MILLENNIUM
PIPELINE

October 26, 1999

Steven C. Resler, Supervisor of Consistency Review and Analysis
New York Coastal Management Program
Department of State
Division of Coastal Resources
41 State Street
Albany, New York 12231-0001

Re: Millennium Pipeline Company, L.P.
Docket No. CP98-150-000

Dear Mr. Resler:

As a follow-up to our meeting on September 10, 1999, enclosed please find a report prepared by Lawler, Matusky & Skelly Engineers LLP to supplement Millennium Pipeline's prior Coastal Management Plan ("CMP") consistency submissions. This submission should resolve all issues concerning the Project's CMP consistency.

We are also sending copies of this document to all Federal and State agencies that are involved with the review of the Project, and will be filing copies in the libraries and other locations that have been maintained as public repositories for information concerning this Project.

Please feel free to contact me at 607.773.9116 if you have any questions or comments. We look forward to our meeting on Friday to discuss the contents of this submission.

Very truly yours,

Richard E. Hall, Jr.
MPL Permitting Manager

cc: Millennium Pipeline Company, L.P.

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MILLENNIUM PIPELINE PROJECT

NEW YORK STATE COASTAL ZONE MANAGEMENT POLICY CONSISTENCY DETERMINATION

October 1999

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1. REGULATORY AUTHORITY

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. § 1451 *et seq.*) was enacted by Congress to balance the competing demands of growth and development with the need to protect coastal resources. The stated policy behind this law is to ". . . preserve, protect, develop and, where possible to restore or enhance, the resources of the nation's coastal zone . . ." 16 U.S.C. § 1452(1). The primary means of achieving this balance is through coastal zone management programs adopted by the states and designed to regulate activities that could affect coastal areas. The CZMA offers incentives to encourage the coastal states and territories to exercise their full authority over coastal areas through development of coastal zone management programs, which are consistent with minimum federal standards. The Coastal Zone Act Reauthorization Amendments of 1990 strengthened the CZMA by requiring the state programs to focus on controlling land use activities and on the cumulative effect of activities in coastal zones.

In 1981, New York State adopted the Waterfront Revitalization and Coastal Resources Act (New York Executive Law § 910 *et seq.*) creating the New York State Coastal Management Program (CMP). The CMP received federal approval in 1982 [47 FR 47056 (22 October 1982)], authorizing New York to implement the federal CZMA through its CMP. The CMP embodies 44 policy statements supportive of the intent to promote a balance between economic development and coastal resource preservation and optimization. The State of New York currently administers its Federally approved CMP through the New York State Department of State (NYSDOS). Pursuant to the Federal CZMA, New York State has defined its coastal zone boundaries and the policies to be utilized in evaluating projects occurring within these designated zones.

2. DESCRIPTION OF THE MILLENNIUM PIPELINE PROJECT

Millennium Pipeline Company, L.P. (Millennium or Applicant) has applied to the Federal Energy Regulatory Commission (FERC) for a Certificate of Public Convenience and Necessity to construct, acquire, own and operate the Millennium Pipeline (the Project). This proposed project is a 424-mile-long natural gas mainline that will extend from an interconnection in Lake Erie at the Canada/United States (U.S.) border, through southern New York, to Mount Vernon, New York. Figure 1 illustrates the proposed route for the proposed project. In addition, Millennium requested a Presidential Permit authorizing construction, operation, and maintenance of facilities at the International Border in Lake Erie for the importation of natural gas. The Millennium Pipeline and associated pipeline facilities will follow existing utility corridors and easements for 86% of the pipeline route.

The proposed project will be an underground natural gas pipeline system consisting of 36- and 24-inch diameter pipe that will traverse the floor of Lake Erie, twelve New York State counties, and the Hudson River at Haverstraw Bay. The proposed project represents a $650 million capital investment in New York's energy future. The purpose of the Millennium Pipeline Project is to transport up to 700,000 decatherms of natural gas per day (dth/d) and to provide firm transportation services for nine shippers for natural gas service beginning on 1 November 2000. Table 1 identifies these nine shippers with precedent shipping agreements in place with Millennium. In addition, Millennium will lease 14,000 dth/d of capacity to Columbia Gas Transmission Corporation. The Millennium Pipeline will be able to transport the equivalent of enough gas to supply 2.1 million homes with natural gas per year, or five large electric generating facilities on an annual basis.

Table 1
List of Millennium Pipeline Project Precedent Agreements

Customer	Term of Service (yrs)
CoEnergy Trading Company	20
Columbia Energy Services	15
Duke Energy Trading & Marketing, L.L.P.	15
Engage Energy (U.S.) L.P.	10
International Business Machines Corp.	10
North East Heat & Light Company	15
PanCanadian Energy Services, Inc.	10
Stand Energy Corporation	20
TransCanada Gas Services - A Division of TransCanada Energy Ltd.	10

Energy Benefits of the Project

The local, regional and national energy benefits of the Millennium Pipeline Project are significant. The Millennium Pipeline will:

Provide an economic and efficient means to transport U.S. and Canadian gas to growth markets in the eastern U.S., including New York, New Jersey, and Pennsylvania;

2. Provide a significant source of clean-burning natural gas to areas burdened with air and water pollution problems, and coal and oil burning stationary sources;

3. Provide a greater diversity of supply for existing customers and a new source of supply for markets not currently served by natural gas; and

4. Expand competition for emerging markets, including local distribution companies.

Energy Demands for the Project

The Northeast corridor is one of the fastest growing natural gas markets in the U.S. According to a recent study, Northeastern gas consumption will increase 45 % over current usage by the year 2015 (Gas Research Institute 1999). Additional consumption needs could be generated by the increasing number of regional nuclear power plants that are being retired and removed from service. In fact, as of May 1998, more than 75% of the 8,800 megawatts (MW) of nuclear capacity, which is projected to be taken out of service in the near future, is located in the northeastern U.S. and Canada (Washington International Energy Group 1998). While there are plentiful reserves of natural gas in the U.S. and Canada to meet this growing need, insufficient pipeline infrastructure is available to economically supply customers in the Northeastern U.S.

Air Quality and Water Quality Benefits of the Project

In recent years, under both public and governmental pressure, there has been a growing demand for clean and efficient energy. This is especially true in the Northeastern U.S., which is faced with some of the highest population densities in the country, corresponding energy demands, and elevated air pollution. In particular, New York State has indicated it will require electric generation plants to significantly reduce emissions of acid rain forming nitrogen oxides (NO_x) and sulfur dioxide (SO_2) (New York Times 14 October 1999). As a result, natural gas has become, and will continue to be, the energy source of choice for new electric utility and independent power plants in the U.S. because of its extremely low emission levels and short construction lead-times (American Gas Association 1997).

However, in many areas in the northeastern U.S., dependable and competitively priced sources of natural gas do not exist. Therefore, most electric generating facilities currently operate by burning high emitting coal or oil. These traditional fossil fuel-burning power plants contribute to air pollution problems, emitting high levels of SO_2, NO_x, carbon monoxide (CO), carbon dioxide (CO_2), and particulate matter (PM) into the atmosphere. As noted above, SO_2 and NO_x are precursors of acid rain, and NO_x is one of the two primary precursors for smog or tropospheric ozone. CO_2 has been credited as one of the chief sources of the global warming trend, and PM has received heightened attention as a source of respiratory ailments.

Under the 1990 Clean Air Act Amendments [42 U.S.C. § 7511c(a)], the entire state of New York was classified as part of the Northeast Ozone Transport Region (OTR). The OTR includes the twelve northeastern-most states. The OTR was established because Congress recognized that due to the proximity and climatological interconnectedness of these states, arresting and preventing ground-level ozone was a regional problem. Accordingly, all states in the OTR must coordinate their efforts to curb ozone-producing emissions. Therefore, decreasing NO_x emissions in New York, New Jersey and Pennsylvania will benefit the entire OTR.

In addition to inclusion in the OTR, certain areas within New York have been designated as severe, moderate and marginal non-attainment areas for ozone. In particular, the greater New York City metropolitan area has been designated as severe non-attainment for ozone and non-attainment for CO, with New York City designated as non-attainment for PM. Therefore, air pollution in general is a statewide concern, but in particular to the greater New York City

metropolitan area. Moreover, New York's Adirondack Mountains have been scarred by the effects of acid rain caused by regional and in-state emissions of NO_x and SO_2 (Times Union 19 September 1999).

Utilizing natural gas as an energy source will contribute to the overall reduction of air pollution in the Northeast and New York State. The United States Environmental Protection Agency (USEPA) has estimated that in 1994, 70% of the nation's total SO_2 emissions and 33% of NO_x came from fossil-fuel-fired electric generation plants (USEPA 1996).

Several of New York State's twenty-one coal-burning power plants are located along Millennium's proposed route [Environmental Advocates, New York Public Interest Research Group (NYPIRG) Fund and Pace Energy Project 1998]. Providing a supply of natural gas to these plants presents a tremendous opportunity to improve their emissions either through complete retrofitting, or through selective reburn applications. Reburn involves the injection of natural gas into a coal or oil-fired boiler to produce NO_x reductions of 50 to 70%, and SO_2 reductions of 20 to 25% (American Gas Association 1997).

Moreover, many coal and oil-fired facilities must use "scrubbers" in their exhaust stacks to reduce emissions of air pollutants (American Gas Association 1997). The scrubbers result in large volumes of ash requiring proper disposal. This creates a solid waste disposal problem and increases operating costs of the electric generating plants. In contrast, natural gas-fired boilers do not need scrubbers or other add-on pollution controls (American Gas Association 1997).

Economic and Socioeconomic Benefits

The Millennium Project presents many economic and socioeconomic benefits to the State of New York, both during and after completion of the Millennium Pipeline. Some of these benefits include the following.

Improving the regional supply of, and access to, natural gas will help accelerate the conversion of old coal and oil-fired power plants to new cleaner gas-fired facilities.

This cost-competitive access to gas supply will produce lower energy costs for homeowners, businesses and industry.

The pipeline will strengthen the region's energy infrastructure, offering competitively priced supplies of energy to current and new customers, and creating additional incentive for economic development. The presence of a new, high-volume energy delivery system in the state could also attract additional investment into the state.

Construction of the facilities will have a minimal impact on the environment since the pipeline follows existing easements and utility corridors for nearly 90% of its length.

Millennium will generate millions of dollars annually in state property taxes, which will be allocated to the counties and municipalities in which the pipeline is located. State revenue will also be created by franchise and sales taxes.

During the construction, more than 4000 union construction workers will be employed to install the pipeline. This will present an employment opportunity for New York workers and will inject a significant amount of money into the state's services industry.

Native American lands will not be impacted by construction.

Environmental Impacts from the Proposed Project

The potential environmental impacts of the proposed project have been reviewed in accordance with the National Environmental Policy Act (NEPA). A draft Environmental Impact Statement (DEIS) was issued by FERC in April 1999. The FERC Staff determined in the DEIS that the Millennium Project, if constructed and operated in accordance with the mitigation measures outlined in the DEIS, would be an environmentally acceptable project. Nevertheless, in an on-going effort to mitigate environmental impacts, Millennium has continued to refine the Project.

Due to the nature of a pipeline project, most of the environmental impacts are incurred during the construction phase. Beyond construction, environmental impacts associated with gas pipelines are virtually nonexistent. Natural gas pipelines are the nation's safest method of transporting energy. Once operational, pipelines create virtually no environmental impacts. The only physical evidence of a pipeline will be a narrow maintained right-of-way, line markers, and, if necessary, small above ground maintenance facilities.

Backed by the project sponsors' long-standing commitment to environmental safety and integrity, Millennium has committed to constructing and operating the proposed project in the most environmentally rigorous manner. Specific Project commitments include:

Trenching techniques to minimize effects on aquatic ecosystems;

Utilizing existing utility corridors for 86% of its length; and

Implementation of vigorous right-of-way restoration and reconstitution programs.

Millennium also has a proven track record in construction and restoration in a variety of geological formations, including wetlands, watercourses, and rocky terrain.

Natural Gas Pipeline Safety Issues

Pipelines provide an extremely safe means of transporting natural gas. The natural gas pipeline industry overall has a very good safety record, and incidents involving natural gas pipelines are extremely rare. Once built, the two main causes of pipeline damage are: 1) people unknowingly digging around an existing pipeline (i.e., third party damage); and 2) corrosion to the steel of the pipe itself.

Marking pipeline areas and notifying landowners, contractors and others who might be working around pipelines, of the necessary precautions required when working in close proximity to

natural gas pipelines, are an effective means of preventing third party damage. Natural gas pipelines, transmission facilities, and rights-of-way are marked and maintained according to federal guidelines. Regular communications with landowners, contractors and others working around pipelines are maintained so that they understand the safety issues and take the proper precautions. Contractors, utilities and other underground facility operators participate in programs like the Underground Facilities Protection Organization of New York (UFPO) which notifies utilities and contractors before people begin excavating near pipeline right-of-ways. Pipelines are monitored 24 hours per day, 365 days per year from gas control facilities, as well as by foot and air patrols. This regular monitoring will ensure the safe operation of the delivery system.

The second major threat to pipelines is from corrosion that occurs on pipelines constructed prior to about 1970. Prior to that time, pipeline construction did not commonly involve the use of pipeline coatings and cathodic protection, two measures that are widely used today. Current pipeline coating and cathodic protection techniques have virtually eliminated the possibility of pipeline corrosion problems.

Pipeline companies continuously monitor their systems to detect leaks. They are able to detect these leaks by monitoring pressure, walking or flying over the lines looking for dead grass along the route, using automated, remote-controlled robots called "smart pigs" to run through the lines to detect corrosion, as well as a number of other measures. Pipeline leaks are generally slow developing and are easily detectable before they become serious. Moreover, natural gas is very difficult to ignite. It is only with the precise combination of air and gas that combustion will occur. If natural gas does ignite, the fire rises straight up because natural gas is lighter than air – it does not spread out.

The proposed pipeline will be 36- and 24-inch-diameter mill coated steel. The line will have a maximum allowable operating pressure of up to 1440 pounds per square inch (psi). The U.S. Department of Transportation (DOT) requires that the line be tested at 110 percent to 150 percent of its operating pressure to ensure the pipe's integrity. The area in which it is located determines the thickness of the pipe wall. In all areas, the pipe wall thickness will be at least one-half inch.

Throughout their construction and subsequent operation, natural gas pipelines are subjected to a number of rigorous measures as part of a safety system for protection and maintenance. All of these procedures must meet DOT standards. Some of these procedures and standards include the following:

Welding: All welders must pass a stringent welding test to gain certification to work on the pipeline. Besides normal visual inspection, all welds are x-rayed to further ensure the integrity of the pipeline.

Hydrostatic Tests: Before being placed in operation, the line is filled with water and pressurized to a level from 110 percent to 150 percent of its operating pressure to test the strength of the pipe.

Cathodic Protection: This is used to minimize corrosion on the pipe over time and to prevent pipeline failure. The pipe is cathodically protected by impressing a small electrical current through the pipe. The electric charge is harmless to the surrounding environment.

Patrolling: A pipeline patrol system is maintained which meets all federal safety regulations. Patrols are performed on a regular basis, with frequency depending on the location of the line.

Pipeline Safety Program: This program involves communicating pipeline safety information to local municipalities, contractors and residents along all the pipeline system.

3. COASTAL ZONE CONSISTENCY POLICY

Sections of the proposed project are within the coastal zone boundary of New York State. Specifically, the Project's proposed Hudson River crossing at Haverstraw Bay and the Lake Erie Coastal zone landing at Ripley, New York, are within New York's coastal zone. Thus, the following assessment identifies the CMP policies and evaluates the Project's consistency with each. This consistency evaluation is provided to enable the NYSDOS, and other agencies required under the CZMA to consider CMP consistency, to evaluate the effect of the proposed project on New York's coastal zone resources.

3.1 HUDSON RIVER – HAVERSTRAW BAY

3.1.1 Description of Proposed Action

The proposed route for the Millennium Pipeline would cross the Hudson River at Haverstraw Bay in Rockland and Westchester Counties, following a 2.1-mile route from Bowline Point on the western side of the Bay to the Veterans Administration hospital property on the eastern-shore.

The proposed Hudson River-Haverstraw Bay route from Bowline Point to the Veterans Hospital property facilitates Millennium's plans to provide gas service to Southern Energy New York's Bowline Point Generating Station, located on the western shore of Haverstraw Bay in Haverstraw, New York. The proposed route also minimizes pipeline mileage to the proposed terminus at Mount Vernon, New York, through use of existing right-of-ways.

While service to the Bowline Point Generating Station and minimization of total pipeline mileage were two considerations favoring the proposed Haverstraw Bay route, Millennium evaluated other Hudson River routing options – particularly routes north of Haverstraw Bay, where directional drilling of the Hudson River could potentially have reduced environmental impacts. No other routes evaluated were determined to be acceptable for economic and environmental reasons.

Alternative Routes Evaluated

Millennium evaluated two alternate Hudson River pipeline crossing routes (Alternative 1 and Alternative 2). Both alternate routes would cross the Hudson River at the same location north of Stony Point, the northern limit of Haverstraw Bay. The pipeline crossing would extend from Tompkins Cove, New York, on the western shore to Buchanan, New York, on the eastern shore. The primary difference between the two alternatives and the selected Haverstraw Bay route, besides the actual crossing location and construction techniques employed, is the route each alternative would follow to reach the western shore landfall. The two Hudson River alternatives are described below:

Alternative 1: Alternative 1 would deviate from the selected Haverstraw Bay route near the Ramapo Station, turning northeast adjacent to the Algonquin pipeline and Consolidated Edison powerline rights-of-way. The alternate route would continue adjacent to these rights-of-way for approximately 10 miles to the Hudson River. The Hudson River is about 5400 feet wide at this point. On the eastern shore, the pipeline would continue east adjacent to the Algonquin right-of-way for about 1-mile to the Consolidated Edison right-of-way where it would turn south to rejoin the proposed Haverstraw Bay route. Alternative 1 would be adjacent to existing rights-of-way for all but about 700 feet.

Alternative 1 would be approximately 5 miles longer that the corresponding segment of the proposed route (not including the 4.1 mile long lateral line to Bowline Point that will be constructed regardless of the river crossing location) and would affect at least 58% more land area. The alternate route would also cross through at least three more subdivisions and other congested areas and two properties listed on the National Registry of Historic Places (NRHP) (Harriman State Park and Palisades Interstate Parkway), which would not be affected by the selected Haverstraw Bay route. In addition, construction at the alternate Hudson River crossing location may not be feasible because of existing utility and industrial development on both banks. The one advantage of this northern Hudson River crossing route is the potential to directional drill the entire length of the crossing thus avoiding potential environmental impacts associated with in-water excavation and backfilling. However, sub-strata sediments along the northern route may not support directional drilling and there is no staging area on either shore that would permit assembling of the pipe to be pulled through the drilled hole.

The potential for greater human and environmental impacts, greater length, impact to NRHP-listed properties, congestion along existing pipeline right-of-ways, and lack of an acceptable crossing technique at this location result in the elimination of Alternative 1.

Alternative 2: Alternative 2 would begin near mile point 385.1 at the intersection of a powerline by following that powerline westward for about one mile and crossing U.S. Route 202. The route would then bear northwestward along another utility corridor for about 0.5 miles crossing Minisceongo Creek and Ivy Road. Alternative 2 would then bear northward east of Letchworth Village State Mental Hospital and would cross Suffern Road and Willow Grove Road. It would continue northward through a saddle on Rider

Hill until it intersects with the Algonquin right-of-way about 0.1-mile southwest of Cedar Flats Road. Alternative 2 would then continue along the Algonquin right-of-way to cross the Hudson River at the same location as Alternative 1 and would continue with the same alternative routing as Alternative 1 on the eastside of the Hudson River.

Alternative 2 would be 0.2 mile shorter than Alternative 1; however, both terminate at the same Hudson River crossing, and Alternative 2 would require substantially more new right-of-way compared to Alternative 1. In addition, Alternative 2 would cross the NRHP-listed Palisades Interstate Park. Greater environmental impacts are associated with Alternative 2, along with the same Hudson River crossing problems. Thus, Alternative 2 is not considered a viable alternative to the Haverstraw Bay route.

Alternate Construction Techniques

Millennium evaluated three pipeline crossing techniques for the Hudson River/Haverstraw Bay crossing. The three techniques were the open-water lay-barge method, directional drilling and open-cut, bottom-pull method. A summary of each technique, including the preferred method, the lay barge technique, is presented below:

The Millennium Pipeline will be constructed across Haverstraw Bay using an innovative open-water, lay barge method, with all excavated material, to eventually be used as trench backfill, stockpiled in barges. Best management practices (BMPs) will be used, as necessary, to further minimize the potential for adverse environmental impacts. The principal features of the construction plan are:

Trench Excavation: The trench will be excavated using a 6 cubic yard (CY) "environmental" or closed bucket in shallow water areas (within 500 feet of shore) and a 22 CY environmental or closed bucket will be used in deeper water areas. The trench will be excavated to a sufficient depth to provide 5 feet of cover over the pipeline outside of the navigation channel and 15 feet of cover within the navigation channel. The bottom width of the trench will be 10 feet over the entire length of the Haverstraw Bay crossing; in the non-channel areas, the top of the trench will be 70-feet wide and in the channel the top opening of the trench will be 130-feet wide.

Dredged Material: Dredged material removed from the trench will be stockpiled in various sized bottom-dumping barges.

- Pipe Laying: A lay-barge will be used to weld and lay the 24-in pipe. (NOTE: 24-in pipe will be encased in 3-in. of concrete material.) The pipeline will be installed by floating it off the back of the lay-barge and then removing the floats to allow the pipe to settle into the trench.

- Trench Backfilling: After the pipeline has been placed in the trench, backfilling will begin. In deep water areas, a bottom-dump barge will be positioned directly over the trench (Differential Global Positioning System and sonar assisted, if necessary), silt curtains will be deployed around the barge, as necessary, and the dredged material

will be placed over the pipeline. In shallow water areas, an environmental bucket will be used to remove the dredged material from the barge and place it over the pipeline. The trench will not remain open for more than two weeks in any given area. As an additional BMP, a dredging operations monitoring plan will be developed, in consultation with resource agencies, to monitor the efficacy of the BMPs and to adjust the use of the BMPs to mitigate adverse environmental impacts to the extent practicable.

The entire 2.1-mile Haverstraw Bay crossing from Bowline Point on the western shore to the Veterans Hospital on the eastern-shore should be completed in approximately three months. The anticipated commencement date for work in the Hudson River is 1 July with an expected completion date of 30 September. This window is still subject to ongoing discussions with responsible Federal and state agencies. However, this construction period appears to be the optimum to minimize aquatic population impacts while at the same time meeting the 1 November in-service date.

Two other pipeline construction techniques were evaluated for the Haverstraw Bay crossing; directional drilling and an open-cut bottom-pull method. The two alternative methods are discussed below:

Directional Drilling: Directional drilling involves drilling a pilot hole underneath the waterbody and then enlarging the pilot hole until the hole is large enough to accommodate the pipe. The technique requires a large staging area to permit welding of the pipe sections, completion of the outer coating, and then alignment prior to pulling the pipe through the hole. In general, hard or consolidated sediments are required to maintain the diameter of the hole prior to and during the drilling and pipe pulling procedures. At the location where the drill exits the bottom sediments, there would be a large volume (approximately 5400 CY for both drill holes) of drill muds (special bentonite clays) discharged to the waterbody under pressure.

Several problems were noted related to the use of this technique in Haverstraw Bay. First, the loose sediments will likely not maintain the hole diameter following drilling. The distance across Haverstraw Bay precludes drilling from one side to the other. Therefore, the pipe would need to be installed outward from each shore to the limit of drilling. Directional drilling from each shore would result in two separate discharges of drilling muds to Haverstraw Bay. In addition, as previously stated, the technique requires a large staging area for pipe assembly. A sufficient staging area is present on the western shore (Bowline Point); however, the shore zone on the eastern shore (Veterans Hospital) is not large enough to permit pipe preparation. It was determined that directional drilling was not a viable technique for the Haverstraw Bay crossing.

Open-Cut Bottom-Pull Method: The initial technique proposed for the installation of the Millennium Pipeline across Haverstraw Bay was the open-cut, with a mechanical dredge, bottom-pull method. Because the crossing is approximately 2.1 miles in length, two dredge plants would be used to excavate the trench and install the

concrete-coated pipeline. Dredged material excavated from the trench would be stockpiled in the water on either side of the trench. Due to positioning constraints and underwater resistance each dredge bucket would need to be brought to the surface prior to the bucket being repositioned and lowered to the bottom before placement along the trench. The procedure would need to be repeated for backfilling. Resource agencies expressed concerns regarding the sedimentation and turbidity that would result from: [1] the extended time period during which dredged material would be stockpiled in the water (approximately 3 months), [2] the extended time period during which the trench would remain open, and [3] the use of open-bucket dredges to excavate and backfill the trench.

Millennium evaluated the bottom-pull method, and though it is believed that this technique could be employed in an environmentally acceptable manner for the Haverstraw Bay crossing, in an effort to identify the most environmentally acceptable crossing technique, the method was changed to the lay-barge method described above.

Environmental Impacts Associated with Lay Barge Dredging Method

Installation of the pipeline would involve the construction of an open trench across Haverstraw Bay with subsequent backfilling to the approximate original bottom elevation after the pipeline is placed on the bottom of the trench. The sequential construction activities would be completed within 2 weeks in any given area over the 2.1-mile wide section of the Bay. The bottom width of the trench would be 10 feet; the top of the trench would be 70 feet wide in nearshore areas and 130 ft wide in the maintained navigation channel.

The method of construction, the dredging equipment employed, the season and duration of construction and BMPs employed for dredging would all have an influence on the potential for adverse environmental impacts. The proposed project uses the best available technology to construct the crossing and will result in the least environmental impact while meeting all applicable regulations, standards and criteria. The following sections address the effects of construction on aquatic resources and the rate of recovery of the habitat after construction is completed. The completed pipeline would have no effect on aquatic resources.

Haverstraw Bay is a productive area of the Hudson River, which supports diverse benthic and fish communities. Among the fish community there are recreationally, commercially and ecologically important species. Numerous fish species migrate through Haverstraw Bay to upstream spawning areas where the young remain in nursery areas or emigrate through the Bay to ocean waters. The Bay is important for overwintering striped bass and sturgeon. The benthic community supports this diverse fish community as well as blue crabs, a commercially important invertebrate that is seasonally abundant in the Bay. Because of the importance of this estuarine habitat, Haverstraw Bay is designated as significant coastal fish and wildlife habitat by NYSDOS.

The primary adverse impact of pipeline construction would be the disturbance to bottom habitat. There would be a temporary loss of habitat and benthic organisms in the material removed to

create the trench. In addition, there would be sediment deposition in undisturbed benthic habitat adjacent to the trench caused by the general sediment disturbance of the dredge bucket contacting the bottom and pulling away from the bottom with each lift. This effect would be limited to the near vicinity of the trench in shallow water, but the effect would spread further in deeper sections and in the channel. Backfilling would also distribute sediments beyond the footprint of the trench. (Discussed in greater detail below.)

Backfilling over the pipeline would return the bottom substrate to its approximate pre-dredge contours. Because the dredging would increase the volume of the original compacted sediments, there would be a period of consolidation after the sediment was replaced over the trench. The natural processes of scour and deposition would quickly restore the substrate to its equilibrium depth in the area of the trench.

The sediments in the project area contain low levels of metals and other chemical contaminants. These contaminants are likely to be present in similar concentrations in the general vicinity of the pipeline route. Although dredging would disturb the contaminants in the sediments, the vast majority of sediments will be retained in the barges or resettle within or close to the trench. When the sediment is backfilled into the trench the resulting concentrations of contaminants would be very similar to pre-dredge levels in the footprint of the trench and in adjacent areas which receive sediment deposition as a result of the construction. A silt curtain could be used to reduce the spread of sediments during backfilling in the channel areas, as necessary. The dredging and backfilling operations have little potential to disperse contaminants that could have an adverse effect on aquatic life.

Dredge plume modeling (conducted by GAI) was used to estimate increases in suspended solids, the extent of the visible plume, and the thickness of sediment deposition that would result from dredging and backfilling the Haverstraw Bay crossing trench. The model results were broken down into four components defined below:

Component 1: Dredging in shallow water using a 6 CY environmental bucket;

Component 2: Backfilling in shallow water using a 6 CY environmental bucket;

Component 3: Dredging in deep water using a 22 CY environmental bucket; and

Component 4: Backfilling in deep water using a bottom dump barge (without the deployment of silt curtains).

The characteristics of the resulting turbidity plumes are summarized in Table 2. The estimated steady-state visible plume resulting from the dredging operations is 60 feet wide (normal to flow) by 35 feet long (in the direction of flow) and 90 feet wide by 460 feet long for shallow water dredging (Component 1) and deep water dredging (Component 3), respectively. The visible plume associated with shallow water backfilling (Component 2) is estimated to be 90 feet wide by 170 feet long. The visible plume for the bottom dump barge discharge (component 4) is larger at 500 feet wide by 400 feet long, but of very short duration (30 minutes or less). The visible

plume areas are approximately 2100 square feet (ft^2), 15,300 ft^2, 41,400 ft^2, and 200,000 ft^2 (per barge dump) for Components 1, 2, 3, and 4, respectively.

The plumes for Components 1 through 3 assume the dredge operates over a 50-foot length of trench before spudding forward; the plume dimension normal to flow was increased by this 50-foot width to account for the moving source. The estimates do not include an interaction between the plumes since they should be sufficiently far apart.

It is estimated that 16 days will be required to complete construction in the shallow water areas (Component 1), 19 days will be required to backfill the shallow water trench sections using the 6 CY bucket (Component 2), and 36 days will be required to excavate 9900 feet using the 22 CY environmental bucket (Component 3), with 52 barge loads of sediment re-deposited in the trench using a bottom dump barge (Component 4). The estimated construction times, sediment quantities, and distances translate to average approximate production rates of 65 feet per day for Component 1, 53 feet per day for Component 2, 275 feet per day for Component 3, and 2 barge dumps per day for Component 4.

The total area impacted by the operation on any given day includes all areas covered by a visible turbidity plume for any length of time. Using this assumption with the progress rates developed in the paragraph above, the areas impacted by Components 1, 2, 3, and 4 are approximately 2700 ft^2/day, 16,100 ft^2/day, 227,700 ft^2/day, and 400,000 ft^2/day (Table 2).

Backfilling in the shallow, near-shore areas (Component 2) results in the maximum turbidity impact (170 feet long visible plume) and dredging (Component 3) provides the largest turbidity plume (460 feet long visible plume) in the central portion of the crossing. The total area impacted by the crossing can be calculated by multiplying the length of the visible plume by the trench length for each area (1000 feet for Component 2 and 9900 feet for Component 3), then summing the two quantities. This results in a total impacted area of 4,724,000 ft^2. Assuming that Haverstraw Bay averages 13,940 feet wide and 22,000 feet long, a maximum of 1.5% of the Bay bottom is estimated to be impacted over the duration of the crossing project.

Total suspended sediment concentrations are not expected to exceed 1000 mg/l above ambient conditions except within 30 feet of dredging and backfilling operations. Suspended sediments are expected to disperse to concentrations between 500 mg/l above ambient conditions and 35 mg/l above ambient conditions within the mixing zone, defined as the area within the visible plume and outside of 30 feet from the dredging operation. Concentrations less than 35 mg/l above ambient conditions are anticipated beyond the visible plume.

During dredging operations, the average thickness of redeposited sediment within Haverstraw Bay for components 1, 2, and 3 are estimated to be 0.18 feet, 0.11 feet, and 0.02 feet over the aerial extent of the visible plume. Benthic species living in soft sediments, such as those found in Haverstraw Bay, are able to favorably respond to sediment deposition in this range and greater.

During bottom dumping backfilling operations (Component 4) most of the sediment would be redeposited in the trench. Sediment accumulation is estimated to be 0.25 feet, respectively, just

outside the trench (150 feet from trench centerline) and deposition would continue to decrease between 150 feet and 400 feet. Deposition would be negligible beyond 400 feet.

The estimated total suspended solids (TSS) concentrations resulting from the discharge of stockpiled dredge material from the bottom dump barge will not exceed 1000 mg/l above ambient conditions within 300 feet of the discharge. Turbidity levels are predicted to decrease quickly with the visible plume (35 mg/l above ambient conditions) dissipating within 30 minutes of disposal operation.

The benthic community is expected to recover quickly after backfilling is completed, because there would be large areas of undisturbed habitat on either side of the trench, which would serve to provide recruitment to the disturbed area. Estuarine sediments, particularly in shallow water, are often disturbed by wind and ship generated waves, by unusually high and low tides which create higher than normal tidal currents, and by riverine flooding which creates high current velocities and carries a high sediment load. Estuarine benthic organisms are adapted to the dynamic nature of the sediments, which permits them to respond quickly to the artificial disturbance of dredging.

Dredging would cause a temporary loss of feeding areas for fish over a very small portion of the Bay. The proposed crossing would disrupt approximately 1.5% of the bottom area of Haverstraw Bay. This temporary loss of usable habitat would be limited to one season; there would be no loss in long term productivity because the environmental factors controlling estuarine productivity would not be impacted by the project. The work would be spread out over a three-month period involving a maximum of 1300 feet of the entire crossing at any given time. The benthic habitat disturbed by dredging in the first instance would be well on its way to recovery before the last section of the work was completed.

The occurrence of numerous migratory fish species in the Hudson River Estuary raises concern for the effect of dredging on migratory pathways. The pipeline crossing work is tentatively scheduled for the period from July through September. At that time of year most of the adult fish have completed their upstream migration, but juveniles of various species are moving into the Bay to use it as a nursery area. Discussions with both state and Federal regulatory agencies to determine the best timing for the construction are ongoing. In any event, the staging of the work along the 2.1-mile route would ensure that the vast majority of the width of the river would be available for migration. Even within a 1300-foot work zone, the dredge and backfill operations would only disturb a very small area in the near vicinity of the dredge and barges. In the channel, a silt curtain may be deployed during backfilling. The silt curtain would be in place only during the actual release of sediment, as necessary. This short-term obstruction in a small portion of the channel would have no effect on migratory fish.

Striped bass, sturgeon, and other species overwinter in Haverstraw Bay. The channel area is likely to hold concentrations of fish from December through March. Scheduling the work during summer would avoid these fall/winter concentrations. The area of the channel disturbed for the pipeline would have partially recovered by winter. Because most species are generally inactive during cold water months any reduction in benthic productivity would not have an adverse effect

on fish feeding. Wintering habitat would be fully available to the various species that congregate in this portion of the estuary, in the first winter after pipeline installation.

BMPs would be applied to the dredging operation. An environmental (closed) dredge bucket would be used to minimize the loss of sediment. The lift rate of the bucket would be limited to 2 ft/sec or less to reduce water column turbidity. There would be no barge overflow because material would be retained for backfilling. These measures would ensure that the operations are at the practical limit for minimizing turbidity.

Impacts of Prior Haverstraw Bay Dredging Activities

The Federal channel through Haverstraw Bay is maintained at 32-feet below mean low water (MLW) by the US Army Corps of Engineers-New York District (USACE-NYD). The channel requires periodic maintenance dredging. In the summer of 1986, water quality was monitored during Haverstraw Bay maintenance dredging (Houston *et al.* 1992). Dredging was conducted mechanically using an open bucket with unrestricted lift speed and no silt curtains. This is a worst case example compared to state of the art dredging practices that would be used for the proposed Millennium Pipeline Haverstraw Bay crossing. Under these worst case conditions, maximum daily differences in dissolved oxygen (DO) were under 1.0 mg/l and averaged only 0.1 mg/l. The turbidity plume and suspended solids raised by the dredging was greatest during flood tide. The greatest elevation occurred within a radius of 500 feet, with a return to near ambient conditions between 1250 and 1500 feet from the dredge. The environmental assessment report on the Hudson River Channel maintenance-dredging program (USACE 1988) indicated that the Haverstraw Bay plume extended 750 feet from the dredge.

3.1.2 Review of Coastal Zone Consistency Policy

.) *Restore, revitalize and redevelop deteriorated and underutilized waterfront areas for commercial, industrial, cultural, recreational and other compatible uses.*

Construction of the proposed Haverstraw Bay river crossing would not involve development in deteriorated and underutilized waterfront areas, and thus this policy does not apply.

2) *Facilitate the siting of water-dependent uses and facilities on or adjacent to coastal waters.*

Construction of the proposed project crossing would not involve the siting of water-dependent uses and facilities on or adjacent to coastal waters, and thus this policy does not apply.

3) *Promote the development and use of the state's major ports as centers of commerce and industry, emphasizing the siting, in these port areas, including those under the jurisdiction of state public authorities, of land use and development which is essential to, or in support of, the waterborne transportation of cargo and people.*

Construction of the proposed project crossing would not involve development and use of any New York State major port facility. There are several public and private marinas in the general

vicinity of the proposed project; however, none are involved in the transportation of people or cargo. Since no New York State major port facilities are involved with the proposed project, this policy is not applicable.

4) *Strengthen the economic base of smaller harbor areas by encouraging the development and enhancement of those traditional uses and activities, which have provided such areas with their unique maritime identity.*

Construction of the proposed project crossing would not involve development in a small harbor area, and thus this policy does not apply. It should be noted that the proposed project would not inhibit development at small harbor areas in the project area.

5) *Encourage the location of development in areas where public services and facilities essential to such development are adequate.*

Construction of the proposed river crossing would not result directly in any new development in the area. The proposed project would serve existing industrial facilities, and residential and commercial customers in developed areas where public services and facilities are adequate for such development. It should be noted that there would be adequate gas volumes in the proposed pipeline to permit future development in developed areas. The proposed project would therefore be consistent with this policy.

6) *Expedite permit procedures in order to facilitate the siting of development activities at suitable locations.*

Construction of the proposed project crossing would not involve the siting of development activities; and thus this policy does not apply.

7) *Significant coastal fish and wildlife habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.*

Haverstraw Bay has been identified as significant coastal fish and wildlife habitat (NYSDOS 1987). Significant coastal fish and wildlife habitats are evaluated, designated and mapped under the authority of the Waterfront Revitalization and Coastal Resources. The New York State Department of Environmental Conservation (NYSDEC) evaluates the significance of coastal fish and wildlife habitat (e.g., ecosystem rarity, species vulnerability, human use) and recommends habitat designations to NYSDOS for inclusion in the CMP. The extensive shallow estuarine habitat areas; occurrence of commercial and recreational fisheries; use of the Bay as a nursery, feeding and/or overwintering area for marine and anadromous species; and presence of vulnerable or sensitive species (i.e., endangered or threatened) qualifies Haverstraw Bay as a significant coastal fish and wildlife habitat under the CMP.

The proposed project passes through the upper reaches of Haverstraw Bay, following a 2.1-mile route from Bowline Point on the western shore of the Bay to the Veterans Hospital property on the eastern shore. Construction of the proposed project would temporarily impact the aquatic

and benthic community of this significant coastal fish and wildlife habitat area within the proposed pipeline crossing.

Located approximately 25 miles north of New York City, Haverstraw Bay extends from Stony Point south to Croton Point for approximately six miles, and varies in width from two miles to almost four miles. Most of the Bay is shallow, less than 15 feet deep at MLW, and is the widest portion of the Hudson River estuary. A federal navigation channel, maintained at a depth of approximately 32 feet below MLW is located in the center of Haverstraw Bay.

The Hudson River is approximately 315 miles in length extending from its source at Lake Tear of the Clouds in the Adirondack Mountains to the Battery at the southern end of Manhattan Island (Limburg *et al.* 1986). The lower Hudson River, defined as that section of the Hudson River between the Battery and the Federal Dam at Troy, New York, is approximately 154 miles long. The Federal Dam, constructed in 1832 as part of the New York State canal system, forms the boundary between the tidal estuarine lower Hudson River and the riverine upper Hudson River. An estuary is defined as a semienclosed coastal body of water that has a free connection with the open sea and within which seawater is measurably diluted with fresh water from land drainage (Pritchard 1967). The Hudson River estuary is a drowned river valley (i.e., bottom elevation at the Federal Dam is below sea level), with saltwater intrusion (defined as the northernmost location of 50-mg/l chloride concentration) restricted to the southern portion of the estuary. The geographical position of the salt front ranges over several kilometers during a tidal cycle. The salt front generally reaches northern Newburgh Bay during the summer low flow period.

High spring flows move the salt front down to the Tappan Zee region [mile point (MP) 27]; summer low flows allow the salt front to intrude toward Poughkeepsie (MP 71). The Indian Point and Bowline Point area experiences seasonal variation from fresh water to mesohaline salinities. Salinity in Haverstraw Bay generally varies between 0 and 10 parts per thousand (ppt), depending on the location of the salt front. Intrusion of salt water from the ocean brings about stratification of the estuary. Denser, more saline water follows deeper areas of the Hudson River channel. Irregularities like sills in the river bottom or constrictions in shorelines cause changes in flow direction and velocity, resulting in mixing between freshwater and saltwater layers. The slower flows in shallow shoreline areas, often coupled with inflow tributaries, bring about lower salinities in shallow shore zones. The intrusion of salt from the ocean into the Hudson River is the primary cause of density-induced circulation in the estuary. This net nontidal movement of water seaward in the upper layer and landward in the lower layer of the salinity-intruded river affects the transport of energy, mass, and plankton through the Hudson River.

Despite past disturbances and development, Haverstraw Bay contains considerable fish and wildlife habitat, and provides the most extensive area of shallow estuarine habitat in the lower Hudson River. Extensive areas of shallow bottom create areas of estuarine tidal marshes that contain salinity-tolerant species of submerged and emergent aquatic vegetation, such as saltwater cordgrass, saltmeadow cordgrass, and spike grass. Mudflats contain arrowhead, bulrush, and tapegrass, while the subtidal aquatic beds are populated by waterweed, coontail, naiad, widgeon grass, and pondweeds.

The shallow estuarine waters of Haverstraw Bay also create important habitat for benthic and epibenthic fauna. The benthic macroinvertebrate infauna (organisms living within the bottom sediments) primarily feed on detritus (organic materials together with associated bacteria, fungus, and other meiofauna). The distribution of macroinvertebrate infauna on a large scale is determined by salinity with polychaete worms being most abundant in brackish water areas such as Haverstraw Bay. Epibenthic fauna live near the surface of the bottom sediments and often migrate up into the water column at night to feed where they function as part of the zooplankton community. In Haverstraw Bay, epibenthic macroinvertebrate collections are typically dominated by mysid shrimp, especially the opossum shrimp (*Neomysis americana*). These benthic and epibenthic populations serve as important food resources for larger macroinvertebrates and many important fish species, including striped bass, white perch, and Atlantic tomcod.

Several commercially and recreationally important fisheries occur in Haverstraw Bay, including striped bass, American shad and blue crab. Historically, oyster beds were prevalent in brackish areas of the Hudson River including Haverstraw Bay and the Tappan Zee. However, a combination of over-harvesting, habitat alteration, and pollution led to their demise more than a century ago.

Haverstraw Bay also provides habitat for migrating waterfowl during spring (March-April) and fall (September-November) migrations, although the actual number of waterfowl using the area is not well known.

The bald eagle (*Haliaeetus leucocephalus*), a Federal and New York State listed endangered species, utilizes areas of the lower Hudson River estuary, including Haverstraw Bay, during winter months for feeding. The Federal navigation channel is kept open throughout the winter months to allow ships and barges access to up-river ports and terminal facilities. During recent years, primarily as a result of the successful bald eagle restoration activities of NYSDEC's Endangered Species Unit, bald eagles have occasionally been observed along the shore and on ice floes in Haverstraw Bay. Since the Haverstraw Bay pipeline crossing will be constructed during the summer months, there will be no impact to bald eagles in the Haverstraw Bay area.

Haverstraw Bay also provides nursery habitat for several fish species, including striped bass, American shad, white perch and Atlantic sturgeon. Other species, including anadromous blueback herring and alewife, move through Haverstraw Bay to upstream spawning areas. Certain marine species, notably bay anchovy, Atlantic menhaden and blue crab, also use Haverstraw Bay as a major nursery and feeding area. Depending on the location of the salt front, a majority of the spawning and wintering populations of Atlantic sturgeon in the Hudson River may occur in Haverstraw Bay. A portion of the shortnose sturgeon population, listed both federally and by New York State as an endangered species, also overwinter in this area.

The shortnose sturgeon occurs only along the east coast of North America. It inhabits tributary rivers to the Atlantic Ocean. It has been recorded as occurring from central Florida to southern New Brunswick, Canada (Dadswell *et al.* 1984). The shortnose sturgeon generally occupies freshwater to brackish water reaches of its natal river and estuaries, remaining primarily in deep river channels.

Shortnose sturgeon spawn in the upper Hudson River, returning downstream immediately afterward. Some adults may leave the Hudson over the summer, but the majority migrate upriver in the fall and overwinter in either the Kingston or Haverstraw Bay region (Dovell *et al.* 1992, Geoghegan *et al.* 1992). Adults that will not spawn in the following spring congregate in a downstream section of the Hudson River in and around Haverstraw Bay. Adults that will spawn in the following spring are thought to migrate upstream and congregate near Kingston, New York.

With the arrival of spring, non-spawning adults disperse from Haverstraw Bay throughout the summer range of the species. Spawning adults ascend the river to spawn in the reach of river between the Federal Dam (Troy, New York) and Coxsackie, New York approximately at river mile 118. Spawning occurs from late April to early May in the Hudson River.

Juvenile shortnose sturgeon grow rapidly and gradually disperse downstream in the Hudson River. By late fall, most surviving juvenile fish have moved into the Haverstraw Bay area of the Hudson River. Juvenile shortnose sturgeon appear to occupy the deeper channel portions of the Bay.

Shortnose sturgeon are benthic feeders. Adults are reported to feed on insect larvae, crustaceans, and molluscs. Shortnose sturgeon feed primarily at night, generally moving into shallower areas to feed. In winter, shortnose sturgeon generally remain in deeper waters to feed, with feeding occurring on an infrequent basis.

Potential impacts of the proposed project would be limited to the construction period, approximately three months. Potential impacts during construction would include the temporary loss of benthic substrate during trenching, installation and backfilling operations, as well as potential increases in suspended sediment concentrations and turbidity.

Present construction plans involve trenching, pipe fabrication, installation and backfilling operations to be conducted continuously, proceeding along the route as one unit. Trench depth in the navigation channel would be about 20 feet and 10 feet in areas outside the navigation channel. Unconsolidated sediments and subsurface soils in Haverstraw Bay require a trench side slope of 3:1 to maintain open trench requirements. During construction, the open trench would be 10 feet wide at the bottom, up to 130 feet wide at the top in the navigation channel, and up to 70 feet wide at the top in areas outside the navigation channel. Construction planning requirements will limit any open trench portion of the proposed route to approximately 1300 feet at any time. Construction of any given pipeline segment, from trenching to backfilling, will be completed within approximately two weeks.

No long-term impacts on the distribution, reproduction or development of aquatic populations using Haverstraw Bay are projected for the proposed project primarily as a result of the use of existing sediment and the rapid recolonization by benthic macroinvertebrates. Measures to protect resources and mitigate potential adverse effects during construction include the use of

closed 'environmental' buckets during trenching and silt curtains, as necessary, during backfilling operations in the channel. Adherence to time schedule dredging (environmental) windows and limits for dredging set forth by the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) and NYSDEC will ensure that no direct impacts occur to significant coastal fish habitat. This window is still subject to ongoing discussions with responsible Federal and state agencies. At present, construction is planned for the period July through September, a period that appears to be the optimum to minimize aquatic population impacts while still meeting the 1 November in-service date. These techniques will be incorporated in the proposed project to avoid, minimize and mitigate potential environmental impacts. Thus the proposed project would be in compliance with this policy.

8) *Protect fish and wildlife resources in the coastal area from the introduction of hazardous wastes and other pollutants which bio-accumulate in the food chain or which cause significant sub-lethal or lethal effect on those resources.*

BMPs addressing shore zone and offshore construction activities will be prepared and followed during construction. The BMPs will include practices to reduce the possibility for accidental release of small amounts of wastes and materials to the river waters from the construction vessels due to poor maintenance and housekeeping practices. Proper lubrication and fueling procedures will be followed with provisions made for leak and spill containment, and diligence will be exercised to oversee waste management practices.

Potential impacts to fish and wildlife resources may include exposure to contaminants released from sediments during trenching and backfilling operations. Sediment quality sampling conducted along the proposed pipeline-crossing route indicated that the sediments contain trace amounts of a variety of metals and semi-volatile organic compounds. However, potential impacts related to the contaminated sediments will be minimized by employing BMPs during trenching and backfilling operations. Measures to mitigate this impact include environmental-bucket dredges, and storing dredged material in barges. Additional BMPs that are applicable include the use of silt curtains, as necessary, and the development (in consultation with resource agencies) of a dredging operations monitoring plan. The dredging operations monitoring plan will be used during construction to monitor the efficacy of the BMPs and to adjust the use of the BMPs to mitigate adverse environmental impact to the extent practicable. By employing these management measures, the proposed project would be consistent with this policy.

Predicted aqueous concentrations of chemical constituents detected in the sediment at the location of the visible plume are presented on Table 3. None of the predicted aqueous concentrations exceed NYSDEC standards or the USEPA's Marine Acute Criteria. Therefore, exceedances of the NYSDEC standards and the USEPA Marine Acute Criteria are not expected beyond the predicted visible plume which has a maximum length dimension of 460 feet for each of the four construction components described in Section 3.1.1.

9) *Expand recreational use of fish and wildlife resources in coastal areas by increasing access to existing resources, supplementing existing stocks, and developing new resources. Recreational uses include: (1) consumptive uses such as fishing and hunting; and (2) non-consumptive uses such as wildlife photography, bird watching and nature study.*

Construction of the proposed project crossing would not preclude recreational use of fish and wildlife resources. The project would therefore be consistent with this policy.

10) *Further develop commercial finfish, shellfish and crustacean resources in the coastal area by encouraging the construction of new, or improvement of existing on-shore commercial fishing facilities, increasing marketing of the state's seafood products, maintaining adequate stocks, and expanding aquaculture facilities.*

Construction of the proposed project crossing would have no effect on commercial fishing resources or activities in the Haverstraw Bay area of the Hudson River. Therefore, the proposed project would not conflict with this policy.

11) *Buildings and other structures will be sited in the coastal area so as to minimize damage to property and the endangering of human lives caused by flooding and erosion.*

The only building to be constructed by Millennium in the coastal zone would be a 20 by 40 foot building containing gas measurement equipment that would be located within the Bowline Point Generating Station industrial complex. The location of the building will minimize property damage and threats to human lives as a result of floods, and thus the proposed project will be in compliance with this policy.

12) *Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.*

Construction of the proposed project crossing would not affect beaches, dunes, barrier islands, or bluffs. Where the pipeline is constructed through the shore zone, there will be short-term disruption; however, the construction site will be immediately returned to pre-construction conditions. Therefore, the proposed project would be in compliance with this policy.

13) *The construction or reconstruction of erosion protection structures shall be undertaken only if they have a reasonable probability of controlling erosion for at least thirty years as demonstrated in design and construction standards and/or assured maintenance or replacement programs.*

Rock rip-rap or other appropriate erosion control devices will be placed along the shore in the immediate vicinity of the shoreline construction. These devices would help stabilize and protect the shoreline construction area. The placement of shore zone protective devices would be in compliance with this policy.

14) *Activities and development, including the construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measurable increase in erosion or flooding at the site of such activities or development, or at other locations.*

The proposed project includes the placement of rock rip-rap or other appropriate erosion control devices in the immediate vicinity of shoreline construction areas. The proposed shore zone protection will not result in any increase in erosion or flooding at the site or at other locations, and thus the proposed project would be in compliance with this policy.

15) *Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.*

Dredging and excavation associated with the proposed project is projected to be done over a very short time period, and the construction site will be returned to pre-existing conditions following construction. The proposed project would not affect natural coastal processes or increase the potential of erosion from adjacent land. In addition, construction of the proposed project would not involve beaches. Therefore, the proposed project would be in compliance with this policy.

16) *Public funds shall only be used for erosion protective structures where necessary to protect human life, and new development which requires a location within or adjacent to an erosion hazard area to be able to function, or existing development; and only where the public benefits outweigh the long-term monetary and other costs including the potential for increasing erosion and adverse effects on natural protective features.*

No public funds will be used in the proposed project. Therefore, this policy does not apply.

17) *Nonstructural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.*

Construction of the proposed project will include BMPs to minimize damage to natural resources in the project area. No flooding or erosion would result from the proposed project, and thus no nonstructural flood or erosion control measures will be required. Therefore, the proposed project is in compliance with this policy.

18) *To safeguard the vital economic, social and environmental interests of the state and of its citizens, proposed major actions in the coastal area must give full consideration to those interests, and to the safeguards which the state has established to protect valuable coastal resource areas.*

Construction of the proposed project would provide a source of clean-burning natural gas to a large section of New York State, providing vital energy and infrastructure to the State. The proposed Haverstraw Bay crossing is based upon the best available technology and will result in the least environmental impact while meeting all applicable regulations, standards and criteria. Safeguarding social and environmental interests of the state and its citizens is being given full

consideration in this consistency evaluation and through the Federal NEPA process. The proposed project would be consistent with this policy.

> *Protect, maintain, and increase the level and types of access to public water related recreation resources and facilities.*

Construction of the proposed project would not preclude access to public water-related recreation resources and facilities. The project would therefore be consistent with this policy.

> *Access to the publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided and it shall be provided in a manner compatible with adjoining uses.*

No publicly owned foreshore will be disturbed by project construction activities. Construction of the proposed project would not preclude public access to waterfront land in the project vicinity. Therefore, the proposed project is consistent with this policy.

21) *Water-dependent and water-enhanced recreation will be encouraged and facilitated, and will be given priority over nonwater related use along the coast.*

Construction of the proposed project would not materially affect water-related recreation resources and facilities. Therefore, the project would be consistent with this policy.

22) *Development, when located adjacent to the shore, will provide for water related recreation, whenever such use is compatible with reasonably anticipated demand for such activities, and is compatible with the primary purpose of the development.*

The proposed project does not include shoreline development; therefore, this policy does not apply.

23) *Protect, enhance and restore structures, districts, areas or sites that are of significance in history, architecture, archaeology or culture of the state, its communities, or the nation.*

From 10 to 14 November 1997, Ocean Surveys, Inc. (OSI) conducted a geophysical survey of the proposed gas pipeline crossing of the Hudson River between West Haverstraw, New York and the Franklin D. Roosevelt Veteran's Hospital, Westchester County, New York. The route was 12,242 feet in length and oriented in a southwest-northeast direction (OSI 1997). The investigation involved the collection of digital side scan sonar, hydrographic, seismic reflection profiles and magnetic intensity data in a 2000-foot wide corridor (OSI 1997). This geophysical survey was also used to undertake an underwater archaeological investigation of the Project corridor. On 26 and 27 August 1998, OSI conducted a supplemental geophysical survey of the proposed Millennium route across the Hudson River between Bowline Point and the east shore landfall at the Veteran's Hospital. This survey was focused on the Bowline Point landfall.

Based on sonar and magnetometer data analysis, there are sonar targets identified in the project area, which may represent either cultural resources, natural material or debris associated with

historical to recent occupations in this section of Haverstraw Bay. Ground truthing (ground truthing is an independent in-depth investigation used to verify the cause of or to identify a remote sensing anomaly or target of interest) of these targets of interest will be examined further as part of the recommended Phase II research. Nevertheless, none of the targets are thought to be significant to the State or the Nation. No buildings or structures of national or historic listing are located within the project area. Therefore, the proposed project is in compliance with this policy.

24) *Prevent impairment of scenic resources of statewide significance. This impairment would include: (a) the irreversible modification of geologic forms, the destruction or removal of structures, whenever the geologic forms, vegetation or structures are significant to the scenic quality of an identified resource; and (b) the addition of structure which, because of siting or scale will reduce identified views or which because of scale, form, or materials, will diminish the scenic quality of an identified source.*

Several portions of the Hudson River waterfront have been identified as "Statewide Areas of Scenic Significance" (SASS) due to their visual appeal, presence of scenic vistas or visible historic structures, or lack of shoreline development. Each SASS area contains a number of mapped subunits recognized for its visual and/or scenic qualities. The project site is not located within any of the NYSDOS-designated SASS areas along the Hudson River. The closest SASS area, Hudson Highlands, terminates at Stony Point (RM 40) more than two miles north of the proposed Haverstraw Bay Crossing.

The coastal zone area, by definition, extends from the shore to the horizon line. On the western side of the Hudson River and to the south of the proposed Haverstraw Bay crossing, the proposed pipeline route would traverse High Tor State Park, crossing over High Tor Ridge, which is the western horizon in the Haverstraw Bay viewshed. The pipeline would be constructed in the existing powerline right-of-way leading over the ridge line to Bowline Point. The existing right-of-way traverses the ridge at an angle, thus from most visual perspectives, the right-of-way is screened by trees and natural vegetation. No construction or cutting will occur outside the existing powerline right-of-way, thus within a growing season the area will be returned to existing conditions.

One mainline valve would be within 50 feet of the eastern shore of the Hudson River and within the grounds of the Franklin D. Roosevelt Veteran's Hospital, an NRHP-listed site. The valve will be below the viewshed of the lower levels of the Hospital; however, it will be visible from upper floors and from nearby George's Island Park. Millennium is currently completing consultation with the New York SHPO to determine if visual screening of the valve will be required. Construction of the proposed project crossing would not impair this resource of statewide significance, and thus the proposed project would be consistent with this policy.

25) *Protect, restore or enhance natural and man-made resources which are not identified as being of statewide significance but which contribute to the overall scenic quality of the coastal area.*

The proposed project would not adversely impact the overall scenic quality of the coastal area in Haverstraw Bay on either the eastern or western shores. Therefore, the proposed river crossing is in compliance with this policy.

The Haverstraw Bay shoreline is intensely developed with a power generating facility, and a mixture of industrial facilities and marinas. Residences (single family and cluster housing) are visible, to the horizon line, along much of the western shore of the Bay in the project area.

The proposed structure on the Haverstraw Bay shore will be consistent with the surrounding facilities. Visual focal points on the western shore include the trap rock crushing and loading facilities, the Bowline Point Generating Station, and a gypsum processing plant and dock. Several oil terminals and tank farms are also present and visible from the Hudson River. The one proposed building will not be a visual focal point or contrast sharply with existing waterfront uses. The equipment and vessels used for the installation process will not be out of character with the fuel barges, crushed stone barges, and freighters that use the Hudson River and are a visual component of Haverstraw Bay.

26) *Conserve and protect agricultural lands in the state's coastal area.*

The proposed crossing is not located adjacent to agricultural lands. Therefore, this policy does not apply.

27) *Decisions on the siting and construction of major energy facilities in the coastal area will be based on public energy needs, compatibility of such facilities with the environment, and the facility's need for a shorefront location.*

The Millennium Pipeline Project is classified as a major energy facility that is entitled to preference under the CZMA. As a major energy facility the proposed project will satisfy the "public energy needs" of New York State and the Northeast U.S. region in a number of different respects: First, the proposed project will satisfy growing market demands, as evidenced both by executed contracts for the pipeline's capacity and the forecasts of various experts. Second, the proposed project will supply low-cost Canadian gas supplies to one of the highest-priced gas markets in the United States - New York. Third, the proposed project will improve electric power reliability and advance clean air objectives by serving new and existing gas-fired power plants along New York's southern tier. Fourth, the proposed project will improve the reliability of gas service to New Yorkers by upgrading the existing natural gas infrastructure through the addition of more capacity, deliverability, delivery points, and interconnections. Fifth, the proposed project will provide gas producers and gas storage developers in western New York with increased access to markets.

Construction of the Haverstraw Bay pipeline crossing takes into consideration public need and environmental issues. The proposed project has been designed to use the best available

construction technology to result in the least environmental impact. The shoreline crossing is necessary because half of the capacity of the proposed project is planned to be delivered to the east side of the Hudson River, at the present time. Therefore, the proposed project is in compliance with this policy.

28) *Ice management practices shall not interfere with the production of hydroelectric power, damage significant fish and wildlife and their habitats, or increase shoreline erosion or flooding.*

Construction or operation of the proposed project crossing would not require ice management; therefore, this policy is not applicable.

29) *Encourage the development of energy resources on the outer continental shelf, in Lake Erie and in other water bodies, and ensure the environmental safety of such activities.*

Construction of the proposed project crossing does not involve development of energy resources on the outer continental shelf, in Lake Erie and in other water bodies. Therefore, this policy does not apply.

30) *Municipal, industrial, and commercial discharge of pollutants, including but not limited to, toxic and hazardous substances, into coastal waters will conform to state and national water quality standards.*

All reasonable measures will be taken to prevent or minimize the discharge of contaminated dredged material, if any, during trenching and backfilling activities.

The New York State Water Classification System classifies Haverstraw Bay as SB. The NYSDEC has three narrative water quality standards for surface waters with this classification.

Taste-, color-, and odor-producing, toxic, and other deleterious substances:

None in amounts that will adversely affect the taste, color or odor thereof, or impair the waters for their best usages.

2. Turbidity:

No increase that will cause a substantial visible contrast to natural conditions.

3. Suspended, colloidal and settleable solids:

None from sewage, industrial wastes or other wastes that will cause deposition or impair the waters for their best usage.

Based on the information presented in Section 3.1.1 and in the response to Policy 8, these narrative standards may be exceeded only in the immediate vicinity of the dredging site and within the visible plume, with the potential exceedance limited to a short period of time.

The project would comply with the applicable permitting requirements. The proposed project crossing would therefore be consistent with this policy.

31) *State coastal area policies and management objectives of approved local waterfront revitalization programs will be considered while reviewing coastal water classifications and while modifying water quality standards; however, those waters already overburdened with contaminants will be recognized as being a development constraint.*

Construction of the proposed project crossing would not affect the water classification or water quality standards in the proposed project area. Therefore, this policy does not apply.

32) *Encourage the use of alternative or innovative sanitary waste systems in small communities where the costs of conventional facilities are unreasonably high, given the size of the existing tax base of these communities.*

Construction of the proposed project would not involve sanitary waste systems; therefore, this policy does not apply.

33) *Best management practices will be used to ensure the control of stormwater runoff and combined sewer overflows draining into coastal waters.*

The proposed project would not involve stormwater runoff or construction of combined sewer overflows. Therefore, this policy does not apply.

34) *Discharge of waste materials into coastal waters from vessels subject to state jurisdiction will be limited so as to protect significant fish and wildlife habitats, recreational areas and water supply areas.*

Construction of the proposed project would not affect discharge from vessels into waters of Haverstraw Bay. Therefore, this policy does not apply.

35) *Dredging and dredge spoil disposal in coastal waters will be undertaken in a manner that meets existing state dredging permit requirements, and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands, and wetlands.*

As discussed in Section 3.1.1 and the responses to Policies 7 and 8, the dredging and backfilling operations associated with the Haverstraw Bay crossing will not require the disposal of dredged material. Since there will be no disposal of dredged material as part of the Haverstraw Bay crossing, the proposed project is in compliance with this policy.

36) *Activities related to the shipment and storage of petroleum and other hazardous materials will be conducted in a manner that will prevent or at least minimize spills into coastal waters; all practicable efforts will be undertaken to expedite the cleanup of such discharges; and restitution for damages will be required when these spills occur.*

The proposed project does not involve the shipment and storage of petroleum or other hazardous materials. Therefore, this policy does not apply.

37) *Best management practices will be utilized to minimize the non-point discharge of excess nutrients, organics and eroded soils into coastal waters.*

Construction of the proposed project does not involve the non-point discharge of nutrients, organics and eroded soils. BMPs will be used during construction and maintenance activities to minimize non-point source discharges. Thus the proposed project is in compliance with this policy.

38) *The quality and quantity of surface water and groundwater supplies will be conserved and protected particularly where such waters constitute the primary or sole source of water supply.*

The proposed project will not affect surface water or groundwater supplies. Therefore, this policy does not apply.

39) *The transport, storage, treatment and disposal of solid wastes, particularly hazardous wastes, within the coastal areas will be conducted in such a manner so as to protect groundwater and surface water supplies, significant fish and wildlife habitats, recreation areas, important agricultural land, and scenic resources.*

The proposed project does not involve the transport, storage, treatment or disposal of solid wastes. Therefore, this policy does not apply.

Effluent discharged from major steam electric generating and industrial facilities into coastal waters will not be unduly injurious to fish and wildlife and shall conform to state water quality standards.

The proposed project would not result in the discharge of any effluent from generating and industrial facilities into the waters of Haverstraw Bay. Therefore, this policy does not apply.

Land use or development in the coastal area will not cause national or state air quality standards to be violated.

The proposed project would not result in the violation of any Federal, state or local air quality standards. The potential reduction in marine traffic and congestion related to the delivery of petroleum products to the Bowline Point Generating Station and other Haverstraw Bay industrial facilities would benefit overall air quality in the project area. The proposed project would therefore be consistent with this policy.

42) *Coastal management policies will be considered if the state reclassifies land areas pursuant to the prevention of significant deterioration regulations of the Federal clean air act.*

The proposed project would not affect state classifications of land areas. Therefore, this policy does not apply.

43) *Land use or development in the coastal area must not cause the generation of significant amounts of acid rain precursors nitrates and sulfates.*

The proposed project would not cause the generation of significant amounts of acid rain precursors, namely, nitrates and sulfates. The proposed project will deliver a clean burning fuel that should result in the overall reduction of acid rain precursors. Therefore, this policy does not apply.

Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.

No tidal or freshwater wetlands will be disturbed as a result of the proposed Haverstraw Bay crossing. The project site is north of the NYSDEC limit (the Tappan Zee Bridge) for Tidal Wetlands (Article 25) jurisdiction. There are no state or Federally-mapped freshwater wetlands in the project area.

3.2 LAKE ERIE CROSSING

Description of Proposed Action

The proposed Lake Erie crossing extends from a landfall about 14 miles west of the community of Port Stanley, Ontario, Canada, across Lake Erie, to a point in the Town of Ripley, New York. The crossing is about 93 miles long, with about 60 miles in Canadian waters and 33 miles in U.S. waters. This evaluation extends from the New York State landfall at Ripley, New York, to the international boarder with Canada.

Alternative Routes Evaluated

Several major route alternatives were examined in selecting a route for the Millennium Project across and around Lake Erie. The delineation of a number of alternative routes was based on the following primary constraints:

Compliance with technical connections such as take-off and delivery points;

Adherence to existing rights-of-way, if available, and where practical;

Avoidance of recognized major physical, natural and cultural environmental constraints; and

Minimization of system costs in terms of construction, operation and maintenance.

On the basis of these primary constraints, three principal alternative routes were identified:

Alternative involving a crossing of Lake Erie;

Alternative 2, involving crossings of the St. Clair River or Detroit River and following existing rights-of-way along the south side of Lake Erie; and

Alternative 3, following existing rights-of-way along the north side and around the eastern end of Lake Erie, involving a crossing of the Niagara River.

For the evaluation of the alternative routes, a number of criteria were used including:

minimization of total route length;

minimization of the number of major crossings such as highways, railways and watercourses;

minimization of routing through urban areas, areas of high heritage resources potential, and other sensitive land uses (e.g., specialty crops, wetlands, etc.); and

minimization of potentially affected landowners.

Based on these criteria, Alternative 1 involving the Lake Erie crossing was selected as the preferred route based on the fact that overall it is the shortest route and, furthermore, on the rationale that potential impacts associated with land-based construction are greater than those associated with in-water construction.

Originally, six sub-alternative routes were identified for the Lake Erie crossing. These were based on three landfall options on the Canadian side near the communities of Morpeth, Port Stanley and Hemlock and two landfall options on the U.S. side near the community of Girard and the Town of North East in Pennsylvania. The landfall option near Hemlock was eliminated for commercial reasons. The landfall near Girard was also eliminated, as it appeared to offer no advantages over the preferred U.S. landfall option near North East (due to its proximity to existing Columbia Transmission right-of-way).

As a result, two sub-alternatives of Alternative 1, i.e., Alternative 1A and 1B extending from landfalls near Morpeth and Port Stanley, respectively, to a landfall near North East were evaluated based on the following considerations: route length, cost, scheduling, landfall location, offshore natural gas development, sediment quality, ice scour potential, anchor dragging, turbidity, and siltation. Alternative 1A was slightly more preferable from the standpoint of Canadian overland route length, landfall location and offshore gas development, whereas

Alternative 1B was preferable from the standpoint of scheduling, sediment quality, anchor dragging and turbidity generation. Based on this assessment, Alternative 1B was selected as the preferred route.

Subsequently, a new U.S. landfall was delineated about 3.1 miles west of the originally preferred landfall location. The primary reason for the U.S. landfall relocation was to realign the initial portion of the original land-based route to avoid the crossings of 12 vineyards.

At the U.S. landfall, directional drilling is the preferred mode of pipeline crossing construction to minimize or eliminate potential impacts on the nearshore environment and any future nearshore impacts on the operating pipeline. Directional drilling is less disturbing to the environment compared to other conventional open-cut operations. Moreover, this technique will place the pipe 30 to 49 feet below the shoreline providing additional protection to the installed pipeline from the high energy, evolving shoreline. The directional drill trajectory and depth below the lake bed will be determined by local geology as well as engineering and regulatory constraints to maximize the drilled length, long-term pipeline integrity, installation safety and environmental protection. The drill exit water depth will be at least 25 feet. The duration of directional drill construction is expected to be four months.

The area immediately offshore of the anticipated pilot bore exit on the lake bed will be pre-trenched to provide a transition zone engineered to accommodate the pipe bend into the normal submarine pipeline trench. It is estimated that about 0.6 miles of the pipeline route offshore of the directional drill exit hole will have insufficient cover to permit pipeline burial in sediment. Therefore, the shale bedrock along this length must be ripped, cut or blasted before the pipeline is installed.

Further offshore, the pipeline will be laid by barge and buried by jetting. Some trenching with a cutterhead dredge may be required at selected locations. Using compressed air, the mechanical jetting sled will bury the offshore pipeline to recommended trench depths ranging from 6.6 to 9.2 feet for the six zones delineated along the pipeline route in the U.S. waters of Lake Erie. A risk-based model was used to determine trench depths along these zones taking into account average water depth, average soil strength, ice scour regime and design criteria (pipeline strain and stress). The 36-inch pipeline will have two outer coatings: a fusion bonded epoxy coating to protect the steel pipe from corrosion, and a 3-inch concrete coating to add sufficient weight for stability. As an additional measure, a cathodic protection system consisting of zinc anodes will be provided to prevent corrosion of the steel pipe. The average production rate is 4,000 ft/day. Lake Erie pipeline construction will be a 24-hour, 7-day-a-week operation and will extend over a six-month period.

Natural processes will quickly backfill the trench. This is normally accomplished by natural erosion (slumping) of the trench walls due to current forces, and subsequent siltation by suspended sediments, particularly during storm events.

3.2.2 Review of Coastal Zone Consistency Policy

1 *Restore, revitalize and redevelop deteriorated and underutilized waterfront areas for commercial, industrial, cultural, recreational and other compatible uses.*

Construction of the proposed Lake Erie crossing would not involve development in deteriorated and underutilized waterfront areas, and thus this policy does not apply.

2) *Facilitate the siting of water-dependent uses and facilities on or adjacent to coastal waters.*

Construction of the proposed project crossing would not involve the siting of water-dependent uses and facilities on or adjacent to coastal waters, and thus this policy does not apply.

3) *Promote the development and use of the state's major ports as centers of commerce and industry, emphasizing the siting, in these port areas, including those under the jurisdiction of state public authorities, of land use and development which is essential to, or in support of, the waterborne transportation of cargo and people.*

Construction of the proposed project crossing would not involve development and use of any New York State major port facilitiy. Therefore this policy does not apply.

4) *Strengthen the economic base of smaller harbor areas by encouraging the development and enhancement of those traditional uses and activities, which have provided such areas with their unique maritime identity.*

Construction of the proposed project crossing would not involve development in a small harbor area, and thus this policy does not apply. It should be noted that the proposed project would not inhibit development at small harbor areas in the project area.

5) *Encourage the location of development in areas where public services and facilities essential to such development are adequate.*

Construction of the proposed project crossing would not result directly in any new development in the area requiring additional public services or facilities. The proposed project would service existing industrial facilities or customers in developed urban areas where public services and facilities are adequate for such development. The proposed project would therefore be consistent with this policy.

6) *Expedite permit procedures in order to facilitate the siting of development activities at suitable locations.*

Construction of the proposed project crossing would not involve the siting of development activities; the policy, therefore, does not apply.

7) *Significant coastal fish and wildlife habitats will be protected, preserved, and where practical, restored so as to maintain their viability as habitats.*

The proposed project area has not been identified as a significant coastal fish and wildlife habitat; however, the proposed project has been designed to maintain the viability of existing habitat.

Steep bluffs and narrow cobble/gravel beaches are the predominant habitat type located along the Lake Erie shoreline at the proposed pipeline landfall. The unprotected shoreline is a high wave energy environment that precludes the establishment of both emergent and submerged aquatic vegetation. Rocky substrate occurs in the nearshore area providing potential spawning and nursery habitat for species including lake whitefish, channel catfish, white bass, smallmouth bass, yellow perch, walleye, freshwater drum, as well as forage fish species. The nearshore also provides foraging habitat for migratory diving waterfowl, including greater scaup, common goldeneye, common merganser, bufflehead, and canvasback.

Impacts on the shoreline and the nearshore zone will be avoided by constructing the proposed Lake Erie landfall using directional drilling. Construction would involve drilling a pilot hole from onshore to exposed bedrock about 2620 feet offshore at a water depth of about 25 feet, thus avoiding coastal fish and wildlife habitats. The proposed project would therefore be consistent with this policy.

Some blasting may be required for a short distance, i.e., about 0.6 miles, at water depths of 25 to 50 feet. Blast rubble could be used for local creation/enhancement of lake trout spawning habitat. Any such habitat enhancement will be developed in consultation with the USACE and NYSDEC, and will be consistent with the CMP.

8) *Protect fish and wildlife resources in the coastal area from the introduction of hazardous wastes and other pollutants which bio-accumulate in the food chain or which cause significant sub-lethal or lethal effect on those resources.*

BMPs addressing landfall, directional drilling and offshore construction activities will be prepared and followed during construction. The BMPs will include practices to reduce the possibility for accidental release of small amounts of wastes and materials to the lake waters from the construction vessels due to poor maintenance and housekeeping practices. Proper lubrication and fueling procedures will be followed with provisions made for leak and spill containment, and diligence will be exercised to oversee waste management practices. Consideration will be given to the Marine Contingency Plans for Spills of Oil and Other Noxious Substances developed for Lake Erie.

Sediments along the proposed pipeline route are generally uncontaminated. All of the organic contaminants were below their detection limits (with the exception of detectable levels of acetone in some samples likely due to residues from glass sample container pre-cleaning). Somewhat elevated (above sediment quality guidelines) concentrations of nutrients (phosphorus, nitrogen) and metals (arsenic, manganese) occurred in some sediment samples analyzed. It is anticipated that, during trenching, any nutrients and metals solubilized into the water column will

be rapidly removed by prevalent oxidation, precipitation and coprecipitation processes. Moreover, the mixing of any localized contaminated sediments with the deeper and adjacent uncontaminated sediments will result in rapid and substantial resorption of any contaminants released to the water column by the uncontaminated suspended sediments.

Based on the relatively good sediment quality, particularly the low (non-detect) concentrations of mercury, PCBs, chlorinated pesticides and other organic contaminants, contaminant release from sediments during trenching will have negligible (non-measurable) effect on water quality or bioaccumulation potential. As a result, the proposed project will be consistent with this policy.

9) *Expand recreational use of fish and wildlife resources in coastal areas by increasing access to existing resources, supplementing existing stocks, and developing new resources. Recreational uses include: (1) consumptive uses such as fishing and hunting; and (2) non-consumptive uses such as wildlife photography, bird watching and nature study.*

Construction of the proposed project crossing would not preclude recreational use of fish and wildlife resources. The project would therefore be consistent with this policy.

10) *Further develop commercial finfish, shellfish and crustacean resources in the coastal area by encouraging the construction of new, or improvement of existing on-shore commercial fishing facilities, increasing marketing of the state's seafood products, maintaining adequate stocks, and expanding aquaculture facilities.*

Construction of the proposed project crossing would not affect commercial fishing resources. Therefore, the proposed project would not conflict with this policy.

Buildings and other structures will be sited in the coastal area so as to minimize damage to property and the endangering of human lives caused by flooding and erosion.

The proposed project crossing does not include the siting of buildings or other structures within an identified floodway or coastal erosion hazard area. All pipeline related structures within the coastal zone area will be below ground. Therefore, this policy does not apply.

12) *Activities or development in the coastal area will be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs.*

Construction of the proposed project crossing at the Lake Erie landfall would be conducted using directional drilling techniques, thus the shoreline bluff will not be impacted. Therefore the proposed project would be in compliance with this policy.

13) *The construction or reconstruction of erosion protection structures shall be undertaken only if they have a reasonable probability of controlling erosion for at least thirty years as demonstrated in design and construction standards and/or assured maintenance or replacement programs.*

The proposed project crossing does not include the construction or reconstruction of erosion protection structures. Therefore, this policy does not apply.

14) *Activities and development, including the construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measurable increase in erosion or flooding at the site of such activities or development, or at other locations.*

The proposed project does not include the construction or reconstruction of erosion protection structures. Therefore, this policy does not apply.

15) *Mining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.*

As indicated in Section 3.2.1 "Description of Proposed Action", construction impacts on the shoreline and nearshore zone will be avoided by constructing the proposed Lake Erie landfall using directional drilling. Further offshore, blasting, cutting or ripping of the shale bedrock will be required for a short distance, i.e., about 0.6 miles. Trench excavation by mechanical jetting will occur at water depths in excess of 50 feet and will not affect natural coastal processes or increase the potential of erosion of adjacent land. Therefore, the proposed project will be in compliance with this policy.

16) *Public funds shall only be used for erosion protective structures where necessary to protect human life, and new development which requires a location within or adjacent to an erosion hazard area to be able to function, or existing development; and only where the public benefits outweigh the long-term monetary and other costs including the potential for increasing erosion and adverse effects on natural protective features.*

The proposed project crossing does not include the construction of erosion protection structures and no public funds will be used. Therefore, this policy does not apply.

17) *Nonstructural measures to minimize damage to natural resources and property from flooding and erosion shall be used whenever possible.*

Construction of the proposed project will not include structural flood control elements. Therefore, this policy does not apply.

18) *To safeguard the vital economic, social and environmental interests of the state and of its citizens, proposed major actions in the coastal area must give full consideration to those interests, and to the safeguards which the state has established to protect valuable coastal resource areas.*

Construction of the proposed project would provide a source of clean-burning natural gas to New York State, providing vital energy and infrastructure to the State. Safeguarding of social and environmental interests of the state and its citizens is being given full consideration through the federal NEPA process. The proposed project would be consistent with this policy.

19) *Protect, maintain, and increase the level and types of access to public water related recreation resources and facilities.*

Construction of the proposed project would not materially affect public water-related recreation resources and facilities. The project would therefore be consistent with this policy.

20) *Access to the publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided and it shall be provided in a manner compatible with adjoining uses.*

No publicly owned foreshore will be disturbed by project construction activities. Construction of the proposed project would not preclude access to publicly-owned lands. Therefore, the proposed project is consistent with this policy.

21) *Water-dependent and water-enhanced recreation will be encouraged and facilitated, and will be given priority over nonwater related use along the coast.*

Construction of the proposed project would not materially affect water-related recreation resources and facilities. Therefore, the proposed project would be consistent with this policy.

22) *Development, when located adjacent to the shore, will provide for water related recreation, whenever such use is compatible with reasonably anticipated demand for such activities, and is compatible with the primary purpose of the development.*

The proposed project crossing will not entail shoreline development; therefore, this policy does not apply.

23) *Protect, enhance and restore structures, districts, areas or sites that are of significance in history, architecture, archaeology or culture of the state, its communities, or the nation.*

From 30 August to 12 September 1997, Racal Pelagos, Inc., conducted a marine geophysical survey of the initially proposed pipeline route between a point near Port Stanley, Ontario, and the original Millennium Project landfall near North East, Pennsylvania. The marine CRM survey involved the collection of side scan sonar, sub-bottom profiling and magnetometer data, as well as sediment samples. This geophysical survey was also used to undertake an underwater archaeological investigation of the proposed project corridor.

From 27 to 31 August 1998, Canadian Seabed Research Ltd. (CSR) conducted a supplemental marine geophysical survey for the altered pipeline route between a landfall to the west of Port Stanley, Ontario, and the new southern landfall near Ripley, New York. These route alterations involved the relocation of the drill exit on the Canadian side, the reroute around a sub-sea mound near the middle of the lake (in Canadian waters) and the relocation of the shore approach on the U.S. side near Ripley, New York. In addition, the 1998 survey also ran an offset track line along the entire primary centerline of the proposed pipeline route. The survey involved the collection of side scan sonar data, sub-bottom profiles, magnetometer traces and lake-bottom bathymetry.

Based on the analysis of the sonar and magnetometer data, there are no underwater archaeological or cultural resources located within the proposed Lake Erie crossing route and the U.S. nearshore (Ripley, New York) landfall area that would be impacted by the proposed project. No historic or listed structures are located within the project area. Therefore, the proposed project is in compliance with this policy.

24) *Prevent impairment of scenic resources of statewide significance. This impairment would include: (a) the irreversible modification of geologic forms, the destruction or removal of structures, whenever the geologic forms, vegetation or structures are significant to the scenic quality of an identified resource; and (b) the addition of structure which, because of siting or scale will reduce identified views or which because of scale, form, or materials, will diminish the scenic quality of an identified source.*

Construction of the proposed project crossing would not impair scenic resources of statewide significance. The proposed project would therefore be consistent with this policy.

Protect, restore or enhance natural and man-made resources which are not identified as being of statewide significance but which contribute to the overall scenic quality of the coastal area.

The proposed project would not adversely impact the overall scenic quality of the coastal area. Therefore, this policy does not apply.

Conserve and protect agricultural lands in the state's coastal area.

The primary crop at the landfall location is corn. A vineyard is present to the west of the landfall of which about 200 feet will be undercrossed by the directional drill route. No tile drainage is present on these lands. The agricultural lands at the landfall will be conserved and protected by the implementation of such mitigative measures as accurate topsoil salvage and replacement; separation of topsoil and subsoil storage piles; chisel cultivation and/or subsoiling, where necessary; formulation and implementation of specific erosion control techniques; seeding and fertilizing after construction; post-construction monitoring of crop yields and soil conditions, as necessary. Therefore, the proposed project would be consistent with this policy.

27) *Decisions on the siting and construction of major energy facilities in the coastal area will be based on public energy needs, compatibility of such facilities with the environment, and the facility's need for a shorefront location.*

The Millennium Pipeline Project is classified as a major energy facility that is entitled to preference under the CZMA. As a major energy facility the proposed project will satisfy the "public energy needs" of New York State and the Northeast U.S. region in a number of different respects: First, the proposed project will satisfy growing market demands, as evidenced both by executed contracts for the pipeline's capacity and the forecasts of various experts. Second, the proposed project will supply low-cost Canadian gas supplies to one of the highest-priced gas markets in the United States - New York. Third, the proposed project will improve electric power reliability and advance clean air objectives by serving new and existing gas-fired power plants along New York's southern tier. Fourth, the proposed project will improve the reliability of gas service to New Yorkers by upgrading the existing natural gas infrastructure through the addition of more capacity, deliverability, delivery points, and interconnections. Fifth, the proposed project will provide gas producers and gas storage developers in western New York with increased access to markets.

Construction of the Lake Erie pipeline crossing takes into consideration public need and environmental issues. Therefore, the proposed project is in compliance with this policy.

28) *Ice management practices shall not interfere with the production of hydroelectric power, damage significant fish and wildlife and their habitats, or increase shoreline erosion or flooding.*

Ice management practices in the nearshore zone would be avoided by constructing the proposed Lake Erie landfall using directional drilling. Construction would involve drilling a pilot hole from onshore to exposed bedrock about 2620 feet offshore at a water depth of about 25 feet, avoiding construction or need for ice management in the shore zone area. The proposed project would therefore be consistent with this policy.

29) *Encourage the development of energy resources on the outer continental shelf, in Lake Erie and in other water bodies, and ensure the environmental safety of such activities.*

Construction of the proposed Lake Erie crossing does not involve development of energy resources on the outer continental shelf, in Lake Erie and in other water bodies. Therefore, this policy does not apply.

30) *Municipal, industrial, and commercial discharge of pollutants, including but not limited to, toxic and hazardous substances, into coastal waters will conform to state and national water quality standards.*

All reasonable measures will be taken to prevent or minimize the discharge of contaminated dredged material, if any, during pipeline construction activities. Moreover, based on the low concentrations of chemical parameters in the sediment, the large dilution capacity of the project waters, and the transitionary nature of the jetting activities, little degradation of water quality due

to chemical release from resuspended sediment is expected. Any chemical releases are expected to be small, their effects will be localized and temporary, and rapid dispersion by mixing and sorption processes to ambient levels is expected. Therefore, no mitigative measures are recommended at this time. The project will comply with the applicable permitting requirements. The proposed Lake Erie Crossing will therefore be consistent with this policy.

31) *State coastal area policies and management objectives of approved local waterfront revitalization programs will be considered while reviewing coastal water classifications and while modifying water quality standards; however, those waters already over-burdened with contaminants will be recognized as being a development constraint.*

Construction of the proposed project crossing would not affect the water classification or water quality standards in the proposed project area. Therefore, this policy does not apply.

32) *Encourage the use of alternative or innovative sanitary waste systems in small communities where the costs of conventional facilities are unreasonably high, given the size of the existing tax base of these communities.*

Construction of the proposed project would not involve sanitary waste systems; therefore, this policy does not apply.

33) *Best management practices will be used to ensure the control of stormwater runoff and combined sewer overflows draining into coastal waters.*

The proposed project would not involve stormwater runoff or construction of combined sewer overflows. Therefore, this policy does not apply.

34) *Discharge of waste materials into coastal waters from vessels subject to state jurisdiction will be limited so as to protect significant fish and wildlife habitats, recreational areas and water supply areas.*

Construction of the proposed project would not affect discharge from vessels into waters of Lake Erie. Therefore, this policy does not apply.

35) *Dredging and dredge spoil disposal in coastal waters will be undertaken in a manner that meets existing state dredging permit requirements, and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands, and wetlands.*

As indicated in Section 3.2.1 "Description of Proposed Action", construction impacts on the shoreline and nearshore zone will be avoided by constructing the proposed Lake Erie landfall using directional drilling. Further offshore, blasting, cutting or ripping of the shale bedrock will be required for a short distance, i.e., about 0.6 miles. Trench excavation by mechanical jetting will occur at water depths in excess of 50 feet and will not affect natural coastal processes or increase the potential of erosion of adjacent land. Therefore, the proposed project will be in compliance with this policy.

36) *Activities related to the shipment and storage of petroleum and other hazardous materials will be conducted in a manner that will prevent or at least minimize spills into coastal waters; all practicable efforts will be undertaken to expedite the cleanup of such discharges; and restitution for damages will be required when these spills occur.*

The proposed project does not involve the shipment and storage of petroleum or other hazardous materials. Therefore, this policy does not apply.

37) *Best management practices will be utilized to minimize the non-point discharge of excess nutrients, organics and eroded soils into coastal waters.*

A site-specific erosion and sediment control plan will be formulated and implemented at the directional drill rig site, e.g. use of straw bales as filters and mulching for interium stabilization; restoration of a suitable land contour and drainage patterns by grading to minimize accelerated erosion; replacement of adequate topsoil; and revegetation by seeding and planting as soon as seasonal conditions permit. The proposed Lake Erie Crossing project will therefore be consistent with this policy.

38) *The quality and quantity of surface water and groundwater supplies will be conserved and protected particularly where such waters constitute the primary or sole source of water supply.*

The proposed project would not affect the surface water or groundwater supply in the area. Based on previous directional drilling construction experience, there will be no impact on groundwater quality, nor is the groundwater regime likely to be disturbed by pipeline construction. There are no known wells in close proximity to the landfall. The proposed project will therefore be consistent with this policy.

39) *The transport, storage, treatment and disposal of solid wastes, particularly hazardous wastes, within the coastal areas will be conducted in such a manner so as to protect groundwater and surface water supplies, significant fish and wildlife habitats, recreation areas, important agricultural land, and scenic resources.*

The proposed project does not involve the transport, storage, treatment or disposal of solid wastes. Therefore, this policy does not apply.

40) *Effluent discharged from major steam electric generating and industrial facilities into coastal waters will not be unduly injurious to fish and wildlife and shall conform to state water quality standards.*

The proposed project would not result in the discharge of any effluent from generating and industrial facilities into the waters of Lake Erie. Therefore, this policy does not apply.

41) *Land use or development in the coastal area will not cause national or state air quality standards to be violated.*

The proposed project would not result in the violation of any Federal, state or local air quality standards. The proposed project would therefore be consistent with this policy.

Coastal management policies will be considered if the state reclassifies land areas pursuant to the prevention of significant deterioration regulations of the Federal clean air act.

The proposed project would not affect state classifications of land areas. Therefore, this policy does not apply.

43) *Land use or development in the coastal area must not cause the generation of significant amounts of acid rain precursors nitrates and sulfates.*

The proposed project would not cause the generation of significant amounts of acid rain precursors, namely, nitrates and sulfates. The proposed project will deliver a clean burning fuel that should result in the overall reduction of acid rain precursors. Therefore, this policy does not apply.

Preserve and protect tidal and freshwater wetlands and preserve the benefits derived from these areas.

The proposed Lake Erie crossing will not affect tidal or freshwater wetlands. Construction of the pipeline crossing will use directional drilling techniques that will involve drilling a pilot hole from onshore to exposed bedrock about 2,620 feet offshore at a water depth of about 25 feet, avoiding construction in wetland or shore zone areas. The proposed project would therefore be consistent with this policy.

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CERTIFICATION

The proposed activity complies with New York State's approved Coastal Management Program, or with the applicable approved local waterfront revitalization program, and will be conducted in a manner consistent with such program.*

Applicant/Agent's Name: Millennium Pipeline Company L.P./Richard E. Hall, Jr.

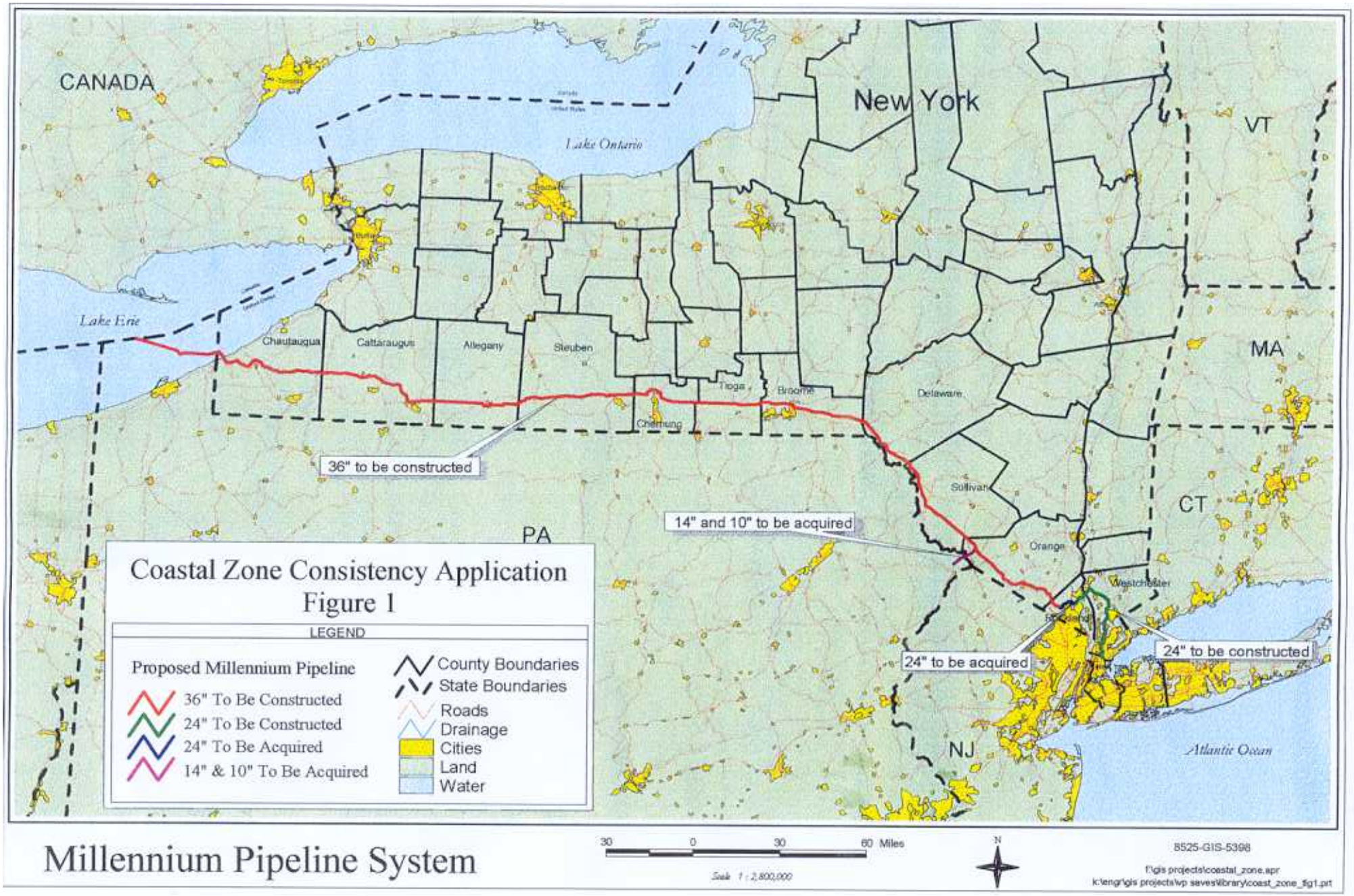
Address: PO Box 2002 Binghamton, NY 13902

Telephone: Area Code (607) 773-9116

Applicant/Agent's Signature: Richard E. Hall, Jr. Date: 10/26/99

MPL Permitting Manager

*This certification and this submission are intended to supplement the certification provided to the New York Department of State ("DOS") on or about November 16, 1998, and the submissions made to the DOS between November of 1998 through March of 1999, and are being made with a full reservation of rights concerning the timeliness of action by the DOS and the sufficiency of the information submitted to the DOS.



Millennium Pipeline System

LEGEND

Proposed Millennium Pipeline as Filed 11/98

(MP 387.5 to MP 390.5)

NO.	DATE	DESCRIPTION	DWN.	APPD.	APPD.
		REVISIONS			

FLUOR DANIEL WILLIAMS BROTHERS

MILLENNIUM PIPELINE COMPANY

Coastal Zone Consistency Application
Figure 2

Hudson River Crossing
Haverstraw Bay

SCALE 1 : 24,000

AREA | DISTRICT

DRAWING NO. 8525-GIS-8398

GIS NO.

SHT 1 OF 1 SHTS

DRAWN: CFC DATE: 10/23/98 CHECKED: REH DATE: 10/23/98 WELL BASE: JPA

APP'D: REH DATE: 10/23/98 DATE: 10/23/98

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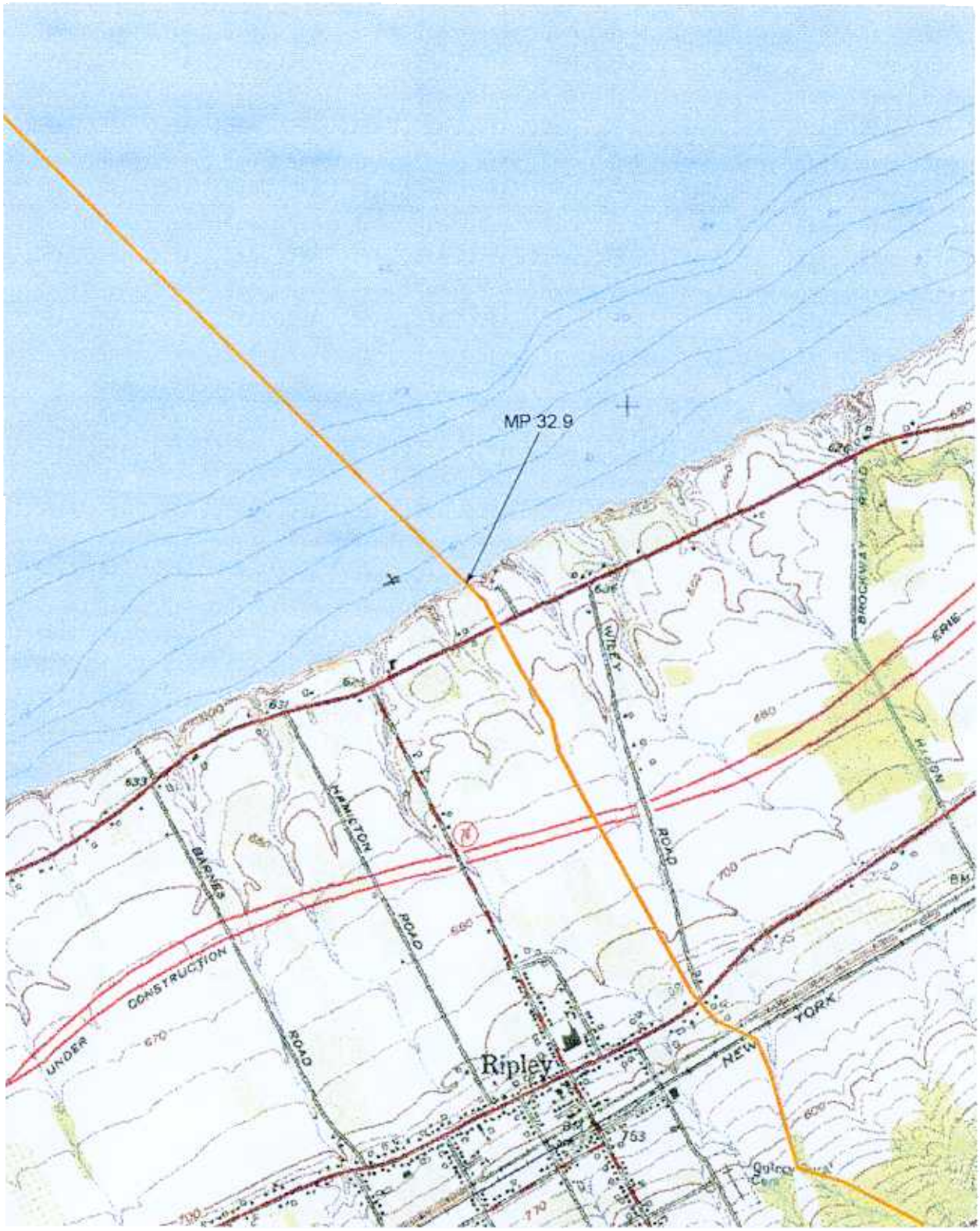

LEGEND	THIS DESIGN IS THE PROPERTY OF MILLENNIUM PIPELINE COMPANY, THIS DESIGN MUST NOT BE REPRODUCED OR LOANED WITHOUT PERMISSION AND MUST BE RETURNED UPON REQUEST.	FLUOR DANIEL WILLIAMS BROTHERS	SCALE 1 : 24,000
Proposed Millennium Pipeline			FDWB JOB NO. 11062500
			MILLENNIUM DWG. NO.
		MILLENNIUM PIPELINE COMPANY	AREA / DISTRICT
		Coastal Zone Consistency Application Figure 3	DRAWING NO. 8525-GIS-5397
		Lake Erie Landfall	GIS NO.
	NO. / DATE / DESCRIPTION / DWN. / APPD. / APPD. — REVISIONS	DRAWN: CFC 10/22/99; CHECKED: REH 10/22/99; APPD: REH 10/22/99; PROJ. ENGR. JRA 10/22/99	SHT 1 OF 1 SHTS
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Table 2 Hudson River Plume Data Summary

Area/Component	Single Event Plume Dimensions[2]			Length of Trench[3] (ft)	Estimated Time Required to Complete Work on Trench Length[4] (12 hr days)	Average Work Rate[6] (ft/12 hr day or Dumps/ 12 hr Day)	Number of Moves or Dumps per 12 Hour Day[7]	Area Impacted per Day per Component(8) (ft^2)	Area impacted per day per Component[8] (%)	Total Area in Haverstraw Bay Impacted by Project[9] (ft^2)	Total Area in Haverstraw Bay Impacted by Project[9] (%)
	Width (ft)	Length (ft)	Area (ft^2)								
Component 1	60	35	2,100	1,000	16	65	1.30	2,700	0.001	--	
Co	--	170	15,300	1,000	19	53	1.05	16,100	0.005	--	
Co	--	--	41,400	9,900	36	275	5.50	227,700	0.074	--	
Co			200,000	9,900	52[5]	1.4	2.00	400,000	0.130		
								--		4,724,000	1.5

Notes

1. Haverstraw Bay values are the approximate physical dimensions of the bay.
   Component 1 - Dredging in shallow water using a 6 cubic yard closed bucket.
   Component 2 - Backfilling in shallow water using a 6 cubic yard closed bucket.
   Component 3 - Dredging in deep water using a 22 cubic yard closed bucket.
   Component 4 - Backfilling in deep water using a bottom dump barge.
2. Dimensions of plume created without moving equipment. For Components 1, 2, and 3 it is assumed that 50 feet can be excavated or backfilled between equipment moves.
3. The length of trench which will be excavated or backfilled with the methods specified by the Components.
4. The time required to complete the specified operation in the specified trench length.
5. The number of barge dump cycles to fill the specified trench length with this Component.
6. Trench length for each Component divided by the estimated time to complete each specified operation
7. Assumes equipment can work on a 50 foot length without moving.
8. Computed by increasing the plume width by the number of moves and then multiplying this width by the plume length
9. Calculated as sum of length (single event plume dimensions) **X** length of trench for components 2 and 4.

Table 3 Predicted Concentrations and Comparison to Standards

Borehole B-1 Parameter	Average Concentration in Sediment	Predicted TSS Concentration	Predicted Aqueous Concentration	Water Quality Standards New York SB Classification	Does Predicted Aqueous Concentration Exceed the New York SB Classification ?	USEPA Marine Acute Criteria	Does Predicted Aqueous Concentration Exceed the USEPA Marine Acute Criteria ?
TOTAL	(mg/kg)	(mg/l)	(mg/l)	(mg/l)		(mg/l)	
Arsenic	6.7333	35	2.36E-04	6.30E-02	no	none	no comparison
Barium	51.5	35	1.80E-03	none	no comparison	none	no comparison
Cadmium	2.18	35	7.63E-05	7.70E-03	no	0.043	no
Chromium	97.8333	35	3.42E-03	5.40E-02	no	1.1	no
Lead	93.6667	35	3.28E-03	8.60E-03	no	0.14	no
Mercury	0.998	35	3.49E-05	none	no comparison	0.0021	no
Selenium	nd	35	nd	none	no comparison	0.41	no
Silver	1.92	35	6.72E-05	none	no comparison	0.0023	no
SEMI-VOLATILE ORGANICS	(µg/kg)	(mg/l)	(µg/l)	(µg/l)		(µg/l)	
Benzo(a)anthracene	365	35	1.28E-02	none	no comparison	300	no
Benzo(b)fluoranthene	230	35	8.05E-03	none	no comparison	300	no
Benzo(k)fluoranthene	500	35	1.75E-02	none	no comparison	300	no
Benzo(a)pyrene	346.6667	35	1.21E-02	none	no comparison	300	no
Bis(2-ethylhexyl)phthalate	780	35	2.73E-02	none	no comparison	none	no comparison
Butyl benzyl phthalate	2300	35	8.05E-02	none	no comparison	2994	no
Chrysene	413.3333	35	1.45E-02	none	no comparison	300	no
Fluoranthene	880	35	3.08E-02	none	no comparison	40	no
Phenanthrene	400	35	1.40E-02	none	no comparison	300	
Pyrene							

Borehole B-8 Parameter	Maximum Concentration in Sediment	Predicted TSS Concentration	Predicted Aqueous Concentration	Water Quality Standards New York SB Classification	Does Predicted aqueous Concentration Exceed the New York SB Classification ?	USEPA Marine Acute Criteria	Does Predicted aqueous Concentration Exceed the USEPA Marine Acute Criteria ?
TOTAL	(mg/kg)	(mg/l)	(mg/l)	(mg/l)		(mg/l)	
Arsenic	6.52	35	2.28E-04	6.30E-02	no	none	**no comparison**
Barium	21.0833	35	7.38E-04	none	no comparison	none	**no comparison**
Cadmium	0.72	35	2.52E-05	7.70E-03	no	0.043	**no**
Chromium	33.75	35	1.18E-03	none	no comparison	1.1	**no**
Lead	19.4083	35	6.79E-04	8.60E+00	no	0.14	**no**
Mercury	1.9	35	6.65E-05	3.00E-02	no	0.0021	**no**
Selenium	nd	35	nd	none	no comparison	0.41	**no**
Silver	nd	35	nd	none	no comparison	0.0023	**no**
SEMI-VOLATILE ORGANICS	**(µg/kg)**	**(mg/l)**	**(µg/l)**	**(µg/l)**		**(µg/l)**	
Benzo(a)pyrene	**390**	**35**	**1.37E-02**	**none**	**no comparison**	**300**	**no**

Borehole B-16 Parameter	Maximum Concentration in Sediment	Predicted TSS Concentration	Predicted Aqueous Concentration	Water Quality Standards New York SB Classification	Does Predicted aqueous Concentration Exceed the New York SB Classification ?	USEPA Marine Acute Criteria	Does Predicted aqueous Concentration Exceed the USEPA Marine Acute Criteria ?
TOTAL	(mg/kg)	(mg/l)	(mg/l)	(mg/l)		(mg/l)	
Arsenic	nd	35	nd	6.30E-02	no	none	no comparison
Barium	21.6667	35	7.58E-04	none	no comparison	none	no comparison
Cadmium	nd	35	nd	7.70E-03	no	0.043	no
Chromium	18.3333	35	6.42E-04	5.40E-02	no	1.1	no
	8.5	35	2.98E-04	8.60E-03	no	0.14	no
Mercury	0.1267	35	4.43E-06	none	no comparison	0.0021	no
Selenium	nd	35	nd	none	no comparison	0.41	no
Silver	nd	35	nd	none	no comparison	0.0023	no

Response to Data Request of
OPR/DEER/ERC II
Date: October 1, 1999
Docket No. CP98-150-000
Section 375.307(e)

MILLENNIUM PIPELINE COMPANY, L.P.

Data Request No. 13

In its January 28, 1999 comment letter, the DOS stated that your filed consistency certification was deficient. The DOS reiterated this to FERC staff on September 14, 1999 (see memo to the file dated September 27, 1999). The DOS stated that to determine the consistency of a proposed activity with the State's significant coastal fish and wildlife habitat policy (Policy No. 7), a narrative assessment is required that demonstrates how the activity would be undertaken in a manner that protects and preserves the designated habitat. The assessment should include sufficient information to determine whether the activity would destroy the habitat, or significantly impair the viability of the habitat, by affecting important physical, chemical, or biological parameters that the habitat is dependent upon. The DOS stated that your permit application and consistency certification does not address these issues and that they must be addressed in order to assess the consistency of the proposed activity with Policy No. 7.

A narrative assessment of all effects on the designated habitat needs to be provided for all phases of construction and post construction activities and conditions. Specifically address and assess the impact on each of the following, as required by State Coastal Policy No. 7.

a. physical parameters, such as living space, circulation, flushing rates, tidal amplitude, turbidity, water temperature, depth (including loss of littoral zone), morphology, substrate type, vegetation, structure, erosion and sedimentation rates;

b. biological parameters, such as community structure, food chain relationships, species diversity, predator/prey relationships, population size, mortality rates, reproductive rates, behavioral patterns and migratory patterns; and

c. chemical parameters, such as dissolved oxygen, carbon dioxide, acidity, dissolved solids, nutrients, organics, salinity, and pollutants (heavy metals, toxic and hazardous materials).