment 2 of the pipeline would consist of an approximately 1,370-foot-long pipestring that would be laid out on the seafloor within a pull corridor in line with the microtunnel exit, as depicted in Figure 2.3.1.2-1. An anchored pipelay barge (PB) or a dynamically positioned pipelay vessel (DPPV) positioned near the microtunnel exit point would be used to assemble the pipestring using the general methods for deepwater pipeline assembly and installation, as described in the FEIS. Once assembled and hydrostatically tested (see Section 2.4, "Hydrostatic Testing"), a cable would be attached to the Segment 2 pipestring and it would be pulled back into the microtunnel using a winch located in the main tunnel. Because the seafloor at the microtunnel exit would have a 4 to 6 percent slope, pre-fabricated pipe supports would be installed to support the pipestring during pull back operations. The pipe supports would be installed using a jackup barge and permanently anchored to the seafloor using screw anchors. The footprint of the pipe supports would be less than that of the protective concrete mats that would be installed over this portion of the pipeline, and would not result in additional impacts or seafloor area requirements. Once pulled into position in the microtunnel, the space between the microtunnel and the pipeline would be sealed with grout to prevent ingress of seawater, and the pipestring would be welded to Segment 1 inside the tunnel. Ocean Express has proposed, and the COE permit requires, that the main tunnel would be maintained in a dry condition during operation of the proposed project (Special Condition #41; Appendix C).

Segment 3 of the pipeline would be installed via conventional direct pipelay using a DPPV, which would not require anchor placement for station keeping during pipeline construction. Conventional direct lay pipeline assembly was described in the FEIS. This segment of the pipeline would continue to the EEZ boundary (MP 0.0). Once completed, the western end of Segment 3 would be positioned approximately 40 to 60 feet north of the installed Segment 2 pipestring. Both the eastern end of the Segment 2 and the western end of Segment 3 would be finished with flanged abandonment heads. An

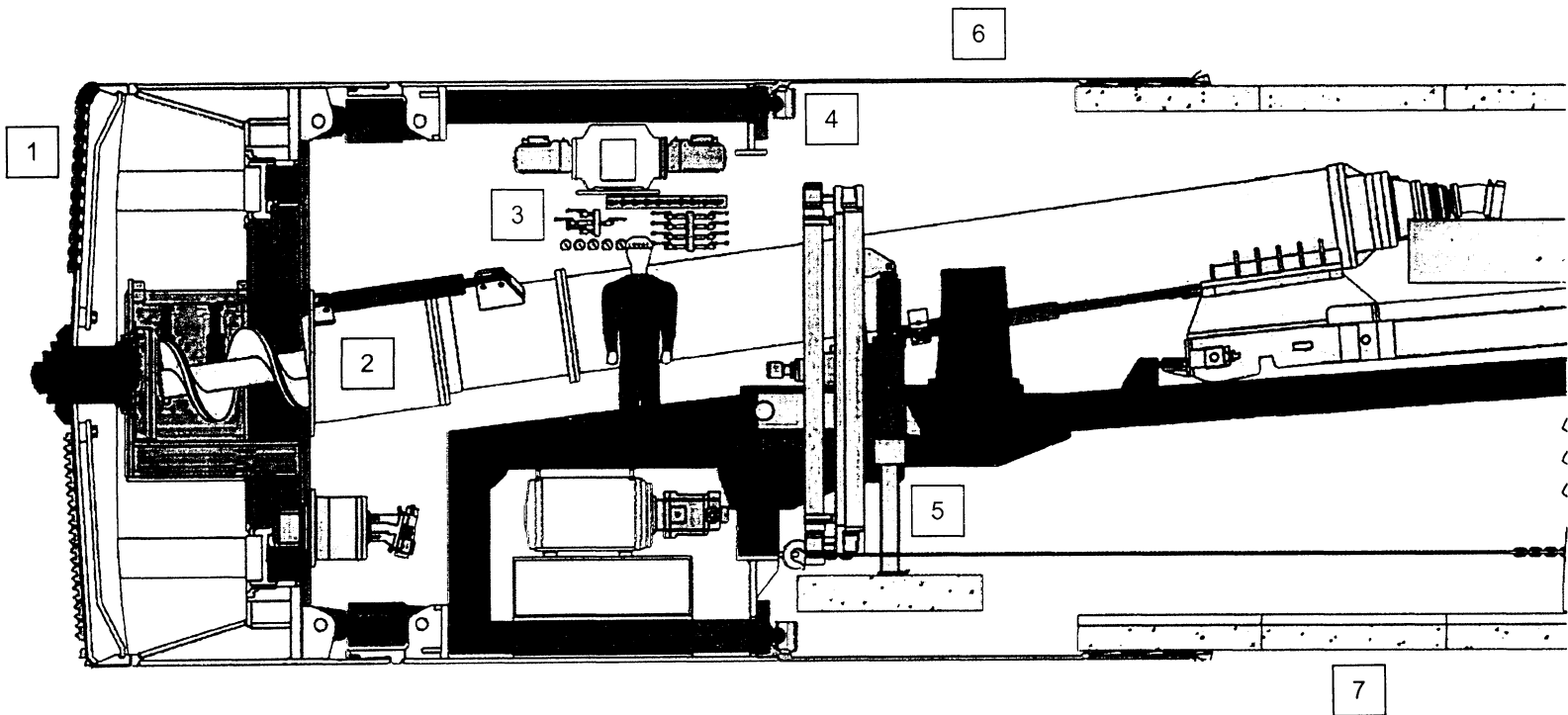
anchored laybarge would pre-assemble a flanged tie-in spool and lower it into position. Divers would then bolt the spool piece to Segments 2 and 3 to accomplish pipeline tie-in.

Following pipeline installation and tie-in of Segments 2 and 3, the section of the pipeline extending from the tunnel exit (TMP 44.8) to a water depth of 200 FSW (TMP 44.3) would be covered with articulated concrete mats to provide pipeline protection. The concrete mats would be installed lengthwise using an anchored barge and would be stabilized in place using screw piles. The articulated concrete mats and their installation were described in the FEIS. After completion of pipeline installation, a hydrostatic test program would be executed to verify the mechanical integrity of the system, as described in Section 2.4, "Hydrostatic Testing."

As required by FERC in the FEIS, Ocean Express has developed a general Storm Handling Plan. That plan stipulates the general measures and contingencies that would be implemented in the event of a storm or other adverse condition to secure barges, vessels, pipe segments, and other construction equipment for the purposes of resource protection and safety. The plan provides general contingencies for each phase of offshore construction, including those activities in nearshore waters. To provide further assurances, the COE permit issued to Ocean Express requires that, in addition to the general Storm Handling Plan, each selected construction contractor would also develop and submit a detailed, vessel- and equipment-specific storm handling plan for agency review prior to commencement of construction activities (Special Condition #71; Appendix B).

### **Tunnel Construction**

A 13.6- foot-diameter, earth pressure balance TBM would be used to construct the tunnel. The TBM would generally consist of a cutterhead, a screw conveyor, an operator station, a concrete segment liner assembly station, and multiple pressure tight bulkheads contained within a steel cylinder, or shield (Figure 2.3.1.2-4). The cutterhead would consist of a rotating face of disk cutters and picks made from



Longitudinal Cross-Section of Main Structure

FIGURE LEGEND

- 1 - Cutterhead
- 2 - Screw conveyor
- 3 - Operator station
- 4 - Hydraulic propulsion cylinders
- 5 - Concrete segment liner assembly station
- 6 - Shield
- 7 - Assembled concrete liner

NOT TO SCALE

AES OCEAN EXPRESS  
NATURAL GAS PIPELINE PROJECT  
EARTH PRESSURE BALANCE TBM

Broward County, Florida

DATE: January 2005

FIGURE 2.3.1.2-4

---

2.0 PROPOSED ACTION

---

durable steel alloys inside the front section of the shield, which is referred to as the cutterhead chamber. The cutterhead would grind and crush materials encountered at the tunnel face in the cutterhead chamber. The design of the TBM would enable dewatering of the cutterhead chamber during tunnel construction for cutterhead inspection and maintenance of worn cutter tools, referred to as an intervention.

An earth pressure balance TBM operates by matching the rate of spoil removal to the penetration rate of the TBM for the soil being mined. When excavating through unstable soils such as sands, soil conditioners are added at the cutterhead face and in the cutterhead chamber to increase the cohesive behavior of the material being excavated and improve the transport and removal of cuttings. Soil conditioners may include bentonite, polymers, or foam. Bentonite is a montmorillonite clay from Wyoming that is not defined as a hazardous material by U.S. Environmental Protection Agency (EPA). The COE permit issued to Ocean Express requires that all proposed chemical additives undergo aquatic toxicity testing and resource agency review and approval prior to their use (Special Condition #26; Appendix B). The soil mixture, or muck, that would result from soil conditioner addition would take on a paste-like consistency. The external pressure at the tunnel face is balanced with the pressure inside the cutterhead chamber by carefully monitoring and controlling the removal rate of muck from the chamber through the screw conveyor. In essence, the TBM would only remove quantities of spoil material equal to the quantities being cut as the machine moved forward. The TBM would operate by balancing the external pressure only at the cutterface with that in the cutterhead chamber, rather than the HDD method, which requires using drilling muds maintained at high pressure along the length of the bore. Therefore, the risk of an inadvertent release of drilling fluid, or "frac-out," would be very low to nonexistent since the fluid would be maintained at a relatively low pressure (orders of magnitude less than used for HDD), and any minimal pressure would be highly localized at the face of the cutterhead typically 40 feet beneath the seafloor.

## 2.0 PROPOSED ACTION

---

During tunnel construction activities, the tunnel would be lined with pre-cast concrete segments, which would be constructed using precision steel molds at the temporary concrete segment fabrication batch plant. Each concrete liner segment would consist of individual, precision cast, and steel reinforced concrete sections. The liner segments would be assembled within the rear of the shield, and would be designed to withstand all anticipated external and internal loading forces. The joints in the concrete liner segments would be gasketed to prevent water intrusion, and the segments would be permanently bolted together. Once a concrete liner segment was fully assembled, hydraulic propulsion cylinders would be used to propel the TBM forward and lock the concrete liner segments together. Because the concrete liner segment would be assembled within the tail shield, a small gap would exist between the liner segment and the excavated ground surface. This void would be immediately filled by cement-based grout pumped from pipes embedded in the tail shield as the TBM moves forward. The transition between the tail shield and the concrete liner would be sealed by a tail seal system to prevent water intrusion.

Ocean Express indicates that the TBM progress would be guided and monitored by a state-of-the-art guidance system. The system would calculate the heading and position of the TBM for comparison to the designed tunnel alignment, and this information would be used to adjust the orientation of the concrete liner segments and the tunnel alignment as construction progressed.

In addition to the TBM, various support equipment would also operate inside the tunnel. A railway would be constructed within the tunnel to transport materials (e.g., muck, concrete liner segments, grout, etc.) and personnel between the tunnel entry point and the TBM. The tunnel would also contain linear utilities such as electrical power cable, compressed air, and water lines. As tunnel construction progressed, additional railway track would be laid and linear utilities would be extended. Additional tunnel support equipment and facilities would operate at the tunnel contractor yard located within the Dania Beach Boulevard Traffic Circle. Aboveground support equipment and facilities would include forklifts, a yard crane, front end loaders, tunnel ventilation fans, air compressors, and office trailers.

---

2.0 PROPOSED ACTION

---

Ocean Express has developed a Tunnel Monitoring and Contingency Plan (included as an appendix to the ECMVP) that establishes the specific procedures for monitoring tunneling operations in order to minimize potential environmental impacts. In that plan, Ocean Express indicates that the proposed tunnel construction method would eliminate or greatly minimize the potential for common hazards or geologic concerns that are sometimes associated with tunneling and other boring activities. As described in the Tunnel Monitoring and Contingency Plan, tunneling activities would be monitored carefully to avoid over-excavation, the concrete liner segments would be designed to withstand all external and internal loading forces, and a minimum overburden of 30 feet would be maintained above the tunnel. These measures should eliminate the potential for tunnel collapse. Further, the earth pressure balance TBM construction method was selected by Ocean Express for its ability to adjust to variable geologic conditions that might be encountered in the project area. If a sinkhole or deposit of loose sand was encountered during tunnel construction, the ground in front of the TBM would be consolidated by injection of grout, and tunnel excavation would continue. Additionally, the feasibility of tunnel installation along the proposed alignment would be verified through site-specific geotechnical investigations.

Our review indicates that TBM tunnel construction in general, and the use of earth pressure balance TBMs specifically, is a proven technology. TBMs have successfully been used around the world in various applications (e.g., construction of subway, railway, road, sewer, water main, penstock, mine access and telecable tunnels) for over 25 years. Historically, use of earth pressure balance TBMs in unstable sediments like that expected in association with the proposed project risked blow-through at the screw conveyor because the muck had little cohesion or plasticity and thus offered little or no resistance to hydraulic pressures encountered at the face of the tunnel. However, injection of soil conditioners by modern earth pressure balance TBMs increases the muck cohesion, which allows their use in unconsolidated formations, including sands and gravels (Hitachi).

## 2.0 PROPOSED ACTION

---

In developing its proposal, Ocean Express completed extensive consultation with numerous tunnel construction consultants and contractors. Based on this consultation, Ocean Express has determined that the proposed application of tunnel construction methodology is feasible. Ocean Express indicates that more complex and demanding projects have successfully used earth pressure balance TBMs to accomplish tunnel construction under conditions similar to that associated with the proposed project. For example, a 19,000-foot-long by 11-foot-diameter tunnel was successfully constructed from an inland shaft south of San Diego, California, out and under the Pacific Ocean with 250 feet of water head over the tunnel. Appendix C provides a listing of other tunnel projects that were successfully completed using earth pressure balance TBMs in excess of 10-feet in diameter.

### **Microtunnel Construction**

A 42-inch-diameter MTBM would be used to construct an approximately 650 foot long microtunnel. The microtunnel would extend from the end of the main tunnel beneath Reef 3 (TMP 44.9) to an exit point at the seafloor a minimum of 200 feet west of the edge of Reef 3 (TMP 44.8). The final design of the MTBM and its cutting tools would be based on the results of site-specific geotechnical investigations to be conducted prior to construction as approved by federal and state resource agencies. In general, the MTBM would provide an efficient means for subsoil excavation while minimizing the risk of environmental impact. MTBM technology is similar to HDD in that drilling fluid is used to circulate drill cuttings from the cutter face back to the entry point. However, MTBM technology allows for the use of much lower drilling fluid pressures below ambient water pressure, thereby minimizing or eliminating the risk of a frac-out relative to HDD construction.

The MTBM launching frame would be moved into the tunnel and set to match the alignment of the launch tube. The MTBM would be set into place and an MTBM support system would be assembled in the tunnel. The MTBM support system would include a guidance system, controls, bentonite system, muck circulation pumps and transfer system, carrier pipe welding equipment, and a

jack frame and power controls. The first section of carrier pipe would then be bolted to the MTBM in preparation for its launch.

As the MTBM progressed, carrier pipe would be jacked forward into the bore created by the MTBM to support the microtunnel bore and provide a conduit for subsequent pipeline installation. Boring would periodically stop to allow insertion and welding of new carrier pipe and reconnection of the MTBM support systems. The carrier pipe would be slightly smaller in diameter than the MTBM to minimize friction during pipe jacking. To lubricate the carrier pipe, bentonite would be injected at low pressure into the annular space surrounding the carrier pipe through ports spaced at 20-30 feet on center. The bentonite fluid would also be used to circulate cuttings back into the carrier pipe and to the microtunnel entrance. Muck resulting from microtunnel excavation activities would be circulated back to the Dania Beach Boulevard Traffic Circle for cutting separation and recirculation of drilling fluids.

Ocean Express has reported that the pressure of the lubricating bentonite in the annulus of the carrier pipe would be less than the hydrostatic differential pressure between the top of the carrier pipe and the ocean floor. This condition would eliminate the risk of a lubrication bentonite frac-out. To provide further assurances, the COE permit issued to Ocean Express requires that the pressure of the lubricating bentonite be less than the ambient hydrostatic pressure throughout the microtunnel construction process to prevent a potential frac-out (Special Condition #38; Appendix B). Ocean Express has also indicated that drilling pressures would be reduced as the MTBM approaches the tunnel exit point to further reduce the potential for a frac-out.

Use of the MTBM would not require excavation of a pit to receive the MTBM or its associated drilling fluids. Ocean Express has indicated that the MTBM would be operated in a manner that would maintain a hydrostatic pressure differential when the MTBM exits the seafloor, such that waters surrounding the exit point would have a tendency to flow into the tunnel. This condition would carry

## **2.0 PROPOSED ACTION**

---

sands and sediments back into the MTBM bore and through the return circulation lines in the tunnel's carrier pipe, rather than generating a sediment plume as might have occurred in association with the previously proposed HDD installation.

The MTBM would be recovered to the surface and a valved flange would be installed on the carrier pipe. The annulus surrounding the carrier pipe would then be grouted from the main tunnel to the exit point, and the carrier pipe would be drained back to the main tunnel.

### **Spoil Removal**

Ocean Express estimates that about 8,004 cubic yards of spoil would be removed to construct the tunnel entrance shaft and about 97,330 cubic yards of spoil would be removed to construct the tunnel and microtunnel. All of this material would be transported back to and/or removed from the Dania Beach Boulevard Traffic Circle workspace area. Spoil materials removed from the tunnel would be loaded on to trucks equipped with water-tight liners for transport to an approved landfill for disposal, as required by the COE permit issued to Ocean Express (Special Conditions #31 and #32; Appendix B).

Soil conditioners would be used to stabilize the tunnel face during TBM excavation activities and could contaminate spoil material removed during excavation activities. Ocean Express would properly handle all tunnel spoils to prevent any potential degradation of soil, surface water, or ground water quality. To provide further assurances, the COE permit issued to Ocean Express requires that all drill cuttings, drilling muds, drilling fluids, and soil conditioners be disposed at an approved landfill (or possibly recycled for beneficial use as approved by COE), and any identified contaminated material would be segregated and sampled for level of contamination (Special Condition #31; Appendix B). Any such material would then be disposed of in accordance with all federal, state, and local regulations.

### **Construction Traffic**

Construction traffic at the Dania Beach Traffic Circle would include delivery of supplies and equipment, and off-site disposal of spoils. These activities would generate an increased volume of traffic through the duration of the tunnel boring and pipeline installation process, which is expected to last approximately 15 months. The anticipated increased truck traffic in and around the Dania Beach Boulevard Traffic Circle associated with implementation of the proposed installation modifications is discussed further in Section 3.7, "Land Use, Recreation, and Visual Resources." Day to day construction activities would be scheduled to account for heavier than usual traffic flow and to avoid high traffic periods. Additionally, an on-site storage facility at the Dania Beach Boulevard Traffic Circle construction site would be designed to hold several days of production materials to give added flexibility. To provide further assurance that local traffic patterns would not be disrupted by construction related traffic, the COE permit issued to Ocean Express requires that project related construction not adversely interfere with normal traffic patterns along Dania Beach Boulevard and State Route A1A (Special Condition #20; Appendix B).

### **U.S. Navy Restricted Area**

A portion of the offshore pipeline route would border U.S. Navy-NSWCCD Restricted Area (Figure 2.3.1.2-1). Additionally, the project would cross the southwestern corner of the restricted area via the landfall tunnel. Ocean Express entered into a Memorandum of Agreement (MOA) with the NSWCCD that finalized the resolution of technical issues as they related to the previously certificated route, pipeline design, operations and maintenance procedures, and related matters. Based on that agreement, Ocean Express proposed to construct approximately 3.8 miles of the offshore route using stainless steel pipe rather than the more traditional carbon steel pipe.

Under the proposed modification, the stainless steel portion of the pipeline would be reduced to 3.3 miles in length (from TMP 44.2 to TMP 47.5), but the alignment would still traverse one corner of the

## **2.0 PROPOSED ACTION**

---

Navy restricted area. The additional temporary workspace associated with the modified offshore construction procedures would also encompass a portion of the NSWCCD restricted area.

Ocean Express is coordinating the proposed modifications with the NSWCCD and anticipates amending the MOA with NSWCCD to accommodate technical issues related to the proposed modifications. Further, the COE permit issued to Ocean Express requires that Ocean Express coordinate with the NSWCCD to ensure that construction and operation of the proposed project does not adversely impact NSWCCD operations (Special Condition #5; Appendix B). By letter filed January 24, 2005, the NSWCCD has no comments to submit concerning the proposed modifications.

### **Vessel Movement and Mooring Procedures**

Ocean Express has updated its Nearshore Maneuvering and Anchoring Guidelines (NMAG), which is an appendix to the ECMVP, to reflect the tunnel modification as well as resource agency consultation conducted since issuance of the FERC Certificate. The NMAG provides guidelines that govern the movement and mooring procedures for the vessels that would be engaged in construction of the nearshore portion of the proposed project. The detailed procedures for anchoring the PB were provided in the FEIS. Additionally, the COE permit issued to Ocean Express includes several conditions related to vessel traffic and monitoring (Special Conditions #43 through #45; Appendix B), anchoring (Special Conditions #46 through #52; Appendix B), and spud placement procedures (Special Condition #61; Appendix B). The key elements of the proposed NMAG and COE permit conditions are summarized as follows:

- In addition to standard navigation aids and safety equipment, all work vessels would be equipped with global positioning system-based vessel monitoring systems to monitor all vessel movements and confirm that vessels do not maneuver outside of approved areas.

## 2.0 PROPOSED ACTION

---

- All anchors and spuds would be placed in sand bottom areas that avoid coral and hardbottom habitats, and these locations would be verified and photo documented to ensure that they occur in complete sand bottom.
- Anchoring would not be conducted in designated reef buffer zones, and any vessels anchored within 30 feet of designated reef buffer zones would utilize screw pile anchor methods.
- All deployed anchors would be equipped with beacon transponders to monitor and record any anchor movement or drag.
- All mooring lines would be positively floating and equipped with mid-line buoys to avoid impacts to coral reefs resulting from anchor sweep.
- Any vessel movements, anchor movements or drag, spud contact, or other similar incidents in non-approved areas would be surveyed by divers to assess potential inadvertent impacts.

The proposed modifications would eliminate the need for operation of construction work vessels inside of the third reef, and further minimize the potential for indirect impacts to the dominant reef trends associated with vessel movement and mooring.

### 2.3.2 Onshore Construction Procedures

As described previously, Ocean Express has not proposed any alignment changes to the onshore portion of the project, and it is not anticipated that the increase in diameter of the pipeline from 24 inches to 26 inches would affect the previously proposed onshore pipeline construction procedures. Thus, the description of the onshore construction procedures presented in the FEIS, as modified by the FERC Certificate, remains current with respect to the proposed modifications.

## **2.0 PROPOSED ACTION**

---

### **2.3.3 Aboveground Facility Construction Procedures**

The proposed modifications would not affect the design or installation of the certificated aboveground meter station facilities, which were described in the FEIS. As described in Section 2.2, "Land Requirements," an underground pressure reducing station and shutoff valve, as well as an aboveground tunnel shaft utility/access building and gas vent would be constructed at the Dania Beach Boulevard Traffic Circle (TMP 47.5) in association with the proposed modifications. It is anticipated that special fabrication crews would install the shutoff valve and pressure reducing station concurrent with pipeline construction.

Following completion of pipeline installation inside the tunnel, the entrance shaft would be readied for long term service through installation of lighting, communication lines, and monitoring systems. An elevator used for construction would be modified for future service, and ladders and platforms would be similarly modified. Additionally, dewatering pumps would be installed to remove any accumulated water. The top of the shaft would be fitted with a waterproof deck and a small, utility access building would be constructed on the deck to provide access to the lower facilities. The building would also house ventilation controls, monitoring equipment, and other utilities.

Upon completion of construction at the Dania Beach Traffic Circle, disturbed areas would be graded and re-seeded or covered with gravel, as appropriate. Additionally, the aboveground facilities would be fenced for security and protection.

## **2.4 HYDROSTATIC TESTING**

As described in the FEIS, the pipeline would be hydrostatically pressure tested in accordance with DOT safety standards (49 CFR Part 192) to verify its integrity and to ensure its ability to withstand the maximum designed operating pressure. Any leaks detected during the test would be repaired and the pipeline would be re-tested. The hydrostatic testing procedures proposed by Ocean Express and presented in the FEIS generally remain current with the exception that the required volumes of

## 2.0 PROPOSED ACTION

hydrostatic test water would be increased as a result of the increase in the proposed pipeline diameter. Additionally, the hydrostatic test of the previously proposed landfall and reef HDD pull strings would be replaced with hydrostatic tests of the tunnel section of the pipeline and the pre-assembled tunnel exit/tie-in section of the pipeline. Following hydrostatic testing of these sections of the offshore pipeline, the entire offshore pipeline would be hydrostatically tested using water withdrawn from and discharged to nonjurisdictional waters in the Bahamas. The volumes of hydrostatic test water and discharge locations currently proposed by Ocean Express are presented in Table 2.4-1.

| <b>Table 2.4-1</b><br><b>Ocean Express Pipeline Project</b><br><b>Hydrostatic Test Water Discharge Locations</b> |                                                             |                         |                                       |                                                                             |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------|---------------------------------------|-----------------------------------------------------------------------------|
| <b>Discharge Location</b>                                                                                        | <b>Purpose of Discharge</b>                                 | <b>Volume (Gallons)</b> | <b>Receiving Water Name and Class</b> | <b>Nearby Environmental Resources</b>                                       |
| HTWD-1                                                                                                           | Hydrotest discharge (entire onshore section)                | 876,400                 | FPL cooling water canal, Class III    | Wetland on FPL property and cooling canal                                   |
| HTWD-1                                                                                                           | Hydrotest discharge (HDD under FPL)                         | 25,300                  | FPL cooling water canal, Class III    | Wetland on FPL property and cooling canal                                   |
| HTWD-2                                                                                                           | Hydrotest discharge (HDD under I-95)                        | 43,000                  | Dania Cut-off canal, Class III        | Dania Cut-off canal                                                         |
| HTWD-2a                                                                                                          | Hydrotest discharge (HDD under U.S. 1)                      | 48,800                  | Dania Cut-off canal, Class III        | Dania Cut-off canal                                                         |
| HTWD-3                                                                                                           | Hydrotest discharge (HDD under West Lake Park)              | 82,200                  | Dania Cut-off canal, Class III        | Dania Cut-off canal                                                         |
| HTWD-3a                                                                                                          | Hydrotest discharge ((HDD under NE 7 <sup>th</sup> Avenue)  | 50,600                  | Dania Cut-off canal, Class III        | Dania Cut-off canal                                                         |
| HTWD-4                                                                                                           | Hydrotest discharge (HDD under ICW)                         | 34,200                  | ICW, Class III                        | ICW                                                                         |
| HTWD-5                                                                                                           | Hydrotest discharge (landfall tunnel section; Segment 1)    | 325,200                 | ICW, Class III                        | ICW                                                                         |
| HTWD-6                                                                                                           | Hydrotest discharge (tunnel exit/tie-in section; Segment 2) | 15,200                  | Atlantic Ocean, Class III             | Reef 3 is approximately 14,400 feet west of the proposed discharge location |
| HTWD-7                                                                                                           | Hydrotest discharge (entire offshore section)               | 11,121,000              | Atlantic Ocean, N/A                   | Off Ocean Cay, The Bahamas                                                  |

## 2.0 PROPOSED ACTION

---

Fluorescene, a yellow-green dye generally accepted for use in aquatic environments, would be added to the hydrostatic test water used for offshore sections of the pipeline to aid in detection of potential leaks. Because the pipeline would be internally coated to provide corrosion protection, Ocean Express has indicated that use of corrosion inhibitors in the hydrostatic test water would likely not be required. Treatment chemicals, such as corrosion inhibitors, biocides, or oxygen scavengers would only be required in association with the proposed hydrostatic testing procedures if the test water were to remain in the pipeline for a period of time exceeding 30 days, which is not expected. If chemical treatments were required, AES states that only environmentally safe chemicals at non-toxic concentrations would be used. To provide further assurances, the FERC Certificate issued for the AES Project required that Ocean Express not use corrosion inhibitors, biocides, oxygen scavengers, or other additives that exhibit toxicity to aquatic organisms in hydrostatic test water without prior written approval by the Director of OEP.

Prior to discharge, Ocean Express has proposed that the test water would be treated, if necessary, to ensure compliance with the National Pollution Discharge Elimination System (NPDES) permit, Florida standards, and the Broward County Code (Chapter 27). Ocean Express has revised the Hydrotesting and Pre-commissioning Plan in its ECMVP (December 2004) to reflect the proposed hydrostatic testing procedures for all pipeline segments to be tested. Ocean Express would seek all federal, state and local authorizations that may be required for discharge to the proposed receiving waterbodies. Such authorizations would be expected to address discharge standards and treatment methods, if applicable. Although Ocean Express has proposed the discharge of hydrostatic test waters in multiple receiving waters, the COE permit requires that there be no discharge of hydrostatic test water into waters of the United States, except as allowed by a NPDES permit (Special Condition #29, Appendix B).

## **2.5 ENVIRONMENTAL TRAINING AND MONITORING**

As described in the FEIS, Ocean Express would employ at least one environmental inspector (EI) per construction spread. The EIs would be present continually during both onshore and offshore construction and restoration activities. The specific duties and responsibilities of the EIs are described

---

**2.0 PROPOSED ACTION**

fully in Ocean Express' ECMVP, which was developed in cooperation with FDEP, National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA Fisheries), the COE, the EPA, and Broward County Department of Planning and Environmental Protection (DPEP). The specific duties and responsibilities would include monitoring onshore and offshore construction processes, including HDD and tunnel operations, vessel movement and anchoring, turbidity monitoring, marine biological monitoring, onshore sediment and erosion control monitoring, and hazardous materials monitoring. EIs would be responsible for enforcing permit, license, and certificate conditions, ensuring correct implementation of the environmental management plans, overseeing post-construction surveys, reporting the results of inspections, and identifying, documenting and reporting potential non-conformances to the environmental requirements.

Ocean Express would also fund independent third-party EIs who would report directly to FERC, and who would have authority to resolve site-specific compliance issues that may arise during construction. These third-party EIs would also be required for onshore and offshore construction and would be responsible for monitoring and ensuring compliance with all mitigation measures recommended in the FERC certificate and in our Plan and Procedures. The third-party EIs would also be responsible for preparing and submitting status reports that would be filed with FERC on a weekly basis until all construction-related activities, including restoration and initial permanent seeding, are complete.

Ocean Express would conduct environmental training for all company and construction contractor personnel and EIs, as required by the FERC Certificate and the COE permit issued to Ocean Express (Special Condition #15; Appendix B). The environmental training would be conducted in accordance with the Environmental Training Syllabi included in the ECMVP. The COE permit requires that Ocean Express and the construction contractors attend a pre-construction conference with staff representatives of the environmental permitting and licensing agencies at least 30 days prior to initiation of any pipeline or tunnel construction activities with the exception of the tunnel shaft excavation (Special Condition #14; Appendix B). Ocean Express would coordinate with FDEP, COE, and Broward County

## **2.0 PROPOSED ACTION**

---

DPEP in writing to schedule this conference and provide these agencies with a minimum of 30 days advance written notice.

### **2.6 OPERATION AND MAINTENANCE PROCEDURES**

The proposed modifications would not affect the general operation and maintenance procedures described in the FEIS. Ocean Express would operate and maintain the proposed facilities in accordance with the DOT regulations in 49 CFR Part 192, and other applicable federal and state regulations.

Ocean Express currently has no plans for future expansion of the facilities proposed. If additional demand for natural gas supplies requires future expansion, Ocean Express would seek the appropriate authorizations from the FERC. When and if an application is filed, the environmental impact of the new proposal would be examined at that time.

Abandonment of the pipeline facilities would be subject to the approval of the FERC under Section 7(b) of the NGA and would comply with DOT regulations and specific agreements or stipulations made for the pipeline rights-of-way. An environmental review of any proposed abandonment would be conducted when the application is filed with the FERC.

### **3.0 ENVIRONMENTAL ANALYSIS**

The following environmental analysis focuses on the new or additional impacts to environmental and human resources that may be affected by incorporation of the tunnel modification into the AES Project that was previously analyzed in our FEIS. The environmental consequences of constructing and operating the modified project would vary in duration and significance. Four levels of impact duration are considered: temporary, short-term, long-term, and permanent. Temporary impacts generally occur during construction with the resource returning to pre-construction conditions almost immediately after disturbance during construction. Short-term impacts could continue up to approximately three years following construction. A long-term impact may last over three years, but less than the life of the proposed project. Permanent impacts may not return to pre-construction conditions during the life of the project.

Impacts were also assessed in regard to level of significance in accordance with NEPA regulations. Ocean Express previously consulted with federal, state, and local agencies to identify appropriate mitigation measures to avoid and minimize environmental impacts associated with construction and operation of the AES Project. In addition, the Ocean Express FEIS and FERC Certificate identified additional measures to avoid and minimize potential impacts. This environmental analysis will evaluate whether the current modifications, revised ECMVP, and previously identified mitigation measures will adequately avoid and minimize environmental impacts due to construction and operation of the modified project, and if warranted, identify additional measures to avoid and minimize impacts.

#### **3.1 GEOLOGY**

Our FEIS described the geologic setting, potential geologic hazards, and measures to avoid and minimize potential impacts associated with geologic resources. We concluded that there would be no significant impacts to mineral or paleontological resources or potential impacts to the project associated with geologic hazards.

### 3.0 ENVIRONMENTAL ANALYSIS

---

The general geologic setting for the modified project is identical to the setting for the AES project. The additional concern associated with the tunnel amendment is the potential for subsidence along the proposed tunnel due to karst terrain or subsurface voids.

As described in Section 2.0, "Proposed Actions," Ocean Express has developed the tunnel route and construction methods to avoid and minimize the potential impacts associated with tunnel construction. From the safety standpoint, Ocean Express determined that a minimum of 30-foot of cover between the tunnel and the ocean floor is preferred to accommodate interventions. From the settlement standpoint, Ocean Express states that structural geotechnical design has proven that with cover of at least two times the diameter of a tunnel is maintained and all other factors remain equal; surface settlement is negligible. In essence, when cover is less than two diameters, there is a potential of settlement because of the lack of cover for the natural bridging effect of soil to be effective without the need for a re-enforced liner. In light of the fact that the TBMs are effectively 15-foot in diameter, Ocean Express conservatively selected the 30-foot minimum cover. The concrete lining that would be used with the TBM does not require the two times tunnel diameter overburden since the concrete segments provide the necessary structural support for the tunnel. However, Ocean Express has stipulated as a design requirement that a 30-foot minimum overburden be maintained for the main tunnel excavation as an added safety measure to eliminate the risk of soil settlement, and to protect workers while accessing the cutterhead (intervention).

Ocean Express has conducted substrate borings, which indicate the substrate along the tunnel path is generally marine deposits and unconsolidated sand with a high proportion of fines. During tunneling, the TBM would monitor the substrate in front of the cutter to identify substrate type and potential voids, and employ measures to maximize cutting efficiency such as soil conditioners, foam, or injecting grout into voids. As the TBM advances, pre-fabricated concrete segments would be installed immediately behind the TBM, which are designed to withstand up to 3 million pounds of external force to stabilize the tunnel. As described in Section 2.3.1.2, "Specialized Offshore Construction Procedures," Ocean Express would implement a Tunnel Monitoring and Control Program to ensure that tunnel stability is monitored

---

### 3.0 ENVIRONMENTAL ANALYSIS

and maintained. In addition, the COE permit requires that Ocean Express complete a tunneling risk analysis and feasibility study that demonstrates there will be no collapse, heave, or subsidence prior to initiating construction (Special Condition #9; Appendix B). Therefore, there would be no significant impacts to geologic resources associated with construction or operation of the modified project.

#### 3.2 SOILS AND SEDIMENTS

Our FEIS described the soil and sediment types and limitations along the AES Project route, as well as the impacts and appropriate mitigation measures to avoid and minimize potential impacts to soil and sediments. The FEIS concludes that the AES project would be constructed in accordance with our Plan and Procedures, and we accepted minor variances requested by Ocean Express since the variances would be as protective as (or more protective than) the requirements in our Plan and Procedures.

The only additional impacts to soils and sediments potentially associated with the modified project would be increased construction activity at the Dania Beach Traffic Circle (TMP 47.5) and the microtunnel exit point (TMP 44.5). Disposal of subsurface soils and sediment removed from the tunnel are discussed in Section 3.7, "Land Use, Recreation, and Visual Resources."

Construction and staging at the tunnel entry point would result in the removal of soils associated with excavating the 40-foot diameter shaft and the soil disturbance for staging the tunnel construction including the shaft, extra workspace, and traffic corridors for supplying the construction activities and spoil removal. The footprint of the staging area would not be any larger than proposed for the AES Project evaluated in the FEIS. The construction area would be maintained during construction and unimproved areas would be restored after construction to pre-construction conditions in accordance with our Plan. In addition, the COE permit requires erosion control devices be installed and monitored daily at the construction site to minimize erosion (Special Condition #21; Appendix B).

The tunnel exit point would be bored with the microtunnel and exit into the seafloor in an area of open sand. Ocean Express reports this "punch out" would result in a tendency for the surface waters to

### **3.0 ENVIRONMENTAL ANALYSIS**

---

enter and fill the microtunnel. It is anticipated that hydrostatic pressure would readily equilibrate, and any loss of sediments into the 42-inch microtunnel would be minor and temporary since the pressures would be expected to equilibrate within seconds, the surrounding sand would replace any minor amounts of sediment that entered the microtunnel based on natural processes, and the exit point would be covered with concrete mattresses.

### **3.3 WATER RESOURCES**

Potential impacts to water resources discussed in the Ocean Express FEIS focused on groundwater, onshore surface waters, and marine waters. The FEIS described the routing, installation and monitoring measures proposed by Ocean Express; and the requirements by FERC to protect water resources in our Plan and Procedures, as well as additional conditions imposed by FERC to avoid and minimize impacts to water resources. With strict adherence to these requirements, we determined the impacts to water resources would not be significant. As described previously, the tunnel amendment would not involve substantial modifications to any segment of the pipeline route other than that segment where the tunnel would replace two HDDs and a direct lay section. We did not identify any modified or new water resource impacts associated with the proposed pipeline diameter change. Consequently, we have only identified and analyzed those impacts to water resources associated with the tunnel construction, especially at the tunnel entry and exit points.

#### **3.3.1 Groundwater Resources**

Prior to initiating tunnel excavation, Ocean Express would finalize a Nearshore Construction Plan and a tunnel safety and monitoring plan, in accordance with the appropriate permits from the COE, FDEP, and the South Florida Water Management District (SFWMD) associated with groundwater discharges. During construction, Ocean Express would dewater the caisson after the tunnel entry excavation is complete, dispose of the water in accordance with federal and state permits, and monitor for any inflows of groundwater through any breaches in the concrete plug. If any inflow occurred, Ocean Express would repair the concrete plug to prevent groundwater seepage.

Our Procedures provide baseline protection measures for groundwater resources (see FEIS Section 3.3.1). In addition, the COE permit requires that there be no discharges of hydrostatic test water into the groundwater, except as authorized by a NPDES permit (Special Condition #29; Appendix B), and that there be no discharge of groundwater into the waters of the United States without appropriate agency authorization (Special Condition #34; Appendix B). Therefore, there would be no significant impact to groundwater associated with construction or operation of the modified project.

### **3.3.2 Onshore Surface Water Resources**

There would be no additional impacts to onshore surface waters associated with the modified project relative to those previously described in our FEIS. Subsequent to the issuance of the FEIS, the COE issued a project permit that requires there be no discharge of hydrostatic test waters, groundwater, or dewatering of the tunnel into the waters of the U.S., except as authorized by a NPDES permit (Special Conditions #29, #30, and #34; Appendix B). With strict adherence to our Plan, our Procedures, the requirements in the FERC Certificate, and federal, state, and local permits, there would be no significant impact to the onshore surface waters associated with construction or operation of the modified project.

### **3.3.3 Marine Water Resources**

The marine segment of the modified project crosses approximately 48 miles of Atlantic Ocean marine waters. The segment would extend from the EEZ boundary between the United States and the Bahamas (MP 0.0) to nearshore at the Dania Beach Boulevard Traffic Circle (RMP 48.0, TMP 47.5). The pipeline would be installed between the EEZ and RMP 44.0 as described in our FEIS. The only modification to this portion of the proposed pipeline would be the increase in the diameter of the pipe from 24 inches to 26 inches. We identified no additional, measurable impact to water resources along this portion of the route relative to those described in our FEIS.

Construction activities along the nearshore portion of the pipeline that could potentially impact marine water resources include tunnel/microtunnel construction, pipestring tie-in construction, and vessel

### 3.0 ENVIRONMENTAL ANALYSIS

---

anchoring. These construction activities could result in turbidity associated with disturbance of the seafloor surface. Potential inadvertent impacts to water resources identified in the Ocean Express FEIS associated with the nearshore segment of the proposed project include frac-outs and fuel spills.

In general, potential impacts to marine water resources would be decreased by the tunnel amendment since the modification would completely eliminate two of the three entry/exit points and associated dredging and substrate replacement proposed as part of the AES Project. With the tunnel amendment, turbidity/sedimentation impacts would be reduced from 5.1 acres to a maximum of 1.0 acres relative to the AES Project. None of the marine acreage impacted during construction of the tunnel would be landward of the tunnel exit point (dominant reef trends). As discussed in Section 3.4, "Fishery Resources, Benthic Communities, and Wildlife," turbidity is primarily a concern to sensitive coral or hardbottom biota. Ocean Express would conduct a pre-construction survey to verify that the exit point is in an area of open sand to reduce the likelihood that turbidity associated with the exit point would impact sensitive resources. Additionally, there is a reduced amount of nearshore construction vessel traffic with the tunnel amendment.

Ocean Express modeled the levels of turbidity and sedimentation that could be generated by construction activities associated with the AES Project, especially HDD methods (HPA 2003) as discussed in our FEIS. For purposes of the tunnel amendment, these previously-modeled turbidity impacts would be considered the worst-case scenario since the extent and duration of seafloor disturbance under the tunnel amendment would be greatly reduced compared to the HDD methods proposed as part of the AES Project. In addition to the elimination of dredging associated with the two entry/exit pits, turbidity and sedimentation would be avoided or minimized at the remaining exit site since Ocean Express predicts that the surrounding water would tend to flow into the microtunnel chamber rather than outward, which would create a turbidity plume. Further, the COE permit has required that the hydrostatic pressure in the microtunnel be less than the ambient hydrostatic pressure to avoid turbidity in the marine environment (Special Condition #38; Appendix B).

---

3.0 ENVIRONMENTAL ANALYSIS

---

As a conservative estimate (overestimate), Ocean Express has proposed to use the previous model results from the Offshore HDD punchout operations to estimate the extent and duration of potential turbidity and sedimentation impacts associated with the tunnel amendment (1.0 acre under the worst-case scenario). As discussed in our FEIS, the extent and duration of turbidity and sedimentation for the AES Project would not be significant if conducted in accordance with Ocean Express' construction and monitoring plans and FERC requirements.

Ocean Express proposes to conduct compliance turbidity sampling at the microtunnel exit location during construction. As described in our FEIS, federal and state resource agencies have developed project-specific turbidity thresholds for the AES Project, specifically a threshold of 4-hour duration of 15 nephelometric turbidity units (NTUs) in reef areas, and a 1.5 millimeters per day sedimentation threshold in reef areas. The COE permit also requires Ocean Express to monitor actual turbidity with an Acoustic Doppler Current Profiler (ADCP), and provide an overlay map that includes the results of the existing sediment transport modeling and actual ADCP-mapped plumes, if any, after installation of the microtunnel (*Special Conditions #59 and #60; Appendix B*).

Ocean Express' modeling study also evaluated potential turbidity and sedimentation associated with other offshore activities that disturb the seafloor (HPA 2003). The study predicted that turbidity associated with anchors, and jackup barges, would be minimal and that suspended sediment would settle to the seafloor within 20 seconds and within about 13 feet of the structure causing the disturbance. The model indicates that these activities would not result in an exceedence of either the turbidity or sedimentation thresholds established by the federal and state resource agencies. To further avoid and minimize impacts to marine resources associated with anchoring and jackup barges, Ocean Express would perform pre-construction dive surveys to locate appropriate anchor locations, the use of transponder beacons on all anchors to monitor any anchor movement (and dive surveys to document impacts if movement is detected), and midline buoys and floating anchor lines to eliminate potential impacts of anchors and anchor sweep to marine resources.

### 3.0 ENVIRONMENTAL ANALYSIS

---

The potential inadvertent release of drilling mud and fuels are described in our FEIS along with measures to avoid and minimize inadvertent impacts, such as avoiding the use of toxic substances in drilling muds and strict adherence to a SPCC Plan. The potential for a frac-out of drilling muds associated with the previously proposed HDD methods was minimized by various operational and monitoring methods as described in our FEIS. Implementation of the tunnel construction method would further minimize the potential for a frac-out since the construction of the tunnel and the microtunnel do not require increasing pressure in the bore hole above the ambient hydrostatic pressure. Consequently, there would be no elevated pressure along the length of the bore as was proposed with HDD. To further avoid and minimize potential impacts of frac-outs, Ocean Express would perform aquatic bioassay tests on all proposed additives and would continuously use underwater video to monitor the microtunnel exit operations during microtunnel exit/tie -in operations and pipeline pull-in. Additionally, the COE permit requires that the hydrostatic pressure in the microtunnel be less than the ambient hydrostatic pressure (Special Condition #38; Appendix B); and that there be no discharge of any materials from the tunnel construction into waters of the United States, except as authorized by a NPDES permit, including drilling muds, drilling fluids, drill cuttings, or soil conditioners (Special Condition #30; Appendix B).

With the mitigative measures proposed by Ocean Express, FERC requirements, and federal, state and local permit requirements, construction and operation of the modified project would not have a significant impact on water resources.

#### 3.4 FISHERY RESOURCES, BENTHIC COMMUNITIES, AND WILDLIFE

The Ocean Express FEIS described the fishery resources, benthic communities, and wildlife that would potentially be impacted by the AES Project with specific emphasis on coral/hardbottom communities and Essential Fish Habitat (EFH). The FEIS described the routing, installation, and monitoring measures proposed by Ocean Express; and the requirements by FERC to protect fishery resources and wildlife in our Plan and Procedures as well as additional conditions imposed by FERC to avoid and minimize impacts to these resources. With strict adherence to these requirements, we

---

### 3.0 ENVIRONMENTAL ANALYSIS

---

determined the impacts to fishery resources, benthic communities, and wildlife would not be significant. As described previously, the tunnel amendment would not involve substantial modifications to any segment of the pipeline route other than that segment where the tunnel would replace two HDDs and a direct lay section in the nearshore environment. The tunnel amendment would not result in any additional impacts to freshwater fisheries or wildlife. Consequently, we have only identified and analyzed those impacts to marine resources associated with the tunnel amendment, especially at the tunnel exit point.

Although the tunnel amendment would generally decrease impacts to marine resources, construction and operation of the modified project could alter the extent of direct, indirect, and inadvertent impacts to some marine resources.

#### 3.4.1 Direct Impacts

Additional direct impacts associated with the modified project could include physical disturbance of marine habitat, especially the seafloor, due to microtunnel construction, pipestring tie-in, vessel anchoring, and possibly increased pipe diameter. The primary resource of concern would be potential impacts to corals and live/hardbottom. Along the proposed route, the dominant reef trends/high-relief coral reefs would be avoided in the nearshore environment using the tunnel methodology. The live/hardbottom in the vicinity of the tunnel exit point and along the deepwater route is primarily composed of a mixture of sand and rubble with solitary or small clusters of rocks surrounded by sand.

In general, direct impacts to nearshore resources would be decreased by the tunnel amendment since the modification would completely eliminate two of the three entry/exit points and reduce the extent of seafloor disturbance at the remaining one. Overall, the nearshore marine acreage (sand and sand/rubble) directly and indirectly impacted by construction west of Reef 3 (including Reef 3) would decrease from almost 10 acres using previously proposed HDD methods (including about 1.9 acres of permanent impact) to no acreage impacted using tunnel methods (no temporary or permanent impacts).

### 3.0 ENVIRONMENTAL ANALYSIS

---

Microtunnel construction and exit could cause direct impacts associated with exiting the seafloor, transition to direct pipelay, and anchoring. To avoid and minimize potential impacts to coral/livebottom, Ocean Express would locate the tunnel exit hole site and associated anchoring locations in coarse-grained, sandy habitat at least 200 feet from Reef 3 based on pre-construction surveys. If corals were observed in the area, Ocean Express would avoid or minimize impacts by slightly altering the pipeline route or updating the impact area calculations and mitigation associated with hardbottom impacts. The COE permit requires that Ocean Express submit an agency approved mitigation plan to COE upon completion of the pre-construction survey (Special Condition #55; Appendix B). Under the tunnel amendment, the pipestring and corresponding pullback corridor along the seafloor would be approximately 80 percent shorter than proposed using HDD methods. Incorporating the tunneling methods would decrease the acreage of hardbottom impacted along the nearshore portion of the pipeline and microtunnel exit and tie-in by approximately 60 percent (0.7 to 0.3 acres).

Other direct impacts to coral or hardbottom could occur in the vicinity of the exit point due to anchors, anchor lines, and jackup barges during tunnel construction. To further avoid and minimize impacts associated with anchoring, Ocean Express would use transponder beacons on all anchors to monitor any anchor movement (and dive surveys to document impacts if movement is detected), and use midline buoys and floating anchor lines to eliminate potential impacts of anchors and anchor sweep to hardbottom. To ensure anchors avoid potential impacts to coral communities and other biota, Ocean Express would require that laybarge anchoring be limited to mapped sand bottom areas. There would also be a reef buffer of 100 feet from the easterly edge of Reef 3 that no vessels would be allowed to anchor except using screw pile methods (screw anchors would be used for anchorages within 30 feet of the reef). Temporary work areas would only be located within sand habitat. Exclusion zones would also be established within temporary work areas that surround isolated patches of hardbottom with high /medium density coverage with a 30-foot buffer. For the jackup barges, the COE permit requires use of an underwater camera, night vision and/or divers to monitor lowering of the spuds to avoid contact with

---

3.0 ENVIRONMENTAL ANALYSIS

---

corals and/or live/hardbottom, and photo-documentation of actual placement of spuds on the jackup barges to document any impact to coral or hardbottom resources (Special Condition #61; Appendix B).

Seaward of the microtunnel construction activities, the pipeline would be installed as described in our FEIS, including direct lay of the pipe on the seafloor with the use of concrete mats to cover the pipeline extending to a depth of approximately 200 FSW. The only additional impact associated with the modified project east of the tunnel exit point would be the increased pipe diameter from 24 inches to 26 inches on the seafloor east from approximately a depth of 200 FSW (RMP 44.3) to the EEZ (MP 0.0). Using the pipe diameter as an estimate of the maximum footprint of the seafloor impacted, this increase in pipe diameter would result in an 8 percent increase in the acreage impacted along the deepwater portion of the modified project (approximately 10.7 to 11.7 acres).

Deepwater habitat surveys were conducted to characterize the proposed route into a variety of habitats including hard bottom reef and reef transition areas, sand, sand with rubble, and soft bottom sand. The surveys indicated that the substrate along the proposed route consisted of open sand habitat (63 percent) or sand-rubble habitat (37 percent). Most of the sand rubble habitat had minimal biota (approximately 54 percent), no sand rubble areas had between 5 and 20 percent cover, and the remaining sand rubble habitat had over 20 percent biotic cover (46 percent). Due to the discovery of deepwater corals in the vicinity of the proposed project area, a reevaluation of a potential area for deepwater coral was completed to further characterize potential coral thickets and mound habitat at depths greater than 650 FSW; however, the closest coral thicket was found approximately 580 feet north of the pipeline route while the closest dead coral mound was located approximately 80 feet north of the pipeline route. The minor increase in pipe diameter would slightly increase the theoretical hardbottom acreage directly impacted by the project footprint from 4.0 acres to 4.3 acres relative to the 24-inch pipe diameter. The actual impact on uncolonized rock could be substantially less since the footprint of the pipeline directly on flat rock substrate would be closer to one inch wide (less than 0.2 acre total).

### 3.0 ENVIRONMENTAL ANALYSIS

---

Pre-construction surveys would be conducted between MP 29.7 and RMP 44.7 to select a specific route that avoids sensitive resources. The surveys would identify and map deepwater corals in hardbottom areas where there is a higher probability for occurrence. Following the survey, a Florida deepwater coral expert would review the data and potential avoidance or mitigation measures proposed. Because deepwater corals associated with exposed hardbottom features at depths greater than 100 feet are a primary concern, Ocean Express proposes to conduct a side scan sonar survey from water depths of 100 FSW to the EEZ Boundary in hardbottom areas to identify high reflectivity or other signatures that indicate hardbottom. Subsequent video surveys of these potential hardbottom areas would be performed to confirm the initial habitat characterizations and to calculate the amount of impact to each habitat type. Monitoring would be conducted during direct lay operations to minimize impacts to hardbottom, and post-construction surveys, particularly between MP 29.7 and RMP 44.7, would be conducted to document the actual impact of the pipeline and recovery of the resources. Mitigation for the actual impact to hardbottom resources would be determined in coordination with federal and state resource agencies (see Section 3.4.5, "Additional Mitigation").

There would be no significant direct impacts to marine resources associated with the modified project with strict adherence to Ocean Express' ECMVP, the FERC requirements identified in our FEIS and FERC Certificate, and federal, state, and local permits and regulations,

#### 3.4.2 Indirect Impacts

Increased turbidity and sedimentation from construction activity could result in indirect impacts to hardbottoms in the project area in association with physical disturbance of the seafloor. Turbidity is primarily a concern to sensitive coral or hardbottom biota, because it could decrease water clarity, which in turn could affect feeding efficiency. Our FEIS provides a detailed discussion of potential impacts of turbidity and sedimentation on corals and measures to avoid and minimize impacts. For the original AES Project, the primary source of turbidity and sedimentation would have been associated with the dredging of three HDD entry/exit points. Under the modified project, two of the three entry/exit points have been

---

3.0 ENVIRONMENTAL ANALYSIS

---

eliminated and the remaining exit point would not require dredging. Impacts to sensitive resources associated with turbidity and sedimentation would be further minimized at the tunnel exit site since the surrounding water would tend to flow into the tunnel chamber during punch-out operations, as discussed in Section 3.3, "Water Resources." Even though the proposed microtunnel punch-out does not involve dredging, Ocean Express has proposed to use the previous results from modeling turbidity and sedimentation due to the Offshore HDD punch-out operations as a worst-case estimate for determining mitigation (0.7 acre). The COE permit requires that Ocean Express monitor turbidity and sedimentation during construction, and submit an overlay map of the actual ADCP-mapped (Special Condition #60; Appendix B). We believe that the actual ADCP-mapped plumes would document a substantial decrease in the turbidity and sedimentation plume modeled for the original AES Project.

Ocean Express proposes to conduct compliance turbidity sampling at the microtunnel exit location during construction. As described in our FEIS and FERC Certificate, federal and state resource agencies have developed project-specific turbidity thresholds, specifically a threshold of 4-hour duration of 15 NTUs in reef areas, and a 1.5 millimeters per day sedimentation threshold in reef areas. A marine, sedimentation, and reef monitoring plan agreed upon with the appropriate agencies would also be followed with periodic turbidity monitoring during and immediately following installation operations. The COE permit requires that Ocean Express monitor actual turbidity, and provide an overlay map that includes the results (Special Condition #59; Appendix B).

Ocean Express' modeling study also evaluated potential turbidity and sedimentation associated with other offshore activities that disturb the seafloor (HPA 2003). As discussed in Section 3.3, "Water Resources," the study predicted that turbidity associated with anchors, and jackup barges, would be minimal.

### 3.0 ENVIRONMENTAL ANALYSIS

---

With strict adherence to Ocean Express' ECMVP, FERC requirements identified in our FEIS and FERC Certificate, and federal, state, and local permits, there would be no significant indirect impacts to marine resources associated with the modified project.

#### 3.4.3 Inadvertent Impacts

Potential inadvertent impacts to coral reefs and marine fishery resources identified in the Ocean Express FEIS include inadvertent releases of drilling muds (frac-outs), toxic hydrostatic test waters, and fuels during construction, and natural gas ruptures during operations. In addition to accidental releases, there could be inadvertent physical impacts due to ship grounding or inappropriate anchoring methods. Our FEIS provided a detailed discussion of these potential impacts, and identified measures to avoid and minimize potential impacts associated with these inadvertent releases. The potential for these inadvertent releases are further avoided and minimized with incorporation of the tunnel amendment, and Ocean Express would still be required to adhere to the measures identified in the FEIS and FERC Certificate. The risk of frac-out would be substantially reduced relative to the AES Project since tunnel and microtunnel construction do not require drilling muds to be maintained at pressures greater than ambient hydrostatic pressure. To further minimize impacts, the COE permit requires that hydrostatic pressure of the microtunnel be maintained below ambient hydrostatic pressures (Special Condition #38; Appendix B); and twice daily surveys be conducted along the sensitive reef resources (Reef 3) and microtunnel route to document any impacts to sensitive resources (Special Condition #57; Appendix B).

Releases of toxic hydrostatic test waters would be avoided since the FERC Certificate requires that no toxic additives can be used in the test waters, and COE requires that no hydrostatic test water be discharged into waters of the United States, except as authorized by a NPDES permit (Special Condition #29; Appendix B).

The risk of an accidental fuel spill or ship groundings in nearshore waters would be reduced relative to HDD installation since the amount of construction traffic in the nearshore environment would

be reduced as part of the tunnel amendment. Tunnel construction would be primarily land-based instead of water-based as was previously proposed for HDD installation.

The risk of a rupture during operation would be further minimized under the tunnel amendment since the tunnel would allow access and visual inspection of approximately 14,000 feet of pipeline, the tunnel would have gas monitors, and there would be a mainline valve at the seaward end of the tunnel and a gas vent at the landward end of the tunnel.

With strict adherence to Ocean Express' ECMVP, FERC requirements identified in our FEIS and Certificate, and federal, state, and local permits, there would be no significant inadvertent impacts to marine resources associated with construction and operation of the modified project.

#### **3.4.4 Essential Fish Habitat**

We previously prepared an EFH assessment for NOAA Fisheries that described the EFH communities in the project area, potential impacts to those resources, and the mitigation measures that would be necessary to avoid and minimize those impacts associated with the AES Project. The assessment concluded that there would be no direct or indirect impacts to specific types of EFH including seagrass; intertidal flats; oyster reefs; pelagic Sargassum; or estuarine, palustrine or freshwater wetlands. The only EFH that would be impacted would be coral/hardbottom and the pelagic water column. A summary of the acreages of EFH that would be directly or indirectly impacted (temporary and permanent) by the modified project are summarized in Table 3.4.4-1.

The EFH assessment for the AES Project concluded that the direct impacts to nearshore coral/hardbottom would not be significant and the direct impacts on deepwater corals would be negligible. In addition, the assessment found that the indirect impacts of turbidity and sedimentation on coral and hardbottom would be negligible for the AES Project. The modified project would reduce both the temporary and permanent impacts to coral and hardbottom by over 60 percent in the nearshore environment due, in part, to completing avoiding the dominant reef trends. The potential impacts to

### 3.0 ENVIRONMENTAL ANALYSIS

deepwater coral would also be minimal based on routing, and pipelaying and post construction surveys as described in Section 3.4.1. In addition to the ECMVP, Ocean Express would also be required to adhere to the requirements described in our FEIS and included in the FERC Certificate as well as the COE permit to further avoid and minimize impacts to EFH resources (as described in Sections 3.4.1 and 3.4.2, and Appendix B).

| <b>Table 3.4.4-1</b><br><b>Summary of Quantitative Impacts to Essential Fish Habitat with Tunneling Method</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                           |                   |                           |          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------|---------------------------|----------|
| Essential Fish Habitat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Temporary Impacts (Acres) |                   | Permanent Impacts (Acres) |          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Direct                    | Indirect          | Direct                    | Indirect |
| Estuarine Shrub/Scrub (Mangrove) Wetland Vegetation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0                         | 0                 | 0                         | 0        |
| Seagrass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0                         | 0                 | 0                         | 0        |
| Intertidal Flats                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0                         | 0                 | 0                         | 0        |
| Palustrine Emergent, Scrub-Shrub, and Forested (Freshwater) Wetlands <sup>a</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0                         | 0                 | 0                         | 0        |
| Coral, Coral Reefs, and Live/Hard Bottoms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.29                      | 0.26 <sup>b</sup> | 4.46 <sup>c</sup>         | 0        |
| Pelagic Sargassum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0                         | 0                 | 0                         | 0        |
| Pelagic Water Column                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0                         | 0.69 <sup>d</sup> | 0                         | 0        |
| <b>Notes:</b><br><sup>a</sup> No impacts because this EFH was avoided by construction design.<br><sup>b</sup> Impact to sand rubble habitat associated with sedimentation/turbidity affected areas as worst-case scenario from the originally proposed excavation of an offshore HDD exit pit at the approximate location of the currently proposed microtunnel exit.<br><sup>c</sup> Impact associated with live/hard bottoms affected by a 26-inch impact width. For comparison purposes, a 24-inch width would result in a 4.2-acre impact.<br><sup>d</sup> Impact associated with sedimentation/turbidity polygon affected areas as worst-case scenario from the excavation of the offshore HDD exit location. |                           |                   |                           |          |

The impact to the pelagic water column would also be reduced with incorporation of the tunnel amendment. The pelagic water column would theoretically be impacted by turbidity. As stated in Section 3.4.2, "Indirect Impacts," the extent of turbidity would be substantially reduced with incorporation of the tunnel amendment, and it is possible that it would be virtually eliminated. It is also important to note that turbidity modeling was conducted within one meter of the seafloor and the impacts

---

### 3.0 ENVIRONMENTAL ANALYSIS

---

to the pelagic water column would be substantially smaller and of shorter duration than in areas proximal to the seafloor. In addition, Ocean Express would monitor turbidity during construction and cease construction activities if turbidity values exceeded conservative thresholds established for coral species that are not as tolerant or able to avoid turbidity plumes as would be pelagic fishes.

We determined that the potential impacts to EFH were not significant for the original AES Project, and conclude that they would be substantially reduced with incorporation of the tunnel amendment. Therefore, there would be no significant impact to EFH associated with the modified project with strict adherence to the mitigation measures proposed by Ocean Express, FERC requirements, and federal, state and local permit requirements. By letter dated February 3, 2005, NOAA Fisheries stated that its concerns would be addressed by full adherence to the mitigative measures proposed by Ocean Express and the requirements included in the COE permit, the FERC Certificate, and state and local authorizations. NOAA Fisheries further stated that the modified project represents a significantly less damaging alternative with respect to nearshore resource impacts.

#### **3.4.5 Additional Mitigation**

Ocean Express has developed an Offshore Mitigation and Restoration Plan to quantify and mitigate for impacts to the seafloor off Broward County. This mitigation plan has been developed in coordination with federal, state, and local resource agencies. The plan describes survey needs prior to construction, during construction, and long-term monitoring after construction to document and quantify the extent and recovery of impacted resources. In addition, the plan identifies the approach for determining compensatory mitigation for direct, indirect, and inadvertent impacts to the seafloor. As described in the Ocean Express FEIS, compensatory mitigation would consist of removing tires that were placed on the seafloor off Fort Lauderdale in the 1970s. Over 2 million tires were placed offshore as a waste management/reef enhancement effort. Subsequently, it has been determined that the tires provide little, if any, ecological value as reef habitat and may adversely impact marine habitat conditions. It is our understanding that Ocean Express and federal, state, and local resource agencies have determined that

### **3.0 ENVIRONMENTAL ANALYSIS**

---

removal and proper disposal of tires is the appropriate mitigation, and they are continuing to coordinate on the scale of the effort. As part of the COE permit, COE reserves the right to determine the most appropriate type of mitigation for inadvertent impacts (Special Condition #51; Appendix B).

#### **3.5 VEGETATION COMMUNITIES**

The Ocean Express FEIS described the vegetative communities associated with upland and wetland habitats along the proposed route of the AES Project including aboveground facilities. In addition, Ocean Express requested minor variances to our Procedures that would be as protective or more protective than the requirements in our Procedures. Therefore, we accepted the requested variances. We also included a condition for Ocean Express to submit an acceptable invasive species control plan, which was provided by Ocean Express to FERC and the cooperating agencies on April 29, 2004. We have concluded that there would be no significant impacts to vegetative resources associated with construction or operation of the AES Project.

The tunnel amendment would not modify the acreage or location of potential impacts to terrestrial vegetation or wetland habitat along the proposed route. Therefore, the potential impacts to these resources would be identical under the modified project to those identified in our FEIS. Therefore, potential impacts to vegetation would be adequately mitigated by strict adherence to our Plan and Procedures, the FERC requirements in our FEIS and Certificate, the Ocean Express' ECMVP, and all federal, state, and local permits.

#### **3.6 PROTECTED, THREATENED, AND ENDANGERED SPECIES**

The Ocean Express FEIS provided a discussion of the federal- and state-listed threatened and endangered species that could be potentially impacted by the AES Project. The FEIS described the likelihood of species occurrence and measures to avoid and minimize impacts to the federally-listed wood stork, four sea turtle species, the American crocodile, and the West Indian manatee as well as state-listed wading birds and the brown pelican. The FEIS included two conditions to protect federally-listed species.

---

### 3.0 ENVIRONMENTAL ANALYSIS

---

These conditions were related to protection of wood stork nesting areas in West Lake Park, and confirmation of resource agency comments/approval of the Manatee Protection Plan. In addition, the FEIS included two conditions to protect state-listed species associated with protecting nesting areas of wading birds and brown pelicans in West Lake Park. With incorporation of these conditions, we concluded that construction and operation of the AES Project would not be likely to adversely affect these species.

Subsequent to the FEIS being issued, USFWS determined on February 24, 2004 that the AES Project would either have "no effect" or "would not be likely to adversely affect" any federally-listed species nor would it affect any critical habitat for federally-listed species.

The tunnel amendment would not influence construction activities associated with West Lake Park, the ICW, or listed species that do not utilize marine habitats. The amendment would reduce potential impacts to the nearshore environment by completely tunneling under habitat potentially utilized by federally-listed sea turtles and the West Indian manatee; and reduce the amount of nearshore construction vessel traffic, which would reduce the likelihood of inadvertent impacts to manatees or sea turtles. The tunnel amendment would not alter deepwater construction activities. We have consulted with the USFWS in Vero Beach, Florida, regarding the modified project and it has indicated that it has no additional concerns associated with the tunnel modification. Therefore, the likelihood of species occurrence, compensation and monitoring requirements, and determination of affect for construction and operation of the modified project remain identical to those described in our FEIS for the AES Project. That is, the modified project would not be likely to adversely affect any federally- or state-listed species.

#### 3.7 LAND USE, RECREATION, AND VISUAL RESOURCES

The Ocean Express FEIS described the potential impacts of the AES Project on land use, recreation, and visual resources in the project area. The FEIS specifically discusses the overall land use acreages required for the project and potential impacts to residential and commercial areas, transportation,

### 3.0 ENVIRONMENTAL ANALYSIS

---

public recreational areas, coastal zone management, and visual resources during construction and operation. The FEIS presents the measures proposed by Ocean Express to minimize impacts to these resources in accordance with our Plan and Procedures. In addition, the FEIS and FERC Certificate identify additional requirements imposed by the FERC to further avoid and minimize potential impacts.

Since the onshore route proposed for the AES Project is not being modified, additional impacts to land use associated with the tunnel amendment primarily include land use requirements for offshore construction and secondary onshore impacts associated with tunnel construction. These secondary impacts may include increased traffic, the need for a concrete fabrication plant, and the construction of an aboveground building at the Dania Beach Traffic Circle.

The overall land use requirements for the modified project would decrease during construction and operation relative to the land use needs for the AES Project. Offshore and onshore land use requirements for the modified project are provided in Table 2.2-1. Specifically, the acreage requirements would decrease by about 17 percent during construction and approximately 5 percent during operation of the modified project relative to the original AES Project.

#### 3.7.1 Offshore

The reduction in overall land use requirements would be associated with the reduction in the length of the offshore pipeline by approximately 0.5 mile, and elimination of seafloor disturbance along the tunnel route under the tunnel amendment. The land use requirements for the deepwater portion of the project (MP 0.0 to RMP 43.3) would not be altered by the modified project. The deepwater acreage would include a 200-foot right-of-way in Federal Waters during construction and operation. While the right-of-way in Federal Waters is based on the easement granted by the MMS, it does not characterize the actual construction impact. The actual construction impact in Federal Waters would essentially be limited to the footprint of the proposed 26-inch-diameter pipeline.

Construction of the nearshore portion of the pipeline would impact acreage associated with the tunnel exit tie-in, pipestring pullback corridor, concrete mats, and direct pipelay. Construction methods in the nearshore environment are described in Section 2.3.1, "Offshore Construction Procedures." The specific acreages impacted by nearshore construction activities are provided in Section 3.4, "Fishery Resources, Benthic Communities, and Wildlife." The nearshore construction activity would occur within a contingency work area of 448 acres and incorporate the area for the construction right-of-way and temporary workspaces. The actual seafloor disturbance within this contingency work area would be about 1 percent of the contingency work area (see Section 3.4, "Fishery Resources, Benthic Communities, and Wildlife"). As a result of the change in installation methods in the nearshore area, actual seafloor disturbance for the modified project would be approximately 80 percent less than that proposed for the original AES Project. To be conservative, the calculation of the land use needs for the nearshore tunnel crossing includes a 25-foot right-of-way along the tunnel route during construction and operation, even though no seafloor impact over the tunnel segment is expected.

### **3.7.2 Onshore**

In general, potential impacts to land use along the onshore pipeline route of the modified project would be comparable to those described in the Ocean Express FEIS. There would be construction of a permanent building at the Dania Traffic Circle. There would also be additional impacts during construction associated with the creation of a concrete fabrication plant, and increased construction traffic associated with the Dania Beach Traffic Circle.

Even though the onshore route would not be altered by the tunnel amendment, onshore land use acreage would increase during construction due primarily to the creation of a 12-acre concrete fabrication plant for the tunnel. Ocean Express proposes to construct a fabrication plant for construction of the concrete segments used to line the tunnel. Currently, the location of the fabrication plant has not been finalized, but Ocean Express expects it to be located on land designated for light industrial use, possibly within the Port Everglades facility. The fabrication plant would be a minor temporary alteration of

### 3.0 ENVIRONMENTAL ANALYSIS

---

activities on industrial property, and may not constitute a change in the land use. We have included a recommendation in Section 2.2, "Land Requirements," that Ocean Express identify the specific location of the fabrication plant including the size, configuration, land use, results of field surveys, and discussion of any potential impacts to sensitive resources and appropriate mitigation measures. The recommendation also requires that Ocean Express document that it has received all federal, state, and local approvals for operation of the facility. The acreage impacted by construction would be restored in accordance with our Plan. The increase in the diameter of the pipeline would not require an increase in the construction or permanent right-of-way. Ocean Express does not propose to increase the onshore acreage impacted during operation of the modified project compared to the AES Project.

Ocean Express has proposed an aboveground natural gas vent and tunnel shaft utility/access building within the Dania Beach Traffic Circle. The land use requirements for these aboveground facilities would be less than 0.1 acre. The building would be 240 square feet, 10 feet high, and would replace the structure that is currently located in the traffic circle. Because the area is located adjacent to major roadways, and the access building would replace an existing structure, no significant adverse impacts to visual resources are anticipated.

The tunnel construction would increase truck traffic at the Dania Beach Traffic Circle associated with delivering additional supplies, such as concrete segments, as well as disposing of increased spoil volumes relative to the AES Project. Ocean Express conducted a traffic impact analysis that found up to 60 trucks per day, or two to three trucks per hour, would be required to support tunnel installation (Kimley-Horn and Associates 2004). Since the FEIS was issued, Ocean Express also has proposed that construction along Dania Beach Boulevard may require up to 30 days to complete and require the closure of up to two lanes of traffic at times. The Ocean Express FEIS and FERC Certificate require that Ocean Express develop a Maintenance of Traffic (MOT) plan in consultation with the Florida Department of Transportation (FDOT) and the Broward County Aviation Department to minimize construction impacts to traffic. The COE permit requires that project construction not result in closures of portions of

---

### 3.0 ENVIRONMENTAL ANALYSIS

---

roadways for more than 24 hours unless approved by FDOT, and that it not interfere with normal traffic patterns along Dania Beach Boulevard or Highway A1A (Special Condition #20; Appendix B). The additional truck traffic from tunnel construction would result in a minor temporary increase in traffic between the fabrication plant and the Dania Beach Traffic Circle and between the Dania Beach Traffic Circle and the disposal location. With strict adherence to an agency-approved MOT plan, the increased traffic would not constitute a significant impact to transportation.

Ocean Express proposes to locally dispose of the spoils where it could serve a beneficial use, such as the expansion of the Fort Lauderdale International Airport or beach renourishment projects if the sediment satisfies applicable sediment standards. The COE permit requires that the spoils be disposed at an approved landfill unless Ocean Express obtains a modification to the permit to recycle the spoils (Special Condition #31; Appendix B). Ocean Express and COE are coordinating on the appropriate disposal methods for the spoils as they relate to applicable sediment standards and appropriate disposition.

#### 3.7.3 Coastal Zone

The Ocean Express FEIS and FERC Certificate required that Ocean Express not begin construction until it had received a determination from the State of Florida that the project was consistent with the Coastal Zone Management Program. On July 2, 2004, the State of Florida completed its coastal zone consistency determination, and found the AES Project to be consistent with the Coastal Zone Management Program. Since the large majority of the AES Project has not been altered, and the tunnel amendment was developed, in part, to further avoid and minimize impacts to sensitive marine resources of greatest concern under the Coastal Zone Management Program, we consider the modified project to also be consistent with Florida's coastal zone policies.

On January 24, 2005, the State of Florida determined that the portion of the modified project in Federal Waters was consistent with the Coastal Zone Management Program, and FDEP is evaluating the

### **3.0 ENVIRONMENTAL ANALYSIS**

---

coastal zone consistency of the remainder of the modified project in State Waters and onshore as part of its ERP review process.

#### **3.7.4 Conclusions**

Overall land use acreage for the modified project would decrease by about 17 percent during construction and about 5 percent during operation of the modified project compared to the original AES Project. The decrease would primarily be associated with decreased disturbance of the seafloor during construction. Onshore land use acreage increased slightly due to a re-calculation of the acreage impacted during construction including temporary workspaces. There could be minor additional impacts associated with increased truck traffic or the construction and operation of a permanent building at Dania Beach Traffic Circle. However, construction and operation of the modified project would not result in significant impacts to land use, recreation, or visual resources.

### **3.8 CULTURAL RESOURCES**

The Ocean Express FEIS described the onshore and offshore cultural resources associated with the AES Project based on record searches and field surveys. It also discussed consultation with SHPO and Native American tribes regarding known cultural resources and methods for addressing unanticipated discoveries during construction. The FEIS concluded that Ocean Express would need to defer any construction activities until it received FERC's approval on cultural resources reports, treatments plans, and agency comments regarding the 1907 New York to Havana cable, onshore resource probability areas and offshore anomalies, a revised Unanticipated Discoveries Plan and Emergency Scenario Response Plan, and a revised anchor handling plan.

On February 4, 2004, Ocean Express filed the requested information with the Commission, MMS, and the SHPO. On March 8, 2004, the SHPO reported that the Ocean Express submittal was complete and sufficient in accordance with Florida Administrative Code, Chapter 1A-46. In addition, the SHPO reported that it maintained no objections to the AES Project methods.

---

3.0 ENVIRONMENTAL ANALYSIS

---

The tunnel amendment would not alter the proposed deepwater pipeline route. The proposed tunnel route was included in the geophysical survey corridor for the cultural resource surveys conducted to support the AES Project. In addition, the tunnel modification would eliminate surface disturbance in the nearshore environment associated with the two HDD entry/exit points and the 9,000 feet of direct pipelay connecting the HDDs. The tunnel amendment would not alter the proposed onshore pipeline route, but it would include the creation of a 12-acre concrete fabrication plant. In Section 2.2, "Land Use Requirements," we have included a recommendation for Ocean Express to identify the fabrication site and provide the necessary survey results, consultation, and mitigation measures to avoid and minimize impacts to sensitive resources, which would include cultural resources.

In accordance with section 106 of the National Historical Preservation Act, we have determined that there would be no significant impact to cultural resources associated with the incorporation of the tunnel amendment if Ocean Express addresses the section 106 requirements as they pertain to the concrete fabrication plant.

### 3.9 SOCIOECONOMICS

The Ocean Express FEIS described the existing socioeconomic conditions in the project area including the local economy, employment, housing, community services, transportation, and tourism. The FEIS described the potential adverse and beneficial impacts to these socioeconomic issues related to construction and operation of the AES Project, and concluded it would have no significant adverse impact on the economy, employment, housing, community services, transportation, or tourism in the project area. In general, the AES Project would have a positive impact on employment and the local economy; no adverse impact on tourism; and insignificant, temporary impacts on commercial and recreational fishing, and diving activities due to minor increases in boat traffic in the nearshore environment.

The tunnel amendment would result in little or no additional impact (positive or negative) on the socioeconomic conditions in the project area relative to the AES Project. There would be minimal change

### 3.0 ENVIRONMENTAL ANALYSIS

---

in the size of the peak workforce (maximum of 5 percent). The tunnel/microtunnel construction would require approximately 16 months, which is approximately a year longer than was proposed for HDD installation (onshore). These changes to the workforce would have a neutral to positive influence on the regional socioeconomics due to slight increases in overall project-related income, services, and tax revenue for the local economy.

#### 3.10 AIR QUALITY AND NOISE

##### 3.10.1 Air Quality

The Ocean Express FEIS discussed current air quality in the project area and potential impacts to air quality relative to federal regulatory standards including National Ambient Air Quality Standards (NAAQS), Title 40 CFR (Parts 6, 51, and 93), and Federal Class 1 areas (40 CFR 81.407). The FEIS also described various mitigation measures that Ocean Express would implement, and we concluded that these measures would effectively minimize air quality impacts.

The modified project does not alter the impacts to air quality associated with construction of the onshore route or the deepwater portion of the pipeline. Tunnel construction would potentially alter the location, amount, and duration of air emissions associated with tunnel construction. There would not be substantial increases in air emissions at any location other than the Dania Beach Traffic Circle. Under the tunnel amendment, the construction of the tunnel would be initiated from the Dania Beach Traffic Circle and would extend approximately 3.0 miles before the microtunnel exited the seafloor. This would result in all air emissions for excavation and construction of the tunnel shaft, operation of the TBM, transportation and installation of the concrete segments, and transportation and separation of spoils, being released at the Dania Beach Traffic Circle over a total of approximately 16 months. There would also be emissions from increased truck traffic including some emissions at the Dania Beach Traffic Circle.

Although there would be some differences in the exact machinery used, the emissions of concern (i.e., nitrogen oxides and carbon monoxide) would be consistent with those identified in our FEIS since

---

### 3.0 ENVIRONMENTAL ANALYSIS

---

the machinery and vehicles would be diesel-powered. Ocean Express calculated emissions for the tunnel construction and prepared a General Conformity Determination in accordance with the Clean Air Act. The emission calculations confirmed that the emission type and emission rates for tunnel construction would be comparable to those for HDD installation of this nearshore pipeline segment. In addition, the Conformity Determination concluded that emissions from the modified project would not interfere with the NAAQS attainment status of Broward County (located within the Southeast Florida Intrastate Air Quality Control Region) or maintenance of the county's ozone status. In addition, the Conformity Determination found that the modified project would conform with the applicable requirements of the Florida State Implementation Plan.

The tunnel amendment does not include any permanent, stationary emission sources, so emissions would be considered temporary and minor during construction. Therefore, the modified project would not result in any significant impacts to air quality.

#### 3.10.2 Noise

The Ocean Express FEIS described the ambient noise conditions in the project area based on a field survey conducted by Ocean Express at various onshore locations including the Dania Beach Traffic Circle. The field survey found ambient noise levels were approximately 68 to 74 decibels on the A-weighted scale (dBA) at all survey locations due to background transportation noise. Ocean Express conducted a noise impact analysis for the originally proposed AES Project to estimate project noise levels. The analysis found that project noise levels at all locations were below residential noise limits as specified in Article VII of the Broward County Code (55 dBA) with the use of appropriate mitigation measures. Ocean Express reported mitigation measures may include special mufflers, prefabricated noise barriers or engineering controls such as noise attenuating enclosures.

As part of the tunnel amendment, Ocean Express subsequently conducted a noise impact analysis for the Dania Beach Traffic Circle associated with the proposed tunnel construction and staging activities.

### 3.0 ENVIRONMENTAL ANALYSIS

---

In addition, the noise impact analysis included evaluation of noise associated with fabrication of the concrete segments for the tunnel at a potential fabrication site near Port Laudania. Ocean Express has not finalized selection of a site for the proposed concrete fabrication plant, but has stated that it prefers the site to be proximal to the tunnel construction site to minimize traffic impacts.

The purpose of the subsequent noise impact analysis was to estimate the noise levels that would be associated with the proposed tunnel construction itself as well as fabrication of the concrete segments. The noise impact analysis considered a worst-case scenario based on the various types of construction equipment operating simultaneously at a location. The noise impact analysis determined that the worst-case noise levels at both locations would be below the residential noise limits in the Broward County Code at the nearest residences (55 dBA) without noise abatement measures. Specifically, the nearest residences to the Dania Beach Traffic Circle would be approximately 500 feet from the construction area, and the worst-case project noise levels would be 36 dBA. The nearest residences to the potential concrete fabrication plant would be approximately 0.6 miles from the potential site, and the worst-case project noise levels would be 23 dBA.

Ocean Express has not finalized the location of the concrete fabrication plant nor identified the potential proximity or duration of construction noise associated with the fabrication plant to the proposed construction activities at the Dania Beach Traffic Circle. Therefore, we recommend that:

- **Prior to construction, Ocean Express should file the results of an updated acoustical analysis and noise mitigation plan with the Director of OEP for review and approval. The analysis should quantify the magnitude, duration, and frequency spectrum of principal noise sources associated with concrete fabrication including the potential cumulative noise associated with project-related noise of the concrete fabrication plant and tunnel construction at sensitive receptors, and specify noise mitigation measures necessary to reduce the noise levels to comply with local noise ordinances.**

Ocean Express has committed to satisfy the Broward County Code, and would monitor actual noise levels during construction, and implement appropriate noise abatement measures, as needed. Therefore, construction of the modified project would not result in any significant impacts to ambient noise levels. The only detectable noise during operation would be during maintenance, which would be minor and short-term. Therefore, there would be no significant impacts to ambient noise levels during construction or operation of the proposed project.

### **3.11 RELIABILITY AND SAFETY**

The Ocean Express FEIS described the measures taken to maximize the reliability and safety of the AES Project including federal safety standards governing natural gas pipelines and project-specific measures associated with routing, pipeline installation, and inspection frequency and procedures during operations. The FEIS also described the historic safety record for interstate natural gas pipelines including a comparison to other types of accidents. The FEIS concluded that the available data show that natural gas pipelines continue to be a safe and reliable means of energy transportation.

As described in Section 2.3.1.2, "Specialized Offshore Construction Procedures," Ocean Express developed the tunnel construction methods and materials to eliminate potential tunnel collapse or subsidence. The modified project would be constructed and operated in accordance with federal and state safety requirement. The tunnel modification has been designed and would be constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR Part 192, and any other applicable safety standards. Additionally, the proposed tunnel would be designed, constructed, installed, inspected, operated, and maintained, as applicable, in accordance with applicable U.S. Department of Labor, Occupational Health and Safety Administration and local building code requirements.

The tunnel design includes gas monitors and a gas vent to detect and safely vent any gas from the tunnel. The natural gas vent and tunnel shaft utility access building at the Dania Beach Traffic Circle

### 3.0 ENVIRONMENTAL ANALYSIS

---

would be enclosed within a secured fenced area and the access door to the Tunnel Shaft Utility/Access building would be locked. The door and fence would be locked and alarmed to prevent access by unauthorized personnel. The tunnel would be maintained in a dry condition during operation of the pipeline, in part, to allow access for regular inspection and any maintenance.

Therefore, the reliability and safety of the tunnel modification would be ensured by completing the construction and conducting day-to-day pipeline operations in compliance with federal and state safety regulations.

#### 3.12 CUMULATIVE IMPACTS

The cumulative impacts of various projects in the vicinity of the AES Project were described in the Ocean Express FEIS. These other projects included other natural gas pipeline projects, expansion of the Fort Lauderdale-Hollywood International Airport, shore protection projects, dredging projects, and fiber optic cables. The FEIS concluded that each of these projects would result in temporary and minor impacts during construction, and that any permanent impacts of these projects would be appropriately mitigated under federal, state, and local regulations and permit requirements.

Updated estimates of the potential impacts to marine hardbottom, seagrass beds, mangroves, and wetlands of the modified project and other projects in the general vicinity are summarized in Table 3.12-1. The only additional projects identified since the Ocean Express FEIS was issued in November 2003 are hurricane recovery projects that are being developed in response to the hurricanes that made landfall along the east coast of south Florida in 2004. FDEP developed a hurricane recovery plan to address and coordinate the short- and long-term recovery efforts for the state's beaches (FDEP 2004). It outlines management strategies that incorporate on-going and emergency federal, state, and local efforts to repair and restore the beach and dune systems. COE reports that hurricane recovery projects would not alter the impacted acreage associated with existing shore protection projects, but could influence the timing of implementation. It is expected that compliance with permitting and approval requirements will ensure

---

### 3.0 ENVIRONMENTAL ANALYSIS

---

avoidance and minimization of environmental impacts of these projects, where possible, as well as incorporate mitigation for unavoidable impacts where warranted.

The modified project was developed, in part, to avoid and minimize impacts to sensitive resources by careful project routing, utilization of tunnelling to avoid sensitive resources, and development of appropriate mitigation measures. The impacts of the modified project would generally be minor and temporary to short-term, and largely be comparable or less than those for the original AES Project constituting a small fraction of the overall cumulative impacts of the various projects in the region. Consequently, only a small cumulative effect is anticipated when the impacts of the proposed project are added to past, present, or reasonably foreseeable future projects in the area.

## 3.0 ENVIRONMENTAL ANALYSIS

**Table 3.12-1**  
**Summary of Cumulative Impacts to Similar Resources**  
**in the Ocean Express Project Area**

| Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Hardbottom<br>Impacts<br>(acres) | Seagrass<br>Impacts<br>(acres) | Mangrove<br>Impacts<br>(acres) | Wetlands<br>Impacts<br>(acres) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|
| Ocean Express Pipeline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5.0 <sup>a</sup>                 | 0                              | 0                              | 0                              |
| Seafarer Pipeline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5.9 <sup>b</sup>                 | 0                              | 0                              | 1.2                            |
| Tractebel Calypso Pipeline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5.8 <sup>c</sup>                 | 0                              | <0.1                           | <0.1                           |
| Fort Lauderdale – Hollywood International<br>Airport Expansion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0                                | 0                              | 0                              | 39.4 <sup>i</sup>              |
| Shore Protection Projects                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 31.6 <sup>d</sup>                | 0                              | 0                              | 0                              |
| Port Everglades Navigation Improvements <sup>e</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 25.7                             | 5.0                            | 11.5                           | 0                              |
| Port of Miami Navigation Improvements <sup>f</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | NA                               | 7.9                            | 0                              | 0                              |
| High-relief hardbottom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 20.7 <sup>j</sup>                | N/A                            | N/A                            | N/A                            |
| Low-relief hardbottom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 28.7 <sup>j</sup>                | N/A                            | N/A                            | N/A                            |
| Rock/rubble                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 123.5 <sup>j</sup>               | N/A                            | N/A                            | N/A                            |
| Fiber Optic Cable Projects                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                  |                                |                                |                                |
| New World Network                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1.5 <sup>g</sup>                 | N/A                            | N/A                            | N/A                            |
| Atlantica-USA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.4 <sup>g</sup>                 | N/A                            | N/A                            | N/A                            |
| Tyco                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.1 <sup>g</sup>                 | N/A                            | N/A                            | N/A                            |
| Cable Bahamas                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <0.1 <sup>g</sup>                | N/A                            | N/A                            | N/A                            |
| AT&T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2.7 <sup>h</sup>                 | N/A                            | N/A                            | N/A                            |
| <b>Cumulative Impact Total</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>251.6</b>                     | <b>12.9</b>                    | <b>11.5</b>                    | <b>40.6</b>                    |
| <b>Notes:</b> N/A = Not applicable<br><sup>a</sup> Estimated direct and indirect impacts. Actual impacts would be determined based on monitoring during construction and post-construction surveys.<br><sup>b</sup> Includes 2.6 acres of potential impacts in water depths greater than 360 FSW based on geophysical data interpretation.<br><sup>c</sup> Based on successful HDDs under the reef habitat without a substantial frac-out. Values reported include impact areas requiring mitigation in State of Florida Waters only. Hardbottom impacts in Federal Waters would be identified by pre-lay video surveys.<br><sup>d</sup> Based on hardbottom impact values and mitigation values reported in the Strategic Beach Management Plan (FDEP 2000b; 2003). Some of the values reported in the Strategic Beach Management Plan (FDEP 2003) were updated with information reported in the FEIS prepared for that project (COE 2003).<br><sup>e</sup> Preliminary data; a preferred alternative has not yet been selected. Source: T. Jordan 2005, pers. comm.<br><sup>f</sup> Data based on the "recommended plan" presented in the COE Miami Harbor Navigation Improvements FEIS (COE 2004).<br><sup>g</sup> Impact acreage based on reported distance traversed across hardbottom areas multiplied by a 6-foot-wide corridor. Source: Project monitoring reports provided by FDEP.<br><sup>h</sup> Total distance of hardbottom traversed by the five installed cables was not reported. PEER (2002) estimated that 3.75 miles of cable was laid across the second reef, and the impact estimate is based on a 6-foot-wide corridor.<br><sup>i</sup> Includes runway extension and associated airport improvements/additions. Source: FAA 2002<br><sup>j</sup> Includes previously dredged areas. |                                  |                                |                                |                                |

## 4.0 ALTERNATIVES

The Ocean Express FEIS concluded that the AES Project, as proposed, was preferred when compared to no action or postponed action alternatives, system alternatives, facility siting alternatives, route alternatives, and route variations. The no action or postponed action alternatives would not satisfy the need to provide energy supplies to south Florida. In addition, no environmentally superior alternatives were identified in comparison to the AES Project including three system alternatives, three facility siting alternatives, six route alternatives, and four route variations. Specifically, the FEIS found that the expansion of existing natural gas pipelines, or construction of proposed natural gas pipelines in south Florida would not be environmentally superior to the modified project, and multiple systems constructed into south Florida may be needed to meet increasing energy demands. Therefore, alternatives would be potentially superior to the modified project only if the need for gas and electric generation have decreased in south Florida, the modified project would increase impacts relative to the AES Project, or if new or improved alternatives were subsequently identified that reduced environmental impacts relative to the modified project.

There is no evidence that the future demands for natural gas or electricity in south Florida have decreased. In fact, the recognition of the value of natural gas to provide a relatively clean fuel supply to meet future energy needs across the country has increased since the FEIS was issued. Natural gas is generally considered to be a cleaner fuel with fewer emissions than oil or coal and the technology currently exists for efficiently utilizing natural gas in contrast to the solar, hydrogen or other alternative fuels. Natural gas is projected to play an increasing role in fueling new and existing power generation plants in Florida, which is one of the fastest growing states in the U.S. Most of the planned generation capacity expected to come online in the coming years is natural gas-fired. Therefore, there is no evidence that the need for natural gas has decreased in south Florida.

The modified project was developed, in part, to reduce environmental impacts, especially to sensitive marine resources. As described in Section 3.0 "Environmental Analysis," the environmental

#### **4.0 ALTERNATIVES**

---

impacts of the modified project have decreased relative to those identified for the original AES Project, especially relative to direct, indirect, and inadvertent impacts to sensitive marine resources.

The primary public and agency comments on the previously proposed AES Project were related to potential impacts to nearshore marine resources, and as a result, most alternatives identified in the FEIS were developed to avoid or minimize these impacts. By completely avoiding the sensitive nearshore resources, the modified project addresses these concerns and there have been no new alternatives identified.

Therefore, we believe that the modified project offers an appropriate route and installation method to deliver a new supply of natural gas to southeastern Florida and have not identified an alternative which provides advantages over the proposed modified project.

---

5.0 FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS

---

**5.0 FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS****5.1 SUMMARY OF THE STAFF'S ENVIRONMENTAL ANALYSIS**

We have concluded that construction and operation of the modified project would largely decrease the environmental impacts relative to those identified for the originally proposed AES Project. In general, the tunnel amendment would not change the construction methods along the deepwater and onshore portions of the route, which total over 92 percent of the length of the proposed project route. In the nearshore environment, the tunnel amendment would substantially decrease the extent of direct seafloor disturbance, substantially reduce the extent of turbidity and sedimentation, and further minimize potential inadvertent impacts associated with frac-outs, accidental spills, and vessel traffic.

Although the tunnel amendment would reduce overall environmental impacts relative to the originally proposed AES Project, there would be some additional impacts associated with the tunnel amendment, primarily during construction. As part of the tunnel amendment, Ocean Express has developed a revised ECMVP that updates the proposed methods to mitigate for potential impacts associated with nearshore installation, anchoring, turbidity, sedimentation, and spill prevention. These plans include offshore monitoring prior to construction to document baseline conditions, construction surveys to document and reduce potential impacts during installation, and post-construction surveys to document the recovery of the resources to pre-construction conditions. In addition, Ocean Express would be required to adhere to the requirements identified in the FERC Certificate for the original AES Project, and the recommendations in this EA as well as federal, state, and local regulations and permits.

**5.1.1 Geology**

The geologic setting would be comparable to that described in the FEIS. There would not be additional impacts associated with mineral or paleontological resources, or geologic hazards. The proposed tunneling method would include a minimum of 30 feet of overburden, use of a tunnel boring machine that has been proven to be effective in unconsolidated substrate like that found along the proposed route, and the use of reinforced concrete to further minimize the risk of collapse, subsidence, or

## **5.0 FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS**

---

settlement. The COE permit requires finalization of the tunneling feasibility study prior to construction and the avoidance of subsidence associated with tunnel construction (Appendix B).

### **5.1.2 Soils and Sediments**

Under the modified project, potential impacts to marine sediments would decrease relative to the originally proposed AES Project since the tunnel amendment would eliminate two of the three previously proposed entry/exit points in the nearshore environment, and eliminate dredging at the remaining one. Ocean Express would monitor turbidity and sedimentation at the microtunnel exit point and cease operations if rates exceeded project-specific thresholds established by federal, state, and local resource agencies.

The only onshore disturbance associated with the tunnel modification would be at the Dania Beach Traffic Circle and the concrete fabrication plant. The footprint of the construction area at the Dania Beach Traffic Circle would not increase, but there would be additional construction activities. We have included a recommendation that Ocean Express provide the pertinent environmental information on the proposed concrete fabrication plant and identify appropriate mitigation to avoid and minimize environmental impacts for approval by the Director of OEP prior to construction (see Section 2.2, "Land Requirements"). The recommendation also requires that Ocean Express document that it has received all federal, state, and local approvals for operation of the facility. All construction activities would be conducted in accordance with our Plan and Procedures to minimize erosion including restoring the construction area to pre-construction conditions with the exception of a new tunnel shaft building.

### **5.1.3 Water Resources**

The tunnel amendment would not modify the onshore route of the proposed project, and there would be no new or additional impacts to groundwater or onshore surface waters. As mentioned above, the tunnel amendment would substantially decrease potential turbidity in marine waters, and turbidity would be monitored during construction in accordance with turbidity thresholds established by federal,

---

## 5.0 FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS

---

state, and local resource agencies. All construction activities would be conducted in accordance with our Procedures.

The COE permit identifies additional requirements to further avoid and minimize impacts to groundwater and waters of the United States including no discharge of hydrostatic test water into groundwater or surface waters; no discharge of groundwater into surface waters; and no discharge of drilling muds, drilling fluids, drill cuttings, soil conditioners, or water from the tunnel into the waters of the United States (unless the discharge is authorized by an appropriate agency or NPDES permit).

### 5.1.4 Fishery Resources, Benthic Communities, and Wildlife

The tunnel amendment was developed in part to further reduce potential impacts to sensitive marine resources, such as corals and hardbottom, relative to the originally proposed AES Project. The tunnel amendment would reduce direct seafloor disturbance by approximately 80 percent in the nearshore environment relative to the AES Project, including a 60 percent decrease in hardbottom impacts. The hardbottom that would be impacted is characterized as sand/rubble habitat composed of low-relief, solitary rocks or groups of rocks - most with minimal or no biotic cover. Direct impacts associated with temporary work areas and anchoring would be further avoided by limiting seafloor disturbance to open sand areas; using screw anchors fixed to the seafloor; visually monitoring and photo-documenting spud placement; using transponders on anchors to detect movement; and using midline buoys and floating anchor lines to avoid potential impacts with anchor sweep.

There would be no alteration of construction methods or the proposed pipeline route in deepwater (greater than 200 FSW) as part of the tunnel amendment. However, there would be an increase in the pipe diameter from 24 to 26 inches. Based solely on pipe diameter, this would result in an 8 percent increase in the footprint of the pipe on the seafloor (10.7 to 11.7 acres). The majority of the route is characterized as open sand (63 percent). Sand/rubble habitat with minimal biota (less than 5 percent

## **5.0 FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS**

---

cover) accounts for an additional 20 percent of the seafloor and the remaining 17 percent is sand/rubble habitat with over 20 percent biotic cover.

Deepwater corals were not observed along the proposed route although dead coral mounds were observed within approximately 80 feet. No live coral mounds were observed within 500 feet of the proposed route. Actual impacts would be further minimized by visually monitoring pipelay to avoid sensitive resources, conducting post-construction surveys to quantify the actual impact and recovery, and determining appropriate mitigation in coordination with federal, state, and local resource agencies as described in Ocean Express' Offshore Mitigation and Restoration Plan.

Overall, the potential impacts to EFH would decrease with incorporation of the tunnel amendment. In the nearshore environment, impacts to hardbottom would decrease 60 percent. Potential impacts to pelagic water column resources would substantially decrease with elimination of dredging. The most conservative estimate of turbidity and sedimentation at the remaining exit point totals 0.7 acre based on previously performed modeling for the original HDD exit hole. The COE permit requires that Ocean Express monitor turbidity and sedimentation during construction and submit a map of the ADCP-mapped plume. We anticipate that the actual ADCP-mapped turbidity plume would be smaller than that modeled for the original AES Project.

### **5.1.5 Vegetation Communities**

The tunnel amendment, as proposed, would not result in any new or additional impacts to upland vegetation or wetlands. Ocean Express has not identified the specific location or resources associated with the 12-acre concrete fabrication plant. It is expected the fabrication plant would be located on developed land at Port Everglades, and not impact sensitive vegetation or wetland resources. However, we have included a recommendation that this information be provided for approval prior to construction (see Section 2.2, "Land Requirements").

---

## 5.0 FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS

---

### 5.1.6 Protected, Threatened, and Endangered Species

USFWS determined that the originally proposed AES Project would not be likely to adversely affect federally-listed species. The tunnel modification, as proposed, would not result in any new or additional impacts to federally-listed endangered or threatened species, and USFWS has indicated that it has no concerns associated with the tunnel modification. It is unlikely that the concrete fabrication plant would have any potential impacts to listed species. However, we have recommended that Ocean Express provide the necessary information for the specific fabrication site to address Section 7 issues, and we would re-initiate consultation with USFWS to develop appropriate mitigation measures if the site is identified as potentially providing habitat for listed species.

### 5.1.7 Land Use, Recreation, and Visual Resources

Overall land use requirements would decrease with incorporation of the tunnel amendment including approximately 17 percent during construction and about 5 percent during operation. This decrease would be due primarily to reductions in seafloor disturbance associated with the 0.5-mile decrease in the overall length of the offshore pipeline and a reduction in the offshore construction work areas. The onshore route and construction methods have not been modified as part of the tunnel amendment. The 12-acre concrete fabrication plant would increase the onshore land use acreage for the modified project, although it would not likely constitute a change in land use since Ocean Express expects that the fabrication plant would be sited on existing industrial lands.

Tunnel construction would also result in an increase in construction traffic associated with the Dania Beach Traffic Circle relative to the originally proposed AES Project. Ocean Express has conducted a traffic study that found there would be up to 60 trucks per day, averaging two to three trucks per hour. Our FEIS and FERC Certificate require that Ocean Express coordinate with the FDOT and Broward County Aviation Department to minimize potential impacts to traffic.

## **5.0 FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS**

---

The only new permanent impact associated with the tunnel amendment would be the addition of a gas vent and tunnel shaft/access building at the Dania Beach Traffic Circle. This facility would require less than 0.1 acre of land and would not constitute a significant impact to visual resources since it would replace an existing structure in a developed setting.

On July 2, 2004, the State of Florida completed its coastal zone consistency determination and found the original AES Project to be consistent with the Coastal Zone Management Program. Since the tunnel amendment generally reduces impacts to the resources of greatest concern under the Coastal Zone Management Program, we consider the modified project to be consistent with Florida's coastal zone policies. In January 2005, the State of Florida determined that the portion of the modified project in Federal Waters was consistent with the Coastal Zone Management Program, and FDEP is currently evaluating the coastal zone consistency of the remainder of the modified project as part of the ERP review process.

### **5.1.8 Cultural Resources**

On March 8, 2004, the SHPO reported that Ocean Express had provided complete and sufficient reports for the original AES Project, and the SHPO maintained no objections to the AES Project. The tunnel amendment would not alter potential impacts to the deepwater route, and the nearshore route was surveyed as part of the original geophysical survey for the AES Project. The only onshore modification associated with cultural resources under the tunnel amendment would be the addition of a 12-acre concrete fabrication plant presumably at Port Everglades. It is not likely that a Port Everglades site would have cultural resource implications, but we have included a recommendation for Ocean Express to conduct the necessary surveys and consultation, and develop any appropriate mitigation to address any issues associated with sensitive resources.

---

**5.0 FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS**

---

**5.1.9 Socioeconomics**

The tunnel amendment would have minimal influence on the regional socioeconomic conditions in the project area. In general, the tunnel amendment may have a general beneficial impact on project-related income, services, and tax revenue for the local economy due to the slight increase in the workforce (less than 5 percent) and extended duration of the tunnel construction relative to the previously proposed HDD installation.

**5.1.10 Air Quality and Noise**

The tunnel amendment would not result in any new or additional impacts to air quality relative to the original AES Project except at the Dania Beach Traffic Circle. The tunnel amendment would result in new and additional equipment being used for a longer duration at the tunnel entry and inside the tunnel. Ocean Express prepared a General Conformity Determination in accordance with EPA guidance, and found that emission type and rates would be comparable to HDD techniques proposed for the AES Project. In addition, the General Conformity Determination concluded that the modified project would not interfere with the NAAQS attainment status in Broward County, or maintenance of the county's ozone status. The General Conformity Determination also found that the modified project would conform with the applicable requirements of the Florida State Implementation Plan.

The tunnel amendment would primarily influence the noise levels at the Dania Beach Traffic Circle, which has residences and businesses within a 0.5-mile radius. Ocean Express is currently determining the final location for the concrete fabrication plant, which would generate noise during construction. We have included a recommendation in this EA that Ocean Express file the results of a revised noise impact analysis and noise mitigation plan that incorporates the final location for the concrete fabrication plant with FERC for approval prior to construction.

## **5.0 FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS**

---

### **5.1.11 Alternatives**

The alternative analysis for the original AES Project concluded that there were no environmentally superior alternatives to the AES Project that would satisfy the growing energy needs of south Florida. In this EA, we evaluated whether the energy needs had decreased, the modified project would result in greater impact than the AES Project, or there were new or improved alternatives.

There is no evidence that future demands for natural gas or electricity have decreased in south Florida. This EA has concluded that the modified project would reduce potential impacts relative to the original AES Project, and we have not identified any new alternatives that provide advantages over the modified project.

Therefore, we believe that the modified project offers an appropriate route and installation method to deliver a new supply of natural gas to southeastern Florida.

### **5.2 FERC'S STAFF RECOMMENDED MITIGATION**

The FERC Certificate for the original AES Project specified 28 requirements or conditions in addition to those identified in our Plan and Procedures, or that may be required by federal, state, and local regulations and permits. In addition to those 28 conditions, we recommend that the following measures be included as conditions to further mitigate the environmental impacts associated with the construction and operation of the modified project, if the Commission certifies the modified project:

- **Prior to construction, Ocean Express shall identify the specific location, size, and configuration of the concrete fabrication plant, and file with the Director of OEP, for review and approval, all pertinent information on the proposed site including sensitive resources present, agency consultation, survey results, potential impacts, and appropriate mitigation, as necessary. The filing shall also include documentation demonstrating that Ocean Express has received all federal, state, and local approvals for operation of the facility.**

## 5.0 FERC STAFF'S CONCLUSIONS AND RECOMMENDATIONS

---

- **Prior to construction, Ocean Express shall file the results of a revised acoustical analysis and noise mitigation plan for the modified project with the Director of OEP for review and approval. The analysis should quantify the magnitude, duration, and frequency spectrum of principal noise sources associated with concrete fabrication including the potential cumulative noise associated with project-related noise of the concrete fabrication plant and tunnel construction at sensitive receptors, and specify noise mitigation measures necessary to reduce the noise levels to comply with local noise ordinances.**

---

**APPENDIX A**

**APPENDIX A**

**DISTRIBUTION LIST**

**APPENDIX A  
DISTRIBUTION LIST**

**Federal Government Agencies**

**Advisory Council on Historic Preservation**

John M. Fowler, Executive Director

**Army Corps of Engineers**

LTG Robert B. Flowers, Chief of Engineers

Stephen Coakley, Director, Resource Management

Col. James G. May, District Engineer, Jacksonville District

Penny Cutt

**Department of Agriculture**

Ann M. Veneman, Secretary

Jim Mosley, Deputy Secretary

**Forest Service**

Dale Bosworth, Chief

**Natural Resources Conservation Service**

Bruce Knight, Chief

T. Niles Glasgow, Florida State Conservationist

**Department of Commerce**

**National Oceanic and Atmospheric Administration**

Joseph E. Powers, Ph.D., Acting Regional Administrator

**National Marine Fisheries Service**

William T. Hogarth, Ph.D., Assistant Administrator for Fisheries

Roy Crabtree, Ph.D., Acting Regional Administrator

**Habitat Conservation Division**

Rickey N. Ruebsamen, Acting Assistant Administrator, Southeast Region

**Protective Resources Division**

Robert Hoffman

**US Coral Reef Task Force**

Roger B. Griffis, Ph.D.

**Department of Defense**

**U.S. Navy**

ADM Vern Clark, Chief of Naval Operations

**Naval Surface Warfare Center Carderock Division**

Chris E. Hagberg, Counsel

Gerald A. Smith, Deputy Director, Signatures Directorate, Code 701

Stephen H. Tryon, Assistant Counsel

Tom Metz, Site Director, South Florida Testing Facility

**Department of Health and Human Services**

Centers for Disease Control and Prevention

**Department of Labor**

Elaine L. Chao, Secretary

OSHA, Region IV Regional Office

Cindy Coe Laseter

APPENDIX A (continued)

Distribution List

**Federal Government Agencies (continued)**

**Department of the Interior**

Gale A. Norton, Secretary

**Bureau of Indian Affairs**

Neal McCaleb, Assistant Secretary

**Office of Trust Responsibilities**

Malka Pattison

**Bureau of Land Management**

Kathleen Clarke, Director

**Fish and Wildlife Service**

Steven A. Williams, Director

Sam Hamilton, Regional Director, Southeast Region

David Hankla, Field Office/Field Supervisor

**Minerals Management Service**

Alex Alvarado, Chief, Pipeline Dept.

Alvin Jones

**Gulf of Mexico OCS Region**

Byron Johnson, Project Manager

**National Park Service**

Fran Mainella, Director

Jerry Belson, Regional Director

**Department of Transportation**

Norman Y. Mineta, Secretary

**U.S. Coast Guard**

Lt. Nicole Nancarrow, Commander, 7th District

**Environmental Protection Agency**

Steve Johnson, Administrator

Heinz J. Mueller, Chief, Office of Environmental Assessment

**Office of Water**

Tracy Meehan, Assistant Administrator

Sam Nunn Atlanta Federal Center

J. I. Palmer, Jr., Regional Administrator

Ron Miederna

**Federal Aviation Administration**

Marion C. Blakey, Administrator

District Office, Orlando Airports

Bart Vernace

**HUD**

Mel Martinez, Secretary

**U.S. Senate Committee on Energy and Natural Resources**

**Distribution List**

**Congressional Representatives**

Rep. Lincoln Diaz-Balart  
Rep. Peter Deutsch  
Senator Bob Graham  
Rep. Kenrick Meek  
Rep. E. Clay Shaw, Jr.

**State Representatives and Senators**

Senator Jeffrey H. Atwater, District 25  
Senator M. Mandy Dawson-White, District 29  
Senator Ken Pruitt, District 28  
Senator Ron Klein, District 30  
Senator Steven A. Geller, District 31  
Rep. Ileana Ros-Lehtinen, District 31  
Senator Debby P. Sanderson, District 31  
Senator Walter G. "Skip" Campbell, Jr., District 32  
Senator Debbie Wasserman Schultz, District 34  
Rep. Irving L. Slosberg, District 90  
Rep. Connie Mack, District 91  
Rep. John P. Seiler, District 92  
Rep. Christopher L. Smith, District 93  
Rep. Matthew J. "Matt" Meadows, District 94  
Rep. Ron L. Greenstein, District 95  
Rep. Stacy J. Ritter, District 96  
Rep. Nan H. Rich, District 97  
Rep. Robert B. Wishner, District 98  
Rep. Eleanor Sobel, District 99  
Rep. Timothy M. Ryan, District 100  
Rep. Mike Davis, District 101

**State Government Agencies**

Governor Jeb Bush  
Governor's Office of Planning and Budgeting  
    Carliane Johnson, Policy Analyst  
Attorney General Bob Butterworth  
Department of Agriculture and Consumer Services  
    Charles H. Bronson, Commissioner of Agriculture  
    Bureau of Plant and Apiary Inspection  
        Richard D. Gaskalla, Director  
    Division of Forestry  
        Earl Peterson, Director

**APPENDIX A (continued)**

**Distribution List**

**State Government Agencies (continued)**

**Department of Community Affairs**

Jasmin Raffington

**Department of Environmental Protection**

Jayne Bergstrom, Program Manager, Environmental Resources Permitting

Bureau of Air Regulations

Clair Fancy, Chief

Bureau of Public Land Administration

Robin Young, Chief

Division of Marine Resources

Director

Division of State Lands

Acquisition and Restoration Council

Division of Recreation and Parks

Director

Division of State Lands

Eva Armstrong, Director

Division of Water Facilities

Bureau of Submerged Lands and Env. Resources

Dave Worley

Florida Coastal Management Program

Sally B. Mann, Director, Intergovernmental Programs

Florida Geological Survey

Walter Schmidt, Ph.D., Chief, Southeast District Office of Intergovernmental Programs

Bob Ballard

Kurtis Gregg

Chris Hoberg, Project Manager

Jocelyn Karazsia

**Department of State**

Division of Historic Resources, Compliance and Review Section

Janet Snyder Matthews, Ph.D., Director

Laura A. Kammerer, Historic Preservationist Supervisor

Susan Hammerstein

**Department of Transportation**

Larry Hymowitz, AJCP, Intergovernmental Manager

**Division of Emergency Management**

**Florida Fish and Wildlife Conservation Commission**

Carol Knox

Mark Robson, Regional Director

Office of Environmental Services

Director

Marine Research Institute

George Henderson/Walt Jaap

**APPENDIX A (continued)**

**Distribution List**

**State Government Agencies (continued)**

Florida Museum of Natural History, Dickinson Hall  
     Roger Portell, Coll. Mgr. Invet. Paleo  
 Florida Soil and Water Conservation Council  
     Director  
 Florida State University  
     Marine Laboratory  
     Director  
 John U. Lloyd Beach State Park  
     Sidney Leve  
     Department of Natural Resources  
         Trustees of the Internal Improvement Trust Fund  
 Nova Southeastern University  
     Richard Dodge  
 South Florida Water Management District  
 West Lake Park State Rec Area  
     Department of Natural Resources  
         Trustees of the Internal Improvement Trust Fund

**Local Government Agencies**

Broward County  
     Attorneys Office  
         Melissa P. Anderson, Assistant County Attorney  
     Aviation Department  
         Diana Lewis  
         Dolores Smith, P.E.  
     Port Everglades Dept.  
         Ken Krauter, Port Director  
         Paul Stanton, Assistant to Port Director  
     County Commissioners  
     Broward County DPEP  
         Steve Higgins  
     County Planning Council  
 Central Broward Water Control District  
     Michael Crowley, District Manager  
 City of Dania Beach  
     Robert Anton, Mayor  
     Ivan Pato, City Manager  
     Laurence Leeds, AICP, Director, Growth Management  
     Brenda Lee Chaliflour

**APPENDIX A (continued)**

**Distribution List**

**Local Government Agencies (continued)**

City of Fort Lauderdale

F. T. Johnson, City Manager

City of Hollywood

Lorie Mertens, Senior Policy Analyst

Ft. Lauderdale Chamber of Commerce

Hollywood Council of Civic Association

Steve Welsch

Palm Beach County Attorney's Office

Lillian Walesky, Legal Assistant

South Florida Ecological Office

Chuck Kelso, Deputy Field Supervisor

South Florida Regional Planning Council

Carolyn A. Dekle

Christina Miskis

John E. Hulsey, Regional Planner

**Libraries**

Broward County Library

Dania Beach Paul DeMaio

Davie/Cooper City Library

Helen B. Hoffman Plantation Library

Hollywood Library

Pembroke Pines Library

Riverland Library

West Regional Library

**Media**

Deerfield Times

Shirley Green

Miami Herald

John Dorschner

Mike Vasquez

New Times Broward-Palm Beach

Sun-Sentinel

David Fleshler

Waterfront News

WPLG-TV10

Kerry Weston

**APPENDIX A (continued)**

**Distribution List**

**Native American**

Miccosukee Tribe of Indians of Florida  
     Steve Terry, NAGPRA Representative  
 Muskogee (Creek) National of Oklahoma  
     R. Perry Beaver, Principal Chief  
 Poarch Band of Creek Indians  
     Fred L. McGhee, Chairman  
 Seminole Nation of Oklahoma  
     Emman Spain, Historic Preservation Officer  
 Seminole Tribe of Florida  
     James Billy, Chairman

**Individuals and Organizations**

Butters Construction  
     West City Port 95 Warehouse LP  
 Cry of the Water  
 Deloitte and Touche  
     Security Capital Ind. Trust  
 EWE Warehouse Investment XIV Ltd.  
 FEC Railroad  
     Dan McDermott, Regional Manager  
 Florida Power and Light Company  
     Property Tax Department  
 Louis Dreyfus  
     Tom Pisula  
 Sea Oaks Condominium  
     Gerri McTigue  
 Self Service Launderette Inc.  
 Wayne McDonald  
     Henry Oreal  
 WP Carey and Co. Inc.  
     Auto QRS 11-39 Inc.  
 Andrew Rogerson, Ph.D.  
 April Middleman  
 Barbaree King  
 Berto Morales  
 Bill Barrott  
 Bill Wosenitz  
 Bob Franks  
 Brian Scherf  
 C.K. Mielyna  
 Catherine Dwore  
 Charlene Scalese

APPENDIX A (continued)

Distribution List

**Individuals and Organizations (continued)**

Charlene Volpe  
 Charles Mayer  
 Christa Berry  
 Cilta Ross  
 Clive Taylor  
 Connie Couture  
 Dale Blostein  
 David Filler  
 David Nielsen  
 Dennis Sweeney  
 Diane Howard  
 Dr. Livingston S. Marshall. Jr., Ass. Professor, Biology Department, Morgan State University  
 Ed Summer  
 G. Counts  
 Gary Luedtke  
 George A. Jason  
 George Carros  
 Jack Halpern  
 James Thomas, Ph.D.  
 Jan Reed  
 Jim Higgins  
 JJ Kelly  
 John Etling  
 John Frosbutter  
 Justin Mellender  
 K. Brandt  
 Karen Gottlieb  
 Kerry R. Cochell  
 Kevin Boyd  
 Lafayette Herring  
 Lee Lavery  
 Maggie Martorell  
 Martha A. McGeary  
 Melville Pollak  
 Michael J. Miller  
 Mike Grady  
 Mimi Donly  
 MP Malone  
 Natalie Schneider  
 Norma and Woody Fisher  
 Patricia Hart  
 Patricia Rafael  
 Randy Manchester

**APPENDIX A (continued)**

**Distribution List**

**Individuals and Organizations (continued)**

Raymond McAllister

Richard Villarruel

Rita Masi

Robert Lovejoy

Robert Mikes

Sam Halpert

Stephen Attis

Sue Cocking

Susan B. Peterson

Susan Epps

**Landowners Not Listed – Privileged and Confidential Information – Not for Release**

**APPENDIX B**

---

**APPENDIX B**

**U.S. ARMY CORPS OF ENGINEERS – DEPARTMENT OF THE ARMY PERMIT  
[PERMIT NO. SAJ-2001 6355 (IP-SLN)]**



**DEPARTMENT OF THE ARMY**  
**JACKSONVILLE DISTRICT CORPS OF ENGINEERS**  
4400 PGA BOULEVARD, SUITE 800  
PALM BEACH GARDENS, FLORIDA 33410

## ***DEPARTMENT OF THE ARMY PERMIT***

**Permittee:** AES Ocean Express LLC  
c/o Donald J. Bartlett  
Two Alhambra Plaza  
Suite 1104  
Coral Gables, FL 33134

**Permit No.** SAJ-2001-6555 (IP-SLN)

**Issuing Office:** U.S. Army Engineer District, Jacksonville

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

**Project Description:** The applicant proposes to install a 26" pipeline designed to transport up to 842,000 Dekatherms ("Dth") per day of natural gas for a project known as the AES Ocean Express Pipeline Project. The Project will include approximately 47.5 miles of 26" offshore pipeline from Dania Beach to the Exclusive Economic Zone (EEZ) and approximately 6.12 miles of 26" onshore pipeline. The Project will receive natural gas from a liquefied natural gas (LNG) storage terminal and re-gasification facility located on Ocean Cay in the Bahamas. Gas will be delivered by a 26" offshore pipeline from the Bahamian side, approximately 40.2 miles in length, connecting at the EEZ boundary. The U.S. portion of the pipeline will be designed, constructed, and operated in accordance with applicable federal, state and local regulations, codes and standards.

The applicant, AES Ocean Express LLC, proposes to install the nearshore portion of the 26-inch pipeline by using an Earth Pressure Balance (EPB) Tunnel Boring Machine (TBM). The EPB TBM will create approximately 14,000 feet by 13'7" (internal diameter) of segmented concrete lined tunnel (Tunnel) from the Dania Beach Boulevard (Route A1A) traffic circle, east beneath the ocean floor, to a point east of Reef-3. The exit of the tunnel will be performed by a micro-tunnel mechanism that will meet the ocean floor surface at approximately 0.05% incline. The exit location of the micro-tunnel will be approximately 200-feet east of the eastern edge of Reef 3. The tunnel approach is proposed to minimize impacts to natural hardbottom features in the Nearshore project area. After punch out beyond Reef 3 the pipe will be directly laid on the ocean floor and covered with articulated concrete mats. Where water depths exceed 200 feet, the pipeline will lay directly on the ocean floor with no cover. The nearshore pipeline portion will be externally coated with concrete, and a pressure reducing station will be installed inside the Tunnel to reduce the onshore Maximum Allowable Operating Pressure (MAOP) to 1480 psig or less.

Direct and indirect effects of the nearshore portion of the project on the biological environment will be limited to a temporary disturbance of 0.29 acres and 0.15 acres of permanent impacts to naturally occurring transitional reef habitat and 0.38 acres of permanent impacts to barren sand bottom. Transitional reef habitat is described as areas of patchy live hard bottom/sand, sand rubble and/or low (<3 feet) or no relief hard bottom with sand veneer, low density (<20% biota coverage consisting primarily of soft corals and sponges). Hard bottom habitats (hard bottom with greater than 20% biota coverage) are not expected to be impacted as a result of the AES Ocean Express Pipeline Project. Transition area impacts are associated with the proposed "pull corridor" of the Tunnel Exit/Tie-In pipe string, and direct lay segments of the pipeline in areas where construction-related sedimentation is expected to exceed either 1.5 mm of sedimentation per day or 16 mg/L turbidity.

The Onshore portion of the Project is not expected to result in impacts to sensitive wetland resources. The onshore portion of the Project will include the construction of a below ground shutoff valve and pressure reducing facility near the landfall point, one above ground main pipeline shutoff valve, one pig launching/receiving station and two meter stations located near the FPL and FGT tie-in point (see Figure 2). No compression facilities will be required for the Project.

Four water bodies (two stormwater retention culverts at the Fort Lauderdale-Hollywood International Airport (FLL), and two unnamed tidal water culverts at Perimeter Road will be crossed using conventional open cut trenching techniques. The onshore portion of the AES Ocean Express Natural Gas Pipeline project will result in 0.04 acres of temporary impacts to these surface waters, and impacted areas will be restored to pre-existing grade upon completion of construction. All other surface waters traversed by the onshore pipeline will be horizontally directionally drilled (HDD).

**Project Location:** The Project will include nearshore, and onshore components. The nearshore portion of the Project will traverse waters of the Atlantic Ocean and coastal ocean bottom in southeast Florida, approximately 0.4 miles south of Port Everglades in Broward County, Florida. For the purposes of the DA permit, nearshore is defined as that portion of the proposed pipeline that will be constructed in tidal waters that occur between the mean high water line on the coastal barrier island and the eastern limit at three geographic miles from the shoreline. The nearshore portion of the AES Ocean Express Pipeline will consist of approximately 4.4 miles of 26" natural gas pipeline. The offshore, or deepwater component of this project consists of the project located within 1000-feet to 2000-feet of water depths below the ocean surface.

The onshore portion of the Project will include approximately 6.12 miles of 26" natural gas pipeline; for the purposes of the DA permit, onshore is defined as areas west of the mean high water line on the coastal barrier island. The onshore Pipeline will extend from a landfall point located within the Dania Beach Boulevard (Route 1A) Traffic Circle west beneath the Intracoastal Waterway, trenched along the north side of Dania Beach Boulevard and West Lake Park, installed via HDD beneath the West Lake Park (just west of the existing FPL access road) and Dania Cut-off canal, to two tie-in points, one to the existing Florida Gas Transmission Company (FGT) pipeline system and the other to the Florida Power and Light (FPL) Fort Lauderdale Power Plant, both located approximately 1.5 miles West of Interstate 95.

The onshore portion of the Project will traverse the following water bodies: Intracoastal Waterway, West Lake Park, Dania Cutoff Canal, two stormwater retention culverts at the Fort Lauderdale-Hollywood International Airport (FLL), two unnamed tidal water culverts at Perimeter Road, and the FPL Fort Lauderdale Cooling Water Canal. Crossings of the Intracoastal

Waterway, West Lake Park, Dania Cutoff Canal and the FPL Fort Lauderdale Cooling Water Canal will be installed via HDD. The remaining four onshore waterbody crossings will be accomplished using open cut trenching techniques. Latitude and longitude for key points of the project are as follows:

**Geographic Position:** Landfall and tunnel shaft at Dania Circle

Latitude 26° 03' 13.87"

Longitude 80° 06' 49.12"

**Micro-Tunnel Exit Point**

Latitude 26° 01' 29.06"

Longitude 80° 05' 04.57"

**State of Florida Territorial Limit**

Latitude 25° 41' 27.42"

Longitude 79° 42' 35.31"

**Permit Conditions:**

**General Conditions:**

1. The time limit for completing the work authorized ends on December 1, 2009. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state

coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature and mailing address of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

**Special Conditions:**

The attached Special Conditions are applicable only to the above referenced Permit Number:

Definitions

Agencies - means the U.S. Army Corps of Engineers, the Florida Department of Environmental Protection, and Broward County Environmental Protection Department.

ECMVP - Environmental Construction Monitoring and Verification Plan

TBM - Tunnel Boring Machine

FDEP - Florida Department of Environmental Protection, Southeast District

Broward County - Broward County Environmental Protection Department

NMFS - National Marine Fisheries Service

1. The permittee shall abide by the relevant special conditions of the attached Florida Department of Environmental Protection (FDEP) permit #06-0193181-002, issued April 27, 2004, and any modifications thereof.

2. AES Ocean Express shall not begin any construction until it has received a final determination from the FDEP for the tunneling construction portion of the project and Ocean Express has filed a copy of the FDEP water quality certification determination with the Corps.

3. Ocean Express shall not begin any construction until it has received a determination from FDEP - Office of Intergovernmental Programs, that the project is consistent with its Coastal Zone Management Program and Ocean Express has filed a copy of the coastal zone consistency determination with the Corps.

4. Prior to construction, Ocean Express shall coordinate with the Corps and United States Coast Guard to establish a timeline for updating the appropriate navigation charts to show the as-built location of the Ocean Express pipeline.

#### U.S. NAVY COORDINATION

5. The permittee shall coordinate with the Naval Surface Warfare Center, Carderock Division (MSWCCD) to ensure that tunnel construction, the Earth Pressure Balance (EPB) Tunnel Boring Machine (TBM), and operation of the pipeline does not adversely impact NSWCCD operations within the Naval Restricted Area and further offshore. AES Ocean Express shall immediately upon receipt, submit to the Corps a copy of the final approved Memorandum of Agreement between NSWCCD and AES Ocean Express LLC for the tunnel construction.

#### US DOT COORDINATION

6. The Ocean Express Natural Gas Pipeline shall be constructed and maintained in accordance with the U.S. Department of Transportation Safety (US DOT) Standards (49 CFR Part 192), which prescribes the minimum standards for pipeline design and construction. In addition, the pipeline will be designed and constructed to meet or exceed government safety requirements (CFR 49 Part 192).

7. The permittee agrees that prior to commencement of construction Ocean Express shall submit to the Corps the final SHPO determination from SHPO's review of the following requested documents:

a. an evaluation of the historic significance of the 1907 New York to Havana cable,

b. A cultural resources assessment documenting the

investigation of all onshore resource probability areas and offshore anomalies,

c. A revised Unanticipated Discoveries Plan and Emergency Scenario and Response Plan, and

d. A revised anchor-handling plan, which indicates how Ocean Express will avoid, the anomalies recommended for avoidance.

8. The permittee shall generate a spreadsheet with project specific time-lines and incorporate specific survey dates and report submittal time frames as deemed by agency permit specific conditions. The permittee shall generate this spreadsheet and submit it to the "agencies" for ease of organizing project timeframes.

#### **GEOTECHNICAL BORING SURVEYS**

9. The permittee agrees to complete the geotechnical explorations along the proposed tunnel route prior to commencement of tunnel construction, with the exception of the construction of the tunnel shaft. In addition, prior to commencement of tunnel construction with the TBM, Ocean Express agrees to analyze the geotechnical data. Ocean Express shall develop and submit a final tunneling risk analysis and feasibility study and incorporate the analysis of the geotechnical data. The feasibility study shall demonstrate that the tunnel construction can be completed successfully without collapse or heave of the tunnel and that subsidence of the reef structure will not occur. The risk analysis and feasibility study shall be reviewed by the Corps, including the NMFS, and approved by the Corps a minimum of 30-days prior to the commencement of tunnel construction with the TBM.

#### **MODIFICATIONS (conditions 10, 11)**

10. Ocean Express shall follow the construction procedures and mitigation measures described in its application and as supplemented (including responses to staff data requests), unless a modification is requested. Ocean Express must fulfill all modification requests as follows:

a. Request any modification to these procedures, measures, or conditions in a formal letter addressed to the Corps (South Permits Branch);

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. For modifications requesting any significant changes to the project, coordination with other agencies, including NMFS, shall occur and comments shall be provided to the Corps. The Corps will conduct the final review of the modification and make a final decision. The Corps (South Permits Branch) shall grant approval in writing before the permittee can use that modification.

11. The permittee agrees that if any future repairs to the pipeline are needed and may affect wetlands or surface waters, particularly impacts to important natural resources, such as coral or other hardbottom, the permittee shall apply for all required federal, state, and local approvals as appropriate.

**ENVIRONMENTAL CONSTRUCTION MONITORING AND VERIFICATION PLAN (ECMVP)**

12. The project activities shall be conducted in strict accordance with the permit's specific conditions; project drawings; permit Attachment A: 'Florida Nearshore Installation Methods'; permit Attachment B: 'Onshore Installation Methods'; and permit Attachment C: 'Environmental Construction and Monitoring Verification Plan (ECMVP)' and associated appendices. The ECMVP appendices include:

Appendix A: Spill Prevention, Control and Countermeasures Plan (September 2003 - 17 pages);

Appendix B: Upland Erosion Control, Revegetation, and Maintenance Plan (August 2003 - 18 pages);

Appendix C: Wetland and Waterbody Construction and Mitigation Procedures (September 2003 - 25 pages);

Appendix D: Marine Biological (Manatee, Cetacean and Sea Turtle) Monitoring Plan (September 2004 - 10 pages);

Appendix E: Plan for the Unanticipated Discovery of Hazardous Wastes or Contaminated Sites (January 2004 - 6 pages);

Appendix F: Hydrotesting and Pre-Commissioning Plan (September 2004 - 123 pages);

Appendix G: Marine Turbidity, Sedimentation and Reef Monitoring Plan (September 2004 - 25 pages);

Appendix H: Horizontal Directional Drill Monitoring and Contingency Plan (September 2004 - 35 pages);

Appendix I: Offshore Mitigation and Restoration Plan (October 2004 - 41 pages);

Appendix J: Environmental Training Syllabi (5 pages);

Appendix K: Emergency Scenario and Response Plan (September 2004 - 34 pages);

Appendix L: Florida Nearshore Maneuvering and Anchoring Guidelines (October 2004 - 18 pages);

Appendix M: Miami Escarpment Installation Guidelines (October 2004 - 9 pages);

Appendix N: Coral Relocation Plan (January 2004 - 3 pages);  
and

Appendix O: Storm Handling Plan (September 2004 - 11 pages)

Appendix P: Tunnel Monitoring and Contingency Plan (October 2004 - 26 pages)

Appendix Q: Microtunnel Monitoring and Contingency Plan (October 2004 - 15 pages)

The incorporation of the permit attachments/plans into the permit shall not be construed as a release from liability by the Corps for the contents of the attachments/plans themselves. The liability for the contents (including errors and omissions) of the attachments/plans lies solely with AES Ocean Express LLC. Failure to address specific issues within the Plans does not relieve the permittee from meeting all applicable Federal, State, County, and local government's rules and regulations.

Any substantial deviations from the permit attachment/plans that have been incorporated into the permit shall require Corps approval in the form of a permit modification.

**PRE-CONSTRUCTION MEETINGS AND TRAINING (conditions 13-16)**

13. The permittee shall be responsible for ensuring that the permit, the attached plans, and all conditions are explained to **all construction personnel working on the project**, and for providing each contractor and subcontractor with a copy of this permit before construction begins.

14. After selection of the contractor and subcontractors to perform the authorized activities and a minimum of 30 days prior to the initiation of each phase of work, with the exception of the construction of the tunnel shaft, authorized by this permit (i.e. onshore construction and nearshore construction), the permittee (or authorized agent) and the contractors and subcontractors shall attend a pre-construction conference with a representative of all interested federal, state, and local agencies. The permittee shall contact the Corps in writing to schedule the conference. U.S. Army Corps of Engineers, South Permits Branch, 4400 PGA Boulevard - Suite 500, Palm Beach Gardens, Florida 33410, (561)472-3519. The permittee shall

contact all other regulatory and commenting agencies in writing at least thirty (30) days prior, to the schedule of the conference. In addition, the permittee shall develop training modules relating to sensitive wetland areas, coral resource sensitivity, nature and configuration and mapping of coral communities, value, and resource protection measures. The permittee shall submit the training modules to the Corps (South Permits Branch), at least 30-days prior to the pre-construction meeting, for review and approval for use during the pre-construction meeting. The Corps (South Permits Branch), will review and comment on the draft training modules within 15-days of submittal. The permittee will be required to utilize these training modules to instruct all staff involved with this construction project.

15. The permittee shall be responsible for ensuring that all of the employees hired for the construction of the AES Ocean Express Pipeline attend a minimum four (4) hour environmental training course provided by the permittee. The training for the offshore construction activities shall include, but not be limited to, an overview of sensitive marine resources in the project area, appropriate measures to be taken to ensure the protection of sea turtles and marine mammals during construction, turbidity monitoring requirements and procedures, and measures to be taken in the event of anticipated and unanticipated actions that could result in harm to marine resources. The training shall occur prior to any employee commencing work on the project and shall include a signed statement of completion for each employee. In addition, prior to construction, all Environmental Inspectors, shall be trained in accordance with the ECMVP Appendix J: 'Environmental Training Syllabi'. The permittee shall provide the Corps documentation that each employee hired for the construction of the AES Ocean Express Pipeline has received the environmental training. **Any 3<sup>rd</sup> party inspector(s) who is selected by FERC and FDEP to work on this project shall take part in the training provided for the Environmental Inspectors.**

16. The permittee shall implement a strict Quality Assurance and quality control program during all construction operations, including entrance shaft construction, tunnel construction, vessel transit, material transfer, and HDD activities. Ample staff shift changes shall occur and shall be designed so that staff exhaustion and complacency during oversight are avoided. The permittee shall ensure that the contractor schedules personnel to receive a minimum of 6 hours of rest in any 24-hour period. Rest periods may be interrupted in

case of emergency, drill, or other overriding operational necessity.

17. This permit, or a copy thereof, complete with all conditions, attachments, exhibits, and any future modifications, shall be kept at each construction spread office. A map showing the nearest spread office shall be kept at the work site of the permitted activity.

18. The structures/work authorized by this permit shall not be placed/conducted on any property, other than that owned or controlled by the permittee (including easements), without the prior written approval of that property owner, or as directed by court through condemnation procedures.

#### **AGENCY ACCESS FOR INSPECTIONS**

19. The permittee shall agree to grant access to any member of the regulatory agencies with proper safety equipment and training including: U.S. Army Corps of Engineers (USACE), National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (USEPA), Florida FDEP of Environmental Protection (FDEP) and their compliance agents; Florida Fish & Wildlife Conservation Commission (FFWCC), and the Broward County Environmental Protection Department (BCEPD), for purposes of monitoring and compliance inspections with a minimum 1 hour notice to the AES Project Manager or his/her designee. The permittee shall make safety training available to any member as necessary to come on site during construction.

Should it be necessary, the permittee shall provide transportation to and from the project sites for each the following:

A post-relocation/pre-construction compliance inspection of any coral removal areas, if needed  
Inspections of any identified unauthorized impact areas  
Tunnel construction/Post-installation/pipeline-pull-in compliance inspections  
Post-pullback compliance inspection of the pull corridors  
Post-construction compliance inspection of direct lay pipeline sections  
During construction and post-construction inspections of the onshore HDD areas for unauthorized impacts

The permittee shall notify the Corps, FDEP, and Broward County upon completion of the preceding construction components and

shall schedule the inspections. The permittee shall schedule the inspections outlined above between 8:00 AM-5:00 PM and shall notify the Corps, FDEP, Broward County and other regulatory agencies a minimum of 5 business days prior to the scheduled inspection date.

#### **ROAD TRAFFIC DISTURBANCES**

20. The permittee agrees that project construction will not interfere with normal traffic patterns along the roadway of Dania Beach Boulevard and A1A. The permittee agrees to develop a traffic pattern for ingress and egress of construction vehicles and deliveries of equipment so that no portions of the roadways will be closed for more than 24-hours, unless otherwise approved by the Florida DOT. The permittee agrees to develop traffic patterns that do not block portions of the Dania Beach traffic circle on a daily basis. A traffic flow contingency plan shall be developed and submitted to the "agencies" for review prior to construction.

#### **DANIA TRAFFIC CIRCLE**

21. The permittee agrees that prior to commencement of any construction, appropriate silt fencing, staked hay bales, or other means of erosion control devices will be installed to contain runoff and erosion as a result of construction. The permittee agrees to visually inspect the erosion control devices on a daily basis for the entire phase of construction. If there is an event of failure or a breach in the erosion control device, immediate repair shall occur.

22. The permittee agrees to maintain clean construction practices in and around the Dania Beach Traffic Circle. The permittee agrees to set up a facility at the exit location of the Dania Beach Traffic Circle that will aid in washing and cleaning the tires of the construction vehicles. This will aid in keeping dirt and construction materials off of the public roads.

#### **BIRD NESTING SEASON**

23. If construction is scheduled to occur within the wood stork nesting season, brown pelican nesting season, or wading bird nesting season Ocean Express shall conduct additional surveys in all areas immediately adjacent to mangroves (i.e., West Lake Park) to determine the presence of any of these active nests. If active wood stork rookeries, brown pelican rookeries, or wading bird rookeries are observed prior to construction, Ocean Express shall immediately notify the Corps and consult with the USFWS to establish a protection buffer zone or construction

setback from the nests and/or protective monitoring measures until the young have fledged and work adjacent to these areas shall not commence until the additional protection is in place.

#### **MANATEES**

24. The permittee agrees to abide by the Standard Manatee Construction Conditions, June 2001, designed to protect the endangered West Indian manatee.

#### **EQUIPMENT FAILURE**

25. The permittee shall adhere to the Ocean Express Pipeline Project Emergency Scenario and Response Plan - Appendix K of the ECMVP. The permittee shall adhere to this plan in the event of certain unexpected equipment failures or potential emergencies related to the construction phase, and other problematic conditions that may be encountered during construction. Some equipment failure measures are also described in the Tunnel Monitoring and Contingency Plan, Appendix P of the ECMVP.

#### **DRILLING ADDITIVES**

26. The permittee agrees that prior to the start of this project, Ocean Express will perform aquatic toxicity tests for any and all proposed chemical additives that may be used during construction operations. The permittee shall prepare a report with the results of the toxicity tests, the MSDS sheets for each proposed additive, and the proposed concentrations of the additives that will be used. The permittee shall submit the information to the "agencies" at a minimum of 90 days prior to the start date of construction for the agencies to review and approve the additives to be used.

#### **HYDROSTATIC TEST WATER (conditions 27-29)**

27. Ocean Express shall not use corrosion inhibitors, biocides, oxygen scavengers, or other additives that exhibit toxicity to aquatic organisms in hydrostatic test waters unless and until the testing and reporting requirements of Specific Condition # 26 above has been followed and adhered to for any hydrostatic test water additives.

28. The permittee agrees that prior to the start of hydrostatic testing, Ocean Express will perform aquatic toxicity tests for any and all proposed chemical additives that may be used during the hydrostatic testing of the pipeline after it has been installed into the tunnel. The permittee shall use marine organisms for toxicity tests for additives in Marine waters, not freshwater organisms. For additives to be used in freshwater

environments, freshwater organisms shall be used for toxicity tests. The permittee shall prepare a report with the results of the toxicity tests, the MSDS sheets for each proposed additive, and the proposed concentrations of the additives that will be used. The permittee shall submit the information to the "agencies" a minimum of 90 days prior to the start date of hydrostatic testing for the agencies to review and approve the additives to be used.

29. There shall be no discharge of hydrostatic test water into waters of the United States except as authorized by a NPDES permit.

#### **DISCHARGE OF MATERIALS**

30. The permittee agrees that there shall be no discharge of any materials from the tunnel construction into waters of the United States, such as construction water (except as authorized by a NPDES permit), drilling muds, drilling fluids, drill cuttings, or soil conditioners.

31. The permittee agrees to dispose of construction water (unless authorized by a NPDES permit), drilling muds, drilling fluids, drill cuttings (unless recycled), or soil conditioners at an approved landfill. The permittee agrees that at a minimum of 90 days prior to the start date of construction a letter of acceptance for the waste material shall be signed by the director(s) of the landfill(s) and submitted to the agencies for approval. The permittee shall dispose of the materials at no other locations other than the approved landfills unless authorized by a modification to this permit. The permittee agrees that if evidence of contaminated soil, sediment, or groundwater is identified, the material will be segregated and sampled for the level of contamination. The contaminated material shall be disposed of in accordance with all federal, state, and local regulations.

32. The permittee agrees to store construction waste materials and transport them to the landfill in water-tight construction vehicles with liners. There shall be no discharge or run-off of water or other hazardous liquids from the construction waste during storage, loading into the waste vehicles, or transport to the landfill. The permittee agrees that the trucks shall not drip or leak as they are traveling on the roadways.

33. The permittee agrees to adhere to the Spill Prevention, Control and Countermeasures (SPCC) Plan in the event of

inadvertent releases of oil or hazardous substances. The SPCC is Appendix A to the Environmental Construction and Monitoring Verification Plan (ECMVP), October 2004. The permittee agrees to have available at all construction spreads adequate spill response equipment including personal protective equipment to immediately respond to and to contain any oil or hazardous material leaks or spills

#### **GROUNDWATER**

34. The permittee agrees that there shall be no discharges of groundwater into the waters of the United States without the appropriate agency authorization. The permittee agrees to obtain the appropriate permits from the South Florida Water Management District and the Florida Department of Environmental Protection for groundwater discharges.

35. The permittee agrees to carefully monitor the dewatering of the shaft after the excavation is complete. The permittee shall monitor for any inflows of groundwater through any breaches in the concrete plug. Prior to the commencement of construction, Ocean Express shall verify and make any necessary changes to the safety plan, of Appendix P of the ECMVP, and submit it to the Corps if any changes are necessary, which shall address worst-case scenarios and how these events will be handled.

#### **SHAFT CONSTRUCTION**

36. To prevent bottom heave, the permittee agrees to monitor the shaft construction for differences in hydrostatic pressure between the inside and outside of the shaft.

#### **TUNNEL CONSTRUCTION (conditions 37-42)**

37. The permittee agrees to abide by the Tunnel Monitoring and Control Program as outlined in the Tunnel Monitoring and Contingency Plan (Appendix P; ECMVP) and the Microtunnel Monitoring and Contingency Plan (Appendix Q; ECMVP) and ensure that the TBM and the micro tunneling will not be advanced unless the following conditions which may indicate a presence of a void/cavity are met:

a. The rate of spoil removal matches the penetration rate of the TBM for the soil being mined, in essence, to remove the correct amount of soil that is displaced by the TBM and/or tunnel.

b. Tunnel alignment is maintained.

Upon detection of a possible void/cavity, the TBM will stop forward advancement; a probe will be drilled from the TBM to inspect the integrity and size of the void. Grout will fill the void/cavity, if necessary.

38. The permittee shall, at all times, maintain the pressure on the lubricating bentonite in the annulus space outside of the micro-bore carrier pipe at a level that it is less than the hydrostatic pressure differential in a manner to prevent a frac-out during micro-tunnel construction.

39. The permittee agrees that before burial or entombment of the TBM, trailing gear and any salvageable components will be removed from the tunnel. This permit authorizes that everything forward of the cutter-head bulkhead will be left in place. All salvageable hydraulic, electronic, and structural components rear of the bulkhead will be removed. The remaining portions of the TBM shall be flushed completely free and clear of any hydraulic oil tanks and any traces of oils. A concrete form shall be erected inside of the pre-cast tunnel lining to entomb the TBM.

40. The permittee agrees that if project construction aspects deem it necessary to remove the TBM via punching-out of the ocean floor, Ocean Express shall IMMEDIATELY notify the Corps by telephone and in writing. The Corps and other agencies must review this proposal and resources present. An area devoid of resources, in sand bottom, shall be selected for TBM removal.

41. The permittee agrees to maintain the tunnel in a dry condition.

42. The permittee agrees that in the event that tunneling cannot be implemented, work shall be terminated and alternative actions should be evaluated. In the event that impacts are significant and adverse, and appropriate and adequate mitigation cannot be provided, then project abandonment should be considered as an alternative.

**VESSEL TRAFFIC and MONITORING (conditions 43-45)**

43. The permittee agrees to adhere to the Nearshore Maneuvering and Anchoring Guidelines, which is Appendix L to the ECMVP. The waters described by "nearshore" are those that extend from the Florida coastline to water depths offshore at 200 meters or the 3 geographic mile limit.

44. The permittee agrees that all vessels that will be used in the construction of this project will be equipped with

standard navigation aids, safety lighting and communication equipment. A Vessel Monitoring System shall be implemented to continuously monitor all construction vessel (not including monitoring vessels or service vessels operating in water depths greater than 200 feet) movements and provide electronic representation of real time position relative to reef limits, workspace, transit and vessel holding areas onboard each vessel. This system shall be GPS based and designed to confirm that vessels remain within the designated work area, transit areas or holding areas.

a. The vessel monitoring system shall track the vessels' location using a minimum of 30-second intervals. The vessel monitoring system shall confirm that the vessels remain within the appropriate and designated work areas, transit areas, and holding areas (including the temporary construction area, the boundary of which is depicted by Drawing 1 of Appendix L of the ECMVP. Any vessel deviation from these areas shall be documented and immediately addressed. The permittee agrees that if an incident were to occur inside the Temporary Work Areas or outside of these areas, such as accidental anchor deployment, equipment falling overboard, or other activities that may damage coral reefs; the permittee shall record and document GPS coordinates at the location of the incidental occurrence.

b. The permittee agrees to generate maps showing all of the vessel tracks on a weekly basis. A log-book containing this data shall be kept on file in the construction office at the construction site, at all times. The maps shall demonstrate that the vessels maneuvered successfully within the approved areas and should also show any vessel tracks indicating any maneuvering that may have occurred outside of the authorized areas. The permittee shall submit weekly reports describing all vessel activities and shall submit maps to the Corps depicting any vessel movements that occurred outside of the designated work area, transit areas or holding areas.

c. The vessel track data in the log-book, mentioned above, shall be evaluated by the environmental inspector on a weekly basis. If a vessel excursion outside of the approved areas is detected, the permittee shall immediately, by telephone, notify the agencies of the event. The "agencies" shall decide upon the severity of the incident if divers shall immediately be deployed. If determined necessary by the Agencies, the permittee agrees to deploy divers, or in the event of an incident in waters beyond diving limits the permittee shall record video survey of the area where the vessel(s) maneuvered outside of the approved areas as

soon as possible but in no event no later than one week after the excursion. Photo documentation shall be obtained to evaluate the coral reef habitat for any inadvertent impacts.

d. If any unauthorized impacts have occurred, the permittee shall immediately; within a maximum of 24-hours of detection; notify by telephone, the Corps (South Permits Branch at 561/472-3519), and all "agencies". The permittee shall immediately, within a maximum of 24-hours of detection, ground-truth the deviated paths (provided that they are within safe diving limits and weather permitting) and document any impacts. The Corps (South Permits Branch) will determine appropriate recovery actions, which will include time-lag and risk assessments and mitigation efforts according to the Regulatory Mitigation Protocol for South Florida. The Corps (South Permits Branch), will determine final mitigation upon the applicants' submittal of a mitigation plan within 60 days of the impact incidence. The compensatory mitigation may be in the form of tire removal, however, the Corps reserves the right to accept the most appropriate form of mitigation for the type of unauthorized impact that may have occurred, so that the damaged resources will be fully compensated. The Corps (South Permits Branch), will coordinate this plan with "agencies", and will submit comments to the permittee within 30-days from submittal.

45. The required digitally recorded data mentioned above in special condition 43 shall include: date, time, vessel name, location points of the vessels, and the activity that the vessel was participating in. This information shall be provided to the Corps (South Permits Branch), in conjunction with the mapped excursion vessel tracks once a week during construction activities.

**ANCHORING (conditions 46-52)**

46. The permittee agrees to position Beacon transponders on the anchors deployed within 100 feet of any existing telecommunications cables to record for any anchor movement or drag. Upon detection of any anchor movement, tension on the anchor line to that anchor will be reduced as necessary to stop the anchor movement. In addition, upon detection of anchor movement, Ocean Express shall dispatch divers and/or ROV to investigate whether any impacts to resources has occurred, and determine what actions are necessary to avoid additional anchor movement (including possible resetting or replacement of the anchor). If impacts from anchor movement (or communication cable movement caused by anchor movement) are discovered, appropriate

reports shall be made to the regulatory agencies as required by the ECMVP. Also refer to specific conditions 66 and 67.

47. This permit does not authorize anchor placement in coral reefs or on hardbottom areas off of Broward County. All anchors shall be placed in complete sand bottom and shall completely avoid coral and hardbottom habitat. Anchor placements are to occur in designated Temporary Work Areas, which have been identified in the application as sandy areas.

48. The permittee agrees that at all times while anchoring off of Broward County all anchoring lines shall have mid-line buoys and positively floating buoyant anchoring lines. This permit does not authorize impacts to the coral reefs as a result of anchoring. The permittee shall ensure that there are no impacts to the coral reef system as a result of anchoring. Anchor sweep is prohibited which may cause impacts directly to the coral reef system or indirectly as a result of turbidity or sedimentation.

49. The permittee agrees to use the pre-selected locations for anchoring on the seafloor within the Temporary Work Areas. The corners of the pre-selected anchor locations and one point in between, shall be identified with GPS coordinates and State Plane Coordinates in NAD27. The permittee agrees to indicate these coordinates on the existing Temporary Work Area map and submit it to the Corps. Once anchor are deployed the permittee agrees to identify anchor locations on a plan view drawing on Laser Airborne Depth Survey (LADS) maps, if possible, and shall indicate any other specific features such as shipwrecks, fiber optic cables, etc., that may be within a minimum of 50' of the anchor areas. The permittee shall also generate separate larger scale maps of each anchor location as a zoomed view.

50. The permittee shall verify anchor locations to ensure that the anchoring locations are in complete sand bottom. The permittee shall take panoramic color photographs or video documentation of the area surrounding the anchor selection sites to demonstrate selection of sand bottom areas. The photographs shall have date, time, and location recorded on them. Where anchoring is occurring in water depths beyond diver limits video documentation shall be conducted to document the area around the pre-selected anchoring zone to demonstrate that anchoring will be in sand bottom.

51. The permittee agrees that at no time during the project will vessels be authorized to anchor within the established Reef

Buffer Zones. The permittee agrees that all anchoring within 30 feet of the Reef Buffer will be restricted to screw pile anchor methods. The permittee shall ensure that the actual locations of anchor placement or installation areas, are recorded by GPS and State Plane Coordinates in NAD27. To demonstrate compliance of the pre-selected anchor locations the actual deployed anchor locations shall be overlaid on the maps that depict the pre-selected anchor locations. These maps shall be submitted to the "agencies" after anchor deployment once a week. If anchors are moved and re-deployed these new anchor locations shall be recorded and plotted as mentioned above. If there is an event of non-compliance, the permittee shall immediately notify, by telephone, the "agencies". Within one week of the incident the permittee agrees to deploy divers, or in the event of an incident in waters beyond diving limits the permittee shall record video survey of the area, where anchoring has occurred outside of the approved anchor locations. Documentation of any inadvertent impacts shall be obtained from the inspections of the coral reef habitat. A report shall be submitted to the "agencies", including a copy to the NMFS, explaining the scenarios of the unauthorized impacts and the findings of the inspection.

The Corps (South Permits Branch) will determine appropriate recovery actions and mitigation efforts according to the South Florida Mitigation Protocol, which will include time-lag and risk assessments. However, the Corps reserves the right to accept the most appropriate form of mitigation for the type of unauthorized impact that may have occurred, so that the damaged resources will be fully compensated. The Corps (South Permits Branch), will determine final mitigation upon the applicants' submittal of a mitigation plan within 60 days of the impact incidence. The compensatory mitigation may be in the form of tire removal, however, the Corps reserves the right to accept the most appropriate form of mitigation for the type of unauthorized impact that may have occurred, so that the damaged resources will be fully compensated. The Corps (South Permits Branch), will coordinate this plan with "agencies", including a copy to the NMFS, and will submit comments to the permittee within 30-days from submittal.

52. The permittee agrees that in the event that additional anchor space is needed beyond the Temporary Work Areas, additional areas shall be selected on a case-by-case basis. These Contingency Work Areas may be located in rubble and/or low to no relief hardbottom areas with low density biota coverage, although, the anchor placement within the Contingency Work Areas shall be selected in sand bottom areas. The permittee shall

indicate these additional anchor selection areas on LADS maps and shall immediately submit the maps to the "agencies" for approval prior to their use. "Agency" approval of these additional anchor areas will be contingent upon their placement in sand bottom areas located a minimum of 100 feet from the nearest edge of any resource.

During the placement of these anchors diver verification shall be used to demonstrate compliance with anchor placement in sand bottom areas. Mid-line buoys and buoyant floating anchor lines shall be used when these anchors are deployed.

#### **EXCLUSION ZONES**

53. The permittee agrees that there shall be no impacts to the two areas designated as Exclusion Zones for any reason. There shall be no anchoring, no anchor sweep, no turbidity or sedimentation impacts, (note that the easternmost exclusion zone is within the sedimentation/Turbidity impact polygon. Impacts are not anticipated in this area. However, they will be included in the impact table in Appendix I, Offshore Mitigation and Restoration Plan, to the ECMVP with a note that it is included because Ocean Express did not re-run their Turbidity/sedimentation modeling for the Micro-tunnel exit since no plume is expected.), no pipeline installation impacts etc., to these resources classified as high to medium density biota. If in the event that unanticipated inadvertent impacts occur to these resources, appropriate mitigation shall be assessed in accordance with the South Florida Mitigation Protocol, which will include time-lag and risk assessments. However, the Corps reserves the right to accept the most appropriate form of mitigation for the type of unauthorized impact that may have occurred, so that the damaged resources will be fully compensated. Also see specific condition #66 and 67.

#### **MICRO-TUNNEL EXIT LOCATION (conditions 54-56)**

54. The permittee agrees that a secondary launch tube may be installed in the main tunnel as a precautionary measure and used in the event of the primary launch tube or microtunnel failure. Use of the secondary launch tube to redirect the microtunnel will require a modification from the Corps. In the modification request, the permittee shall provide revised exit coordinates, modified work area drawings, revised anchoring plans, additional biological information if necessary, and avoidance and minimization of impacts to resources to the maximum extent practicable.

55. The permittee agrees that at least 90-days prior to the commencement of any construction aspects of the project, with the exception of the construction of the tunnel shaft, pre-construction surveys will be conducted at the micro-tunnel exit location. This survey shall consist of 500 kHz side scan sonar surveys of the area described below for the micro-tunnel exit location and 15 meter offsets. The swath shall cover a minimum of 30 meters with a resolution of 0.75 cm and the following:

a. Pre-construction surveys shall be conducted in a north/south direction at the proposed micro-tunnel exit location, and shall extend at a minimum of 500-feet to the north and 500-feet to the south of the micro-tunnel exit location. These surveys will be used by the permittee to identify the final exit location with the least impact potential for corals.

b. Pre-construction surveys shall be conducted in an east/west direction at the final micro-tunnel exit location determined in 52 (a) above, and shall extend at a minimum of 500-feet to the east and 500-feet to the west of the micro-tunnel exit location to fully document the exit location.

c. The pre-construction surveys of the subject area shall also document the extent and size of the "Exclusion Zones". A quantitative analysis shall be provided to the Corps.

d. The permittee shall identify any areas that support hardbottom and/or coral resources within the proposed micro-tunnel exit location;

e. The permittee has pre-selected the micro-tunnel exit location in an area of sand bottom. If this micro-tunnel exit location deems to be not feasible, the permittee shall demonstrate why this is not possible and shall avoid and minimize impacts to high ecological value deepwater resources to the greatest extent practicable (including the establishment of adequate buffers); and

e. The permittee shall submit an updated mitigation plan for final review and approval upon completion of the pre-construction survey.

Results of the survey(s) and mitigation plans must be submitted to the Corps, NMFS, Broward County, and FDEP for review and approval at least 60 days prior to commencement of construction, with the exception of the construction of the tunnel shaft.

56. If the permittee fails to conduct the pre-construction surveys of the micro-tunnel exit location prior to the commencement of construction of any portions of this project, with the exception of the construction of the tunnel shaft, the Corps will assume total permanent impacts of a 200-foot by 200-foot (0.92 acres) area surrounding the micro-tunnel exit location.

#### **MONITORING SURVEYS OVER REEF 3 DURING CONSTRUCTION**

57. The permittee agrees to conduct monitoring during tunnel construction beneath Reef 3 and during the micro tunneling operations. The monitoring area will include the area from the westerly edge of Reef 3 and extend a minimum of 200-feet beyond (east of) the micro tunnel exit point along the tunnel/micro tunnel center line. This monitoring will consist of twice daily 500 kHz side scan sonar surveys of the tunnel center line and 15 meter offsets. The swath will cover a minimum of 30 meters with a resolution of 0.75 cm. These records will be compared to the pre-construction side scan sonar survey data to demonstrate that no unanticipated impacts have occurred as a result of the tunnel and micro tunnel construction. The survey data will be maintained at the project field office. Daily email reports of any anomalous results, if any, will be provided to the Corps and all other appropriate regulatory agencies. The survey data shall be submitted to the Corps post-micro-tunnel construction.

#### **TURBIDITY MONITORING**

58. The permittee agrees that compliance turbidity sampling will be conducted at the micro-tunnel exit location in the manner and at the locations specified in Appendix G, Marine Turbidity, Sedimentation and Reef Monitoring Plan of the ECMVP. Within 60-days prior to commencement of construction, Ocean Express shall develop and submit to the Corps a turbidity monitoring plan and select monitoring sites at the nearest edge of adjacent resource. The Corps shall review this plan for appropriate monitoring site selection locations. If the current direction is not determinable at the time of construction, then the compliance samples shall be recorded from four evenly spaced locations within a 20-foot perimeter of construction. Background turbidity samples shall be collected 180-meters up current of construction each time monitoring is to be conducted. Turbidity samples shall be collected every two hours during punch-in or punch-out of the micro-tunnel exit construction operations, 24 hours per day for this segment of the project.

a.) If turbidity exceeds 29 NTU above background at any time during the construction process, work will stop immediately.

b.) If turbidity exceeds 15 NTU, but is less than 29 NTU above background, a retest will be conducted every 15 minutes at the same location where the compliance sample was recorded.

1.) If turbidity remains stable (at plus or minus 2 NTU) or declining, monitoring will continue every 15 minutes.

2.) If turbidity drops to less than 15 NTU above background at the 4th retest monitoring will continue every 2 hours.

c.) If turbidity remains 15 NTU or more above background at the 4th retest work will immediately stop. If turbidity has not returned to below 15 NTU's above background at the end of the 3 hour monitoring period, then work will cease until the cause is identified and corrected and until turbidity returns at below 15 NTU's.

If, during monitoring, turbidity increases at a rate greater than 2 NTU for three successive retests work will immediately stop.

In addition, the permittee shall not violate turbidity requirements imposed by the Florida Department of Environmental Protection in its permit, number 06-0193181-002.

**Turbidity monitoring reports shall be submitted weekly** to the Department of The Army at: South Permits Branch, 4400 PGA Boulevard, Suite 500, Palm Beach Gardens, Florida 33410. As part of the monitoring report, the permittee shall provide a data summary cover page stating whether or not there were any turbidity exceedences or anomalies, their cause, and what was done to remediate the situation.

Monitoring reports shall also contain the following information:

- (a) permit number;
- (b) dates of sampling and analysis;
- (c) time of day samples taken;
- (d) depth of water body;
- (e) depth of sample;
- (f) antecedent weather conditions;
- (g) direction of flow;
- (h) wind direction and velocity;

- (i) a statement describing the methods used in collection, handling, storage and analysis of the samples;
- (j) a map indicating the sampling locations; and
- (k) a statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection, and accuracy of the data.

**ACOUSTIC DOPPLER CURRENT PROFILER (ADCP) (conditions 59, 60)**

59. Acoustic Doppler Current Profiling shall be used to track the movement and character of suspended sediment plumes. Measurements shall be recorded at the frequency interval specified in the turbidity special condition and at locations within the densest portion of the plume. Any plumes that violate the turbidity special condition criteria will trigger immediate cessation of tunnel construction activities. The ADCP recorded sedimentation field and turbidity plumes shall be mapped. AES Ocean Express shall provide a map that includes an overlay of the results of the sediment transport modeling results and the ADCP mapped plumes. In the case that the instrumentation and associated mapping reveal additional areas of impact, the resources within those areas will be examined for signs of impact as prescribed in the Appendix G, Marine Turbidity, Sedimentation and Reef Monitoring Plan of the ECMVP, photo-documented with the geographic location, and included into the monitoring protocol. Inadvertent impacts will require twice the agreed upon mitigation ratio required for less sensitive habitats.

60. The permittee agrees that upon completion of the tunnel punch-out activities, the permittee shall prepare and submit an overlay map that includes the results of the existing sediment transport modeling and actual ADCP-mapped plumes, if any. If AES Ocean Express identifies additional potential impact areas, Ocean Express shall examine resources within those areas as part of its post-construction monitoring program, as described in the ECMVP, Appendix I: "Offshore Mitigation and Restoration Plan".

**SPUD PLACEMENT PROCEDURES**

61. The permittee agrees that to lower the feet (spuds) of the jack-up vessel to the seafloor for micro-tunnel construction assistance, the feet will **only** be positioned in areas of sand bottom or if spud placement in sand bottom is not possible then the placement of the spuds shall follow the criteria specified in Appendix N, Coral Relocation Plan, of the ECMVP.

- a. Each time the jack-up vessel is assembled

and the spuds are lowered, an underwater camera, night vision, and/or scuba divers that are trained in the identification of all corals and marine communities, shall be used to ensure that the placement of each spud will avoid contact with corals and/or live/hardbottom to the maximum extent practicable and shall only be positioned in sand bottom or if spud placement in sand bottom is not possible then the placement of the spuds shall follow the criteria specified in Appendix N, Coral Relocation Plan, of the ECMVP.

b. After placement of the spuds of the "lift" vessel, they shall be photo-documented with the date, depth, geographic location, and time of day super-imposed on the photograph. Each time the spuds are to be relocated, the spuds will be raised and the permittee agrees to deploy a diver to inspect the area (post-spud placement survey) under the "lift" vessel. The diver shall photo-document the area under the "lift" vessel, with the date, depth, geographic location, and time of day super-imposed on the photograph, to verify that no impacts to corals and/or live/hardbottom, and marine communities shall occur. No impacts to sensitive resources are authorized by this permit activity, for the placement of the spuds of the jack-up vessels except for the calculated impacts as provided in the Appendix I, Offshore Mitigation and Restoration Plan of the ECMVP.

c. If impacts to corals and/or live/hardbottom, and marine communities do occur from spud placement, divers will be deployed immediately after inspection to perform triage measures and to reattach coral communities. The damaged areas shall be flagged, GPS identified, the depth and time shall be recorded, and photos of the triage procedures shall be documented. A qualified lead diver (an on-site staff member overseeing coral triage operations) with a minimum of a Master's Degree and prior experience in successful coral triage shall be used.

d. Some work associated with micro-tunnel exit activities are outside of safe diving limits therefore, these sites shall be guided and documented by remote video documentation. The permittee agrees to record video documentation while the spuds of the "lift" vessel are being placed on the seafloor. Video documentation must be recorded while the spuds are positioned on the seafloor to fully document that they are being placed in sand bottom and that impacts to coral/hardbottom resources do not occur except as provided as Appendix I, Offshore Mitigation and Restoration Plan, of the ECMVP. After the spuds have been removed from areas beyond safe diving limits, the permittee agrees to record video documentation to demonstrate that the

spuds were placed in sand bottom or to indicate the extent of any impacts that may have occurred to coral/hardbottom resources except for the calculated impacts as provided as Appendix I, Offshore Mitigation and restoration Plan, of the ECMVP. If coral relocation is necessary, the Corps reserves the right to review the coral relocation efforts and to assess mitigation measures where needed for any coral relocation activities due to stress on the corals, improper relocation efforts, unsuccessful relocation efforts, etc.

#### Report Submission

All pre, during, and post documentation of spud placement must be submitted in the form of video and report and shall be submitted to the Department of the Army within 60 days after completion of the tunnel-exit and all jack-up vessels have vacated the area. The report shall include two stages; pre-construction conditions/initial set-up, and post-construction conditions. Photos of each spud placement locations, and detailed quantitative and qualitative data as specified in Appendix I, Offshore Mitigation and restoration Plan, of the ECMVP, at the two stages shall be submitted to the Corps for review. If unauthorized impacts have occurred see conditions #66 and 67.

#### DEEPWATER ROUTE SURVEYS (conditions 62-64)

62. At least 90 days prior to initiating offshore construction between about milepost (MP) 29 and RMP 44.7, Ocean Express shall submit to the Corps for review and written approval, a pre-installation video survey plan for pre-selecting a suitable pipeline route to avoid deepwater corals that includes:

- a. the identification and mapping of high probability exposed hardbottom regions along the pipeline centerline;
- b. specifications on the resolution and survey method;
- c. designation and draft contractual agreement with a recognized Florida deepwater coral expert to independently review the pre-installation video;
- d. avoidance and minimization to high ecological value deepwater resources to the greatest extent practicable (including the establishment of adequate buffers); and
- e. mitigation strategies, if required.

The results of this pre-construction survey will be used to avoid impacts to deepwater coral thickets, to the extent practicable, in the manner described in Appendix M, Miami Escarpment Installation Guidelines, of the ECMVP. Results of the survey(s) and mitigation strategies must be submitted to the Corps, NMFS, the Department of the Interior's Mineral Management Service

(MMS), and Florida DEP for review at least 60 days prior to construction. A recognized Florida deepwater coral expert will independently review the pre-construction survey. The Florida deepwater coral expert shall be selected by the permittee in consultation with NMFS.

63. If the permittee fails to conduct the pre-construction deepwater surveys, in accordance with the condition mentioned above, Appendix I, Offshore Mitigation and Restoration Plan, and Appendix M, Miami Escarpment Installation Guidelines, of the ECMVP, prior to and if the permittee fails to get the agencies final approval of the pre-selected deepwater route that is a suitable pipeline route to avoid deepwater corals or exhibits avoidance and minimization to high ecological value deepwater resources to the maximum extent practicable prior to the commencement of construction of any portions of this project, with the exception of the construction of the tunnel shaft, the Corps will assume total permanent impacts of the length of the pipeline not surveyed by 26 inches wide.

64. At least 45 days prior to initiating offshore construction between MP 25 and RMP 44.7, Ocean Express shall submit to the Corps for review and written approval, a post-construction monitoring plan that would provide for a qualitative assessment of impacts to significant deepwater resources that could not be avoided by construction of this segment of the pipeline. The plan shall include provisions for:

- a. an as-built baseline survey (immediately post-construction) for the pipeline between MP 25 and RMP 44.7; and
- b. an assessment of impacts to deepwater resources at year two following construction.

An interagency team comprised of representatives from the Corps, FERC, MMS, NMFS, and the Florida DEP would review the results of the year two survey and determine the need for monitoring of these resources at year four. If monitoring at year four is required, the team would review the results and determine if a final monitoring survey is needed at year 10. The plan shall propose survey methodologies including the types of equipment to be used, the expected resolution of survey data, and the dimensions of the survey corridor.

#### **SEAGRASS SURVEY**

65. The permittee agrees that at a minimum of 15 days prior to commencement of HDD activities in the ICW, the applicant shall submit to the Corps and NMFS a seagrass survey that fully adheres

to the Recommendations for Sampling Halophila johnsonii at a Project Site. (see attached)

#### **NOTIFICATION OF INJURY TO NATURAL RESOURCES**

66. The permittee shall immediately notify the Corps (South Permits Branch at 561/472-3519), and the other "agencies", by telephone, within a maximum of 24-hours upon detection and submit a preliminary written report, within one week of investigation of the incident, in the event of unauthorized or inadvertent damage to natural resources. The permittee shall document any unauthorized or inadvertent impacts or accidents that have occurred to seagrass, coral and/or hardbottom resources. The permittee shall initiate within 24 hours upon detection of any incident (weather permitting), the immediate triage, recovery, stabilization, and restoration of any injury to natural resources in the event of unforeseen accidents from any construction activities, such as anchor damage, anchor cable scouring, material transfer, pipeline failure, micro-tunnel failures, vessel groundings, etc. A preliminary injury assessment shall be submitted to the Corps (South Permits Branch), within one week of the incident. The Corps (South Permits Branch), will determine appropriate recovery actions. A total project injury assessment shall be submitted within the post-construction report, which shall be submitted 120 days post-construction.

#### **MITIGATION OF INADVERTENT IMPACTS**

67. The permittee shall avoid injury to all mangrove wetland habitat, freshwater wetland habitat, and submerged aquatic habitats (outside of the permitted impacts) within the project footprint and vicinity by any and all construction activities. Unavoidable impacts shall require restoration and mitigation. Wetland mitigation ratios shall be determined based on UMAM analysis, hardbottom mitigation ratios shall be determined in accordance with the South Florida Mitigation Protocol. In the case of inadvertent or unauthorized impacts, the permittee shall submit a mitigation plan to the Corps (South Permits Branch), which will include compensatory mitigation that will account for time-lag and risk assessments. The Corps reserves the right to accept the most appropriate form of mitigation for the type of unauthorized impact that may have occurred, so that the damaged resources will be fully compensated. The Corps (South Permits Branch), will coordinate this plan with NMFS, FWS, and EPA, and will submit comments to the permittee within 30-days from submittal by the permittee.

#### **CORAL TRANSPLANTATION (conditions 68-69)**

68. If for any reason, any portions of the project construction may deem it necessary for corals to be relocated, AES Ocean Express shall immediately notify the Corps by telephone and in writing. The permittee has agreed to minimize impacts to certain sensitive resources by implementing a coral relocation plan in the manner described in Appendix N, Coral Relocation of the ECMVP, the Coral Relocation Plan. Prior to commencing coral relocation pursuant to this plan, the permittee shall notify the Corps by telephone and in writing. If detrimental impacts to additional high ecological value resources are anticipated during construction, but can be avoided through coral transplantation, construction in the subject area shall be halted until such corals are relocated in accordance with Appendix N of the ECMVP, the Coral Relocation Plan, and the subject area is free and clear of the resources. The permittee shall implement a QA/QC plan to ensure and oversee that coral transplantation efforts are successful. The permittee shall ensure that all participants conducting project activities are held to the standards highest quality of work. The permittee and the Corps (South Permits Branch), will re-assess mitigation accordingly and will account for time-lag and risk into the consideration if needed. The Corps reserves the right to accept the most appropriate form of mitigation for the type of unauthorized impact that may have occurred, so that the damaged resources will be fully compensated.

69. The permittee agrees to develop and submit a detailed monitoring plan for the relocated corals. Time-lines and monitoring methods shall be identified. The plan shall be approved by the Corps, NMFS, FWS, EPA, FDEP, and Broward County, within 30 days of submittal.

#### **TRANSPLANTED CORAL SUCCESS CRITERIA**

70. At a minimum, the relocated corals shall maintain an 80% survival rate after 6 months from the initial relocation date. Thereafter, the relocated corals shall maintain that 80% survival throughout the life of the monitoring program. Should the Corps (South Permits Branch), determine that the relocated corals are not achieving this survival criteria, additional mitigation may be required as deemed appropriate by the Corps (South Permits Branch), through a modification. The permittee agrees to prepare a report that clearly describes in detail, possible reasons for not reaching an 80% survival rate. The permittee agrees to monitor the mitigation reef and corals at 6 months from the initiation of coral transplantation, 1 year, 2 years, 5 years, and 7 years post transplantation. The permittee agrees to submit a mitigation reef monitoring report within 90

days after each monitoring event to document the status of the relocated corals. AES Ocean Express will not be held to any failures caused by natural events or other non-project related events that may hinder coral transplantation success rates.

#### **STORM CONTINGENCY PLAN**

71. AES Ocean Express has drafted a Storm Contingency Plan as Appendix O of the ECMVP. The permittee is required to adhere to the Storm Handling Plan (Appendix O to the ECMVP) and in addition will require the final selected contractor to submit to the "agencies" his/her companies' detailed Storm Handling Plan prior to the commencement of construction, with the exception of the construction of the tunnel shaft.

#### **THIRD PARTY ENVIRONMENTAL INSPECTORS (conditions 67, 68)**

72. The permittee shall provide a plan, in consultation with FERC that indicates how AES would provide compliance monitoring of the Corps conditions within the framework of the FERC third-party compliance monitoring task. The permittee will allow sufficient time for the Corps and FERC to discuss these issues. The Third party environmental inspector issues will be resolved at a maximum of 30-day prior to commencement of construction, with the exception of the construction of the tunnel shaft.

73. As required by the FDEP Permit and the FERC Certificate, and by this Corps authorization, the permittee agrees that the third party environmental inspectors will not be AES Ocean Express employees and shall be independently employed as third-party environmental inspectors to ensure compliance with all conditions and procedures.

#### **POST-CONSTRUCTION SUCCESS/FAILURES**

74. At a maximum of 120 days after construction of the United States portion of the project is finished, Ocean Express shall prepare and submit a post-construction report, detailing successes and failures that occurred during the project construction. This report should identify the lessons learned in connection with the project in terms of the technologies used, anticipated and unanticipated impacts to marine resources, and measures that would provide greater fishery resource protection in similar type future projects.

75. For all requested submittals and reports please submit them to the U.S. Army Corps of Engineers, South Permits Branch, 4400 PGA Boulevard, Suite 500, Palm Beach Gardens, Florida 33410, and a copy of the post-construction reports shall be submitted to

the U.S. Army Corps of Engineers, Regulatory Division, Enforcement Branch, Attention: Lisa Abernathy, Post Office Box 4970, Jacksonville, Florida 32232-0019, fax 904-232-1684, telephone 904-232-3526.

76. If prehistoric artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoes, or any physical remains that could be associated with Native American cultures, or early colonial American settlement are encountered at any time within the project site area, the permitted project shall cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The permittee, or other designee, should contact the Florida Department of State, Division of Historical Resources, Review and Compliance Section, at 850-245-6333, or 800-847-7278, as well as the appropriate permitting agency office. Project activities shall not resume without verbal and/or written authorization from the Division of Historical Resources. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately, and the proper authorities notified in accordance with Section 972.05 Florida Statutes.

**Further Information:**

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

Section 404 of the Clean Water Act (33 U.S.C. 1344).

Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).

c. Significant new information surfaces, which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The

referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

7. If the work authorized is not completed on or before **December 1, 2009**, authorization, if not previously revoked or specifically extended, shall cease, and be null and void.

Please refer to the attached form, *Notification of Administrative Appeal Options and Process*, concerning your options on acceptance of this permit. For appeals of special conditions, applicants must first appeal to the District Engineer (Branch Chief), to be mailed to the above letterhead address. To appeal this decision, or for appeals based on other concerns, the applicant should mail the completed form to the following address:

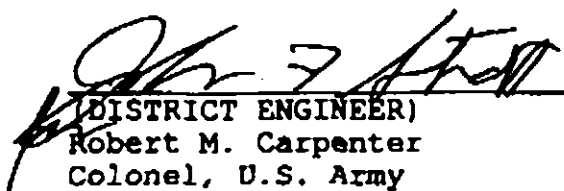
Commander, South Atlantic Division  
U.S. Army Corps of Engineers  
ATTN: Appeals Review Officer  
CESAD-CM-CO-R, Room 9M15  
60 Forsyth St., SW.  
Atlanta, Georgia 30303-8801

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Donald J. Bartlett  
 Vice President  
  
 (APPLICANT NAME and TITLE)

Jan 10, 2005  
 (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

  
 (DISTRICT ENGINEER)  
 Robert M. Carpenter  
 Colonel, U.S. Army

16 January 2005  
 (DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

\_\_\_\_\_  
 (TRANSFeree-SIGNATURE)

\_\_\_\_\_  
 (DATE)

\_\_\_\_\_  
 (NAME-PRINTED)

\_\_\_\_\_  
 (ADDRESS)

\_\_\_\_\_  
 (CITY, STATE, AND ZIP CODE)

## ***DEPARTMENT OF THE ARMY PERMIT***

### **Attachments to Department of the Army Permit Number SAJ-2001-6555 (IP-SLN)**

1. PERMIT DRAWINGS: Included as Attachments # 1 - 30, dated December 1, 2004.
2. Environmental Construction Monitoring and Verification Plan, December 2004 - on file at the U.S. Army Corps of Engineers, South Permits Branch Office, 4400 PGA Boulevard - Suite 500, Palm Beach Gardens, Florida 33410.

| NOTICE TO APPLICANT OF ADMINISTRATIVE APPEAL DECISIONS AND PROCESS AND<br>REQUEST FOR COMMENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                    |                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------|
| Applicant:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                    | File Number:            |
| Attached is:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                    | Date:                   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                    | See<br>Section<br>below |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission) | A                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PROFFERED PERMIT (Standard Permit or Letter of permission)         | B                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PERMIT DENIAL                                                      | C                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | APPROVED JURISDICTIONAL DETERMINATION                              | D                       |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PRELIMINARY JURISDICTIONAL DETERMINATION                           | E                       |
| <p><b>SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <a href="http://usace.army.mil/inet/functions/cw/cecwo/reg">http://usace.army.mil/inet/functions/cw/cecwo/reg</a> or Corps regulations at 33 CFR Part 331.</b></p> <p><b>A: INITIAL PROFFERED PERMIT:</b> You may accept or object to the permit.</p> <ul style="list-style-type: none"> <li><b>ACCEPT:</b> If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.</li> <li><b>OBJECT:</b> If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.</li> </ul> |                                                                    |                         |

**B: PROFFERED PERMIT:** You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**C: PERMIT DENIAL:** You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**D: APPROVED JURISDICTIONAL DETERMINATION:** You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**E: PRELIMINARY JURISDICTIONAL DETERMINATION:** You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

**SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT**

**REASONS FOR APPEAL OR OBJECTIONS:** (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

**ADDITIONAL INFORMATION:** The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

**POINT OF CONTACT FOR QUESTIONS OR INFORMATION:**

|                                                                                                                                                                                                                                                                                                                                                                        |                                                                                      |                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------|
| <p>If you have questions regarding this decision and/or the appeal process you may contact:</p>                                                                                                                                                                                                                                                                        | <p>If you only have questions regarding the appeal process you may also contact:</p> |                          |
| <p>RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.</p> |                                                                                      |                          |
| <p>_____<br/>Signature of appellant or agent.</p>                                                                                                                                                                                                                                                                                                                      | <p>Date:</p>                                                                         | <p>Telephone number:</p> |

**APPENDIX C**

---

**APPENDIX C**

**LIST OF EARTH PRESSURE BALANCE TUNNELS  
(FROM OCEAN EXPRESS)**

# LOVAT EPB TBM REFERENCE LIST

| MACHINE    | SERIES | ORIGINAL OPERATING CITY         | FOOTAGE | METERS | GROUND TYPE         |
|------------|--------|---------------------------------|---------|--------|---------------------|
| ME386SE    | 15500  | Lisbon, Portugal                | 7218    | 2200   | 3, 4, 6             |
| RMP375SE   | 12600  | Samia, Canada                   | 8027    | 1837   | 1, 3, 5             |
| RME370SE   | 19700  | Bologna, Italy                  | 20072   | 6118   | 1, 2, 3, 4          |
| RME370SE   | 19800  | Bologna, Italy                  | 20072   | 6118   | 1, 2, 3, 4          |
| RME320SE   | 20500  | London, U.K.                    | 17388   | 5300   | 2, 3                |
| RME320SE   | 20400  | London, U.K.                    | 17388   | 5300   | 2, 3                |
| RME306SE   | 20700  | Torino, Italy                   | 16076   | 4900   | 1, 2, 4             |
| RME306SE   | 20800  | Torino, Italy                   | 18896   | 5150   | 1, 2, 4             |
| RME257SE   | 17900  | Singapore                       | 8403    | 2581   | 2, 3, 4, 7          |
| RME257SE   | 18000  | Singapore                       | 8347    | 2544   | 2, 3, 4, 7          |
| MP254SE    | 16600  | Washington D.C., USA            | 5886    | 1788   | 2, 3                |
| RMP242SE   | 18400  | Singapore                       | 11483   | 3500   | 1, 2, 3, 4          |
| RMP242SE   | 18500  | Singapore                       | 11483   | 3500   | 1, 2, 3, 4          |
| RME242SE   | 17000  | Moscow, Russia                  | 9843    | 3000   | 2, 3, 4, 6          |
| RME232SE   | 14600  | Toronto, Canada                 | 13452   | 4100   | 2, 3, 4, 5          |
| RME232SE   | 14700  | Toronto, Canada                 | 13452   | 4100   | 2, 3, 4, 5          |
| RMP222SE   | 9100   | Moscow, Russia                  | 18405   | 5000   | 1, 2, 3, 4, 5, 6, 7 |
| RMP222SE   | 9200   | Moscow, Russia                  | 18405   | 5000   | 1, 2, 3, 4, 5, 6, 7 |
| MP202SE    | 13700  | London, U.K.                    | 8400    | 2500   | 2, 3                |
| MP202SE    | 13800  | London, U.K.                    | 8400    | 2500   | 2, 3                |
| RME200SE   | 15900  | Port Hedland, Australia         | 3280    | 1000   | 1, 2, 3, 4, 5, 6    |
| MP188SE/RL | 10100  | Seattle, USA                    | 18505   | 5840   | 1, 2, 3             |
| RMP185SE   | 20300  | Los Angeles, California, U.S.A. | 8202    | 2500   | 1, 2                |
| RMP185SE   | 20200  | Los Angeles, California, U.S.A. | 17388   | 5300   | 1, 2                |
| RMP185SE   | 20100  | Los Angeles, California, U.S.A. | 16404   | 5000   | 1, 2                |
| RMP185SE   | 20000  | Los Angeles, California, U.S.A. | 18372   | 5800   | 1, 2                |
| ME181SE    | 16900  | San Diego, USA                  | 4400    | 1341   | 2, 3                |
| MP170SE    | 16100  | Tehran, Iran                    | 18375   | 5600   | 1, 2, 3             |
| RME167SE   | 18300  | Hull, U.K.                      | 21041   | 6413   | 1, 2, 3, 4          |
| RME167SE   | 18200  | Hull, U.K.                      | 13865   | 4182   | 1, 2, 3, 4          |
| MP157SE    | 15600  | Seattle, USA                    | 10200   | 3100   | 1, 3, 5             |
| RMP156SE   | 10800  | Melbourne, Australia            | 27232   | 8300   | 1, 2, 3, 4, 6, 7    |
| MP155SE    | 17200  | Aviles Leon, Spain              | 19800   | 6000   | 2, 3, 4             |
| RME152SE   | 21000  | Los Angeles, U.S.A.             | 27887   | 8500   | 1, 2                |

|             |       |                     |       |       |               |
|-------------|-------|---------------------|-------|-------|---------------|
| RMP152SE    | 20900 | Los Angeles, U.S.A. | 27887 | 8500  | 1,2           |
| RME152SE    | 20800 | Los Angeles, U.S.A. | 27887 | 8500  | 1,2           |
| MP151SE     | 12400 | Bristol, U.K.       | 5578  | 1700  | 5             |
| MP148SE     | 16000 | Paris, France       | 3854  | 1205  | 5             |
| MP146SE/RL  | 10200 | Los Angeles, USA    | 8000  | 1830  | 3,4           |
| RMP143SE    | 14800 | Seoul, South Korea  | 3800  | 1100  | 3,4,6,7       |
| MP138SE     | 10000 | London, U.K.        | 4583  | 1400  | 1,2,3         |
| MP134PJ     | 11900 | Alexandria, Egypt   | 8203  | 2500  | 2,4           |
| MP133SE/PJ  | 9300  | Houston, USA        | 15000 | 4572  | 1,2,3,4       |
| RMP131SE    | 19900 | Limerick, Ireland   | 8202  | 2500  | 1,2,3,4       |
| RME131SE    | 18800 | Portsmouth, U.K.    | 12812 | 3845  | 1,2,3,4,5,6,7 |
| RME131SE    | 18800 | Portsmouth, U.K.    | 13199 | 4024  | 1,2,3,4,5,6,7 |
| RME131SEA   | 15800 | Blackpool, U.K.     | 12845 | 3918  | 2,3           |
| RMP131SE    | 14300 | Blackpool, U.K.     | 12850 | 3917  | 2,3           |
| RMP131SE    | 13900 | Blackpool, U.K.     | 12850 | 3917  | 2,3           |
| MP131SE     | 11500 | London, U.K.        | 18400 | 5000  | 2,3           |
| MP131SE     | 10400 | Cairo Egypt         | 21328 | 6500  | 2,3           |
| MP131SE     | 9900  | London, U.K.        | 55760 | 17000 | 3             |
| RME129SE    | 14900 | Seoul, South Korea  | 1967  | 800   | 2,7           |
| RMP129SE    | 18400 | Seoul, South Korea  | 2955  | 900   | 3,4,6,7       |
| ME127SE     | 13500 | Valladolid, Spain   | 19885 | 8000  | 2,3,4         |
| MP116SE     | 11400 | London, U.K.        | 24600 | 7500  | 3             |
| MP116SE     | 11800 | London, U.K.        | 27880 | 8500  | 3             |
| RME115SE    | 18800 | Suffolk, U.K.       | 18077 | 4900  | 3,4,5,7       |
| MP115SE     | 13100 | Leicester, U.K.     | 20670 | 6300  | 3,5,6         |
| RMP113PJ/SE | 13400 | Glasgow, Scotland   | 7650  | 2300  | 1,2,3,5       |
| MP109SE     | 15400 | Bangkok, Thailand   | 11810 | 3600  | 2,3,4         |
| MP108SE     | 15300 | Bangkok, Thailand   | 11810 | 3600  | 2,3,4         |
| MP109SE     | 15200 | Bangkok, Thailand   | 11810 | 3600  | 2,3,4         |
| ME108PJ     | 17800 | Bern, Switzerland   | 5203  | 1586  | 1,2,3,4,6     |
| RMP105SE    | 19800 | Omsk, Russia        | 6889  | 2100  | 1,2,3,4       |
| MP106SE     | 19000 | Madrid, Spain       | 23780 | 7250  | 3,5,7         |
| MP104SE     | 10500 | Cairo, Egypt        | 12140 | 3700  | 2             |
| ME101SE     | 19300 | Perth, Australia    | 4265  | 1300  | 2,4           |
| RMP101PJ    | 14500 | Brighton, England   | 10500 | 3200  | 2,3,6         |
| MP100PJ     | 7800  | London, U.K.        | 9000  | 2743  | -             |
| MP99SE      | 13300 | Paris, France       | 13780 | 4200  | 3,4           |

|        |       |                    |       |      |         |
|--------|-------|--------------------|-------|------|---------|
| ME98RL | 11700 | Houston, USA       | 15000 | 4570 | 2, 3, 4 |
| MP908E | 14100 | Cairo, Egypt       | 13940 | 4250 | 2, 3, 4 |
| MP908E | 14200 | Cairo, Egypt       | 13940 | 4250 | 2, 3, 4 |
| MP908E | 15100 | South London, U.K. | 8200  | 2500 | 5       |

| LEGEND                                              |                                    |
|-----------------------------------------------------|------------------------------------|
| Machine Model Number Denotes TBM Diameter in inches |                                    |
| Machine Type Designation                            | Ground Type Designation            |
| R Rock                                              | 1 Boulders & Cobbles               |
| M Open Mode                                         | 2 Sand & Gravel                    |
| MP Semi-Closed Mode                                 | 3 Plastic/Silt/Clay/Marl           |
| ME EPB Mode                                         | 4 Silt                             |
| SE Segment Erector                                  | 5 Shale, Chalk, Glacial Till, Marl |
| RL Rib and Lagging                                  | 6 Sandstone, Mudstone, Limestone   |
| PJ Pipe Jacking                                     | 7 Hard Rock over 80 MPa            |
| A Automated Unloader                                |                                    |

---

**APPENDIX D**

**APPENDIX D**

**LITERATURE CITED**

**LITERATURE CITED**

---

**LITERATURE CITED**

Council on Environmental Quality (CEQ). 1997. *Considering Cumulative Effects Under the National Environmental Policy Act*.

Federal Aviation Administration (FAA), U.S Department of Transportation. 2002. *Second Supplement to the Draft Environmental Impact Statement for the Proposed Expansion of Runway 9R-27L, Fort Lauderdale-Hollywood International Airport, Broward County, FL*. November 2002.

Florida Department of Environmental Protection (FDEP). 2000b. *Strategic Beach Management Plan, Central Atlantic Coast Region*. Office of Beaches and Coastal Systems. October 2000.

Florida Department of Environmental Protection (FDEP). 2003. *Strategic Beach Management Plan, Southeast Atlantic Coast Region*. Office of Beaches and Coastal Systems. July 2003.

Florida Department of Environmental Protection (FDEP). 2004. *2004 Hurricane Recovery Plan for Florida's Beach and Dune System*. Division of Water Resource Management, Bureau of Beaches and Coastal Systems. November 2004.

Florida Public Service Commission (FPSC). 2003. *A Review of Florida Electric Utility 2003 Ten-Year Site Plans*.

Han-Padron Associates (HPA). 2003. *Sedimentation Impact Assessment for Directional Drilling operations – Dania Beach, Florida*. Prepared for AES Ocean Express LLC. April 2003.

Haubner, Dan. 2004. *Corps Cleans Out Ports Post-Storm*, in *Shoreline*. A monthly electronic publication of the Florida Shore & Beach Preservation Association. October 2004.

**LITERATURE CITED**

---

Jordan, T. 2005. Personal communication on February 1, 2005, between P. Cutt (COE Jacksonville District) and T. Jordan (COE Planning Division) concerning Port Everglades navigation improvements.

Kimley-Horn and Associates. 2004. Traffic Impact Analysis -- AES Ocean Express Pipeline Dania Beach Traffic Circle. Prepared for Haley & Aldrich, Inc. November 2004.

Public Employees for Environmental Responsibility (PEER). 2002. A Professional Jury Report on the Biological Impacts of Submarine Fiber Optic Cables on Shallow Reefs off Hollywood, Florida. December 2002.

U.S. Army Corps of Engineers (COE). 2003. Final Environmental Impact Statement: Broward County Shore Protection Project, Segments II and III, Broward County Florida. Jacksonville, FL

U.S. Army Corps of Engineers (COE). 2004. Final Environmental Impact Statement: Miami Harbor General Reevaluation Report Study. January 2004.

**FEDERAL ENERGY REGULATORY COMMISSION**

ROUTING CODE PJ-11.3  
WASHINGTON, D.C. 20426

OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

**FIRST CLASS**