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April 25, 2005

**BY HAND DELIVERY**

Hon. Jaclyn A. Brilling  
Secretary  
NYS Dep't of Public Service  
Three Empire State Plaza  
Albany, NY 12223-1350

Re: Case 02-T-0036  
Neptune Regional Transmission System, LLC

Dear Secretary Brilling:

Enclosed for filing are: (i) the original and ten copies of an application to amend the certificate of environmental compatibility and public need granted to NeptuneRTS pursuant to Article VII of the Public Service Law by order dated January 23, 2004, as further amended by order dated October 28, 2004, (ii) a copy of the public notice that was published in the *Long Island Newsday* on April 22, 2005 and 25, 2005, and (iii) an affidavit of service of the filing on the persons listed on the Commission's service list as well as those individuals on whom service is required by Commission regulation. Proof of publication of the public notice will be forwarded upon receipt. The application is being filed pursuant to section 122(4) of the Public Service Law; notice and service are being effected pursuant to section 85-2.10 of the Commission's regulations (6 NYCRR 85-2.10). Information within this application that depicts "critical infrastructure" as defined in section 86(5) of the Public Officers Law has been redacted. NeptuneRTS has filed an unredacted application with the Commission's Record Access Officer.

NeptuneRTS believes that a hearing will not be required on the proposed amendments because the changes to the route detailed in the application are minimal and will result in no new or incremental impacts. Further, the amended route will result in no diminishment of benefits to be provided by the NeptuneRTS transmission facility. See

Hon. Jaclyn A. Brillling  
April 25, 2005  
Page 2

PSL § 123(2). NeptuneRTS is submitting this application for amendment to accommodate the request of the Long Island Power Authority to relocate NeptuneRTS's authorized terminus of the interconnection at the western boundary of the Newbridge Road substation to the northeast corner of the substation.

Please call me if you have any questions.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David Allen", with a long horizontal flourish extending to the right.

David Allen

DA:cgw  
Enclosures

cc: Service List (w/enclosures)

NEW YORK STATE BOARD ON ELECTRIC GENERATION  
SITING AND THE ENVIRONMENT

---

In The Matter of the Application of the Application of Neptune  
Regional Transmission System LLC for a Certificate of  
Environmental Compatibility Public Service Need Pursuant to  
Article VII of the Public Service Law

Case No. 02-T-0036

---

**AFFIDAVIT OF SERVICE**

STATE OF NEW YORK)  
                                          )ss:  
COUNTY OF ALBANY)

Terri S. Hart, being duly sworn, deposes and says:

I am over the age of 18, I am not a party to this action, and I am employed by the law firm of Cohen, Dax & Koenig, PC, 90 State Street, Suite 1030, Albany, New York 12207.

On the 25<sup>th</sup> day of April, 2005, I caused to be delivered a true and correct copy of the Application for Second Amendment of the Application to the New York State Public Service Commission for a Certificate of Environmental Compatibility and Public Need or notice to the persons at the addresses shown on the attached list.

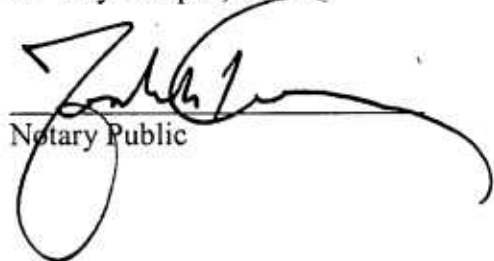
Service was accomplished by delivery in one of the following ways as indicated on the attached lists: 1) by hand delivery; 2) by placing the document in a Federal Express envelope and said envelope having been picked up by a Federal Express employee; or 3) by placing the document in a postage paid envelope and placing the envelope in a mail box regularly maintained by the United States Postal Service, located in the city and county of Albany, New York.

I declared, under penalty of perjury, that the foregoing is true and correct.

Dated: April 25, 2005

  
TERRI S. HART

Sworn to before me this  
25<sup>th</sup> day of April, 2005

  
Notary Public

JOSHUA NOAH KOENIG  
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Commission Expires September 30, 2006

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NOTICE OF APPLICATION TO AMEND  
CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED  
BY NEPTUNE REGIONAL TRANSMISSION SYSTEM, LLC

On or about April 27, 2005, Neptune Regional Transmission System, LLC (NeptuneRTS) will file an application with the New York Public Service Commission (NYPSC) for an amendment of the Certificate of Environmental Compatibility and Public Need (Certificate) granted by the NYPSC on January 23, 2004, and further amended by the Commission in its "Order Granting Amendment of Certificate of Environmental Compatibility and Public Need" issued October 28, 2004.

NeptuneRTS now seeks to amend the Certificate to authorize a minor relocation of the terminus of the AC line that will connect the DC/AC converter station to the Newbridge Road Substation. This minor change from the currently authorized location at the center of the western boundary of the substation to the northeast corner boundary involves a slight eastward shift of the current route of the AC cable system within the Wantagh State Parkway right of way and use of an existing, unused, Long Island Railroad right of way south of Salisbury Park Drive. The total length of the proposed reroute is approximately 0.2-mile. This minor modification will not in any way diminish the public benefits that will be realized by Long Island electricity users from the operation of the NeptuneRTS transmission facility.

The amendment is being proposed at the request of Long Island Power Authority ("LIPA") to coordinate NeptuneRTS's interconnection with LIPA's proposed 345 kV underground transmission circuit connecting the East Garden City Substation to Newbridge Road Substation ("Newbridge Road Connector Project").

This amendment will not result in material changes to, or increases in, any environmental impact or in a substantial change in location of the facility. Accordingly, Neptune RTS will request that the NYPSC grant the application and amend the Certificate without holding any hearings.

Copies of the amendment application will be available for public inspection during normal business hours at: Department of Public Service, Central Files, 14<sup>th</sup> Floor, Three Empire State Plaza, Albany, NY 12223; Department of Public Service, Central Files, 90 Church Street, New York, NY 10007; Westbury Memorial Public Library, 445 Jefferson Street, Westbury, NY 11590; Levittown Public Library, 1 Bluegrass Lane, Levittown, NY 11756; and Oyster Bay-East Norwich Public Library, 89 E. Main Street, Oyster Bay, NY 11771.

Persons desiring to comment on the proposed amendment must file their comments in writing addressed to Hon. Jaclyn A. Brillling, Secretary, Public Service Commission, Three Empire State Plaza, Albany, NY 12223-1350 on or before May 18, 2005.

NeptuneRTS is a Delaware LLC with offices at P.O. Box 1000, One Hunnewell Square, Pittsfield, ME 04967.

**Application for Second Amendment  
of the Application to the New York  
State Public Service Commission for  
a Certificate of Environmental  
Compatibility and Public Need  
Case No. 02-T-0036**

**April 2005**

**Prepared by:**

**NEPTUNE REGIONAL TRANSMISSION SYSTEM LLC  
P.O. Box 1000  
One Hunnewell Square  
Pittsfield, Maine 04967**

**STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION**

-----X  
Case 02-T-0036 Application of Neptune  
Regional Transmission System LLC for a  
Certificate of Environmental Compatibility  
And Public Need Pursuant to Article VII  
of the Public Service Law  
-----X

**APPLICATION FOR SECOND AMENDMENT OF  
CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED**

**INTRODUCTION**

Neptune Regional Transmission System, LLC (“NeptuneRTS”) submits this application for an amendment to the Certificate of Environmental Compatibility and Public Need granted by the Commission in its January 23, 2004, Order in this proceeding as amended by the Commission in its “Order Granting Amendment of Certificate of Environmental Compatibility and Public Need” issued October 28, 2004.

This application, made in accordance with section 123(2) of the Public Service Law, requests an amendment to the Certificate authorizing a minor relocation of the terminus of the alternating current (“AC”) line that will connect the direct current (“DC”)/AC converter station to the Long Island Power Authority (“LIPA”) system from the currently authorized location at the center of the western boundary, to the northeast corner boundary, of the Newbridge Road Substation. The change is sought in order to coordinate NeptuneRTS’s interconnection with LIPA’s proposed 345 kilovolt (“kV”) Underground Transmission Circuit connecting the East Garden City Substation to Newbridge Road Substation (“Newbridge Road Connector Project”) (see PSC Case 04-T-1687).

The change involves a slight eastward shift of the current route within the Wantagh State Parkway right of way (“ROW”) and use of an existing, unused, Long Island Railroad right of way (“LIRR ROW”) south of Salisbury Park Drive. The total length of the proposed reroute is approximately 0.2 mile. No material changes to, or

increases in, the environmental impacts that may potentially result from the construction and operation of the NeptuneRTS facility will occur as a result of the proposed amendment. Further, this minor modification will not in any way diminish the public benefits that will be realized by Long Island electricity users from the operation of the NeptuneRTS transmission facility.

Notice of this application is being provided as required by 16 NYCRR § 85-2.10. NeptuneRTS requests that the requirement for a hearing be waived due to the de minimus nature of the changes being sought.

Communications concerning this application should be directed to:

John W. Dax, Esq.

Charles Micoleau, Esq.

David Allen, Esq.

Curtis Thaxter Stevens Broder & Micoleau LLC  
One Canal Plaza

Cohen, Dax & Koenig, PC

P.O. Box 7320

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Portland, ME 04101

Albany, NY 12207

## DISCUSSION

On January 23, 2004, the Commission issued an "Order Adopting Joint Proposal and Granting Certificate of Environmental Compatibility and Public Need for a Transmission Facility from New Jersey to Long Island." The Order authorized construction and operation of the New York portion of an electric transmission facility consisting of a nominal 600-megawatt ("MW") (+/- 500 kV)<sup>1</sup> submarine and underground high voltage direct current ("HVDC") transmission facility extending from

<sup>1</sup> The size of the NeptuneRTS facility has been described in application documents and discovery responses as "600 MW (nominal)" and its delivery capability has been described as "approximately 600 MW" on a firm basis and up to 750 MW on a short-term basis. See, e.g., Evidentiary Record to Accompany Joint Proposal, Vol. 1, Tab 4, response to DPS 11 and Second Supplement to Application, Exh. E-1, p. E-1-1. In its contract with LIPA, NeptuneRTS has committed to deliver 660 MW on a firm basis, and the facility's capability now is frequently described as being 660 MW. Except as approved by the Commission in its October 28, 2004 Order Granting Amendment, the facility design has not changed in any material manner. However, as a contractual matter, the facility's firm transmission capacity has been refined from "approximately 600" to 660 MW.

Sayreville, New Jersey, to the Newbridge Road substation in Levittown, New York. On October 28, 2004, the Commission granted NeptuneRTS an amendment to its Certificate that provided for (i) changes to the HVDC cable route associated with the marine to land transition and the marine route in Lower New York Bay; (ii) modifications to the HVDC cable design; and (iii) changes in the approved method of submarine cable installation.

The state of New Jersey issued final permits for the New Jersey portion of the facility in December 2004 and the United States Department of the Army issued a final permit in February 2005.

LIPA selected NeptuneRTS as a winning bidder pursuant to a competitive bidding process initiated by LIPA's May 30, 2003, "Request for Proposals to Provide Capacity, Energy, and Ancillary Services to the Long Island Power Authority" ("RFP") for 250-600 MWs of "base-load" supply. NeptuneRTS and LIPA executed a long-term firm transmission capacity purchase agreement ("Contract") on October 4, 2004. Pursuant to the Contract, NeptuneRTS will sell point-to-point, non-interruptible transmission capacity over its facility to LIPA over a 20-year base period.

NeptuneRTS is now in the midst of detailed construction planning. The first Environmental Management and Construction Plan ("EM&CP") filing covering construction of the Long Island Converter Station was filed on March 15, 2005.

This application is necessitated by LIPA's recent request that NeptuneRTS change the location where the underground AC line will enter the Newbridge Road substation that was approved by the Commission in its January Order. Specifically, this proposed amendment accommodates a request from LIPA to move NeptuneRTS's interconnection point to the northeast side of the substation pursuant to good engineering practice in order to avoid interference with existing underground utilities and major installations within the substation, and to co-locate, to the maximum extent possible, the NeptuneRTS interconnection with LIPA's proposed 345 kV Newbridge Road Connector Project and the corresponding modifications to the Newbridge Road substation. The change in the location of the interconnection point and the final 1,125 feet of the

NeptuneRTS AC cable bundle<sup>2</sup> will accommodate the new equipment layout at the Newbridge Road substation as well as avoid crossing underground utilities now exiting the substation. Details of the route modification are provided in Exhibit 2, Location of Facilities.

Impacts from construction will be minimized because NeptuneRTS will use Horizontal Directional Drilling (“HDD”) technology to install the AC cable bundle.<sup>3</sup> NeptuneRTS will conduct its portion of on-site installation work for the AC line during the first and second quarter of 2006, and prior to Memorial Day 2006, in accordance with Certificate Condition No. 29.

LIPA has developed a protocol for specific environmental protection and mitigation measures, filed with the Commission as Appendix D to the Article VII Application for the LIPA – Newbridge Road Connector Project. As will be provided for in NeptuneRTS’s EM&CP for the upland cable installation, NeptuneRTS will employ these same or equivalent measures to protect vegetation and water resources.

## CONCLUSION

NeptuneRTS requests that the Commission grant the requested amendment to the Certificate of Environmental Compatibility and Public Need without hearing.

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<sup>2</sup> The design of the AC line will be substantially as described in NeptuneRTS’s Second Supplement to its Article VII application.

<sup>3</sup> The final approximately 140 feet of the eastern end of the cable that enters the substation will be installed by cut and cover techniques.

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## Exhibit 2

### Location of Facilities

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## EXHIBIT 2 – LOCATION OF FACILITIES

### 2.1 General Description of Facility Location

The amended AC cable route will traverse approximately 1,125 feet within the Wantagh State Parkway ROW and LIRR ROW. The portion of the new cable route within the Wantagh State Parkway ROW comprises a slight eastward shift of the original route, which is necessary to reduce the bend angle of the cable as it turns in an eastward direction towards the substation. The remainder of the new cable route within the LIRR ROW is between LIPA's Newbridge Road substation and the southern side of Salisbury Park Drive. This ROW is not used by the LIRR and the LIRR has no current plans for its future use. The eastern portion of the LIRR ROW comprising the amended cable route currently has an underground 138 kV transmission line owned by LIPA. The 138 kV underground line approaches the substation from the east and would be adjacent to the Neptune line for approximately 210 feet. The LIRR ROW will also be used by LIPA to locate the new 345 kV transmission line that is the subject of Case 04-T-1687.

The NeptuneRTS AC cable bundle, will be installed within a 24- to 30-inch pipe located 10 feet north of the centerline of the LIRR ROW, approximately 15 feet to the south of LIPA's existing 138 kV line and approximately 20 feet to the north of LIPA's proposed 345 kV line. This location maintains sufficient spatial clearance from LIPA facilities to eliminate adverse thermal impacts to all cables.

The portion of the Wantagh State Parkway ROW comprising the proposed cable route consists of a mowed area immediately adjacent to the roadway pavement, which is bordered by a forested area. The forested area serves as a buffer between the parkway and residences to the east. The LIRR ROW runs parallel to and between Salisbury Park Drive and the substation fence. The ROW is below the grade of Salisbury Drive and is separated from Salisbury Park Drive by a steep slope. The LIRR ROW is not maintained and currently serves no recreational purpose. There are no bike or foot paths through the LIRR ROW and access and use are limited by the sharp slope off Salisbury Park Drive and thorny undergrowth throughout the LIRR ROW.

## **2.2 Location Maps**

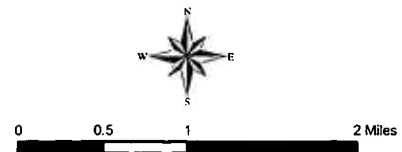
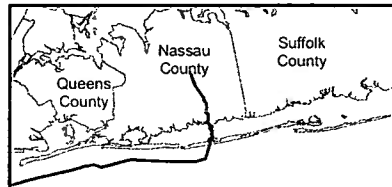
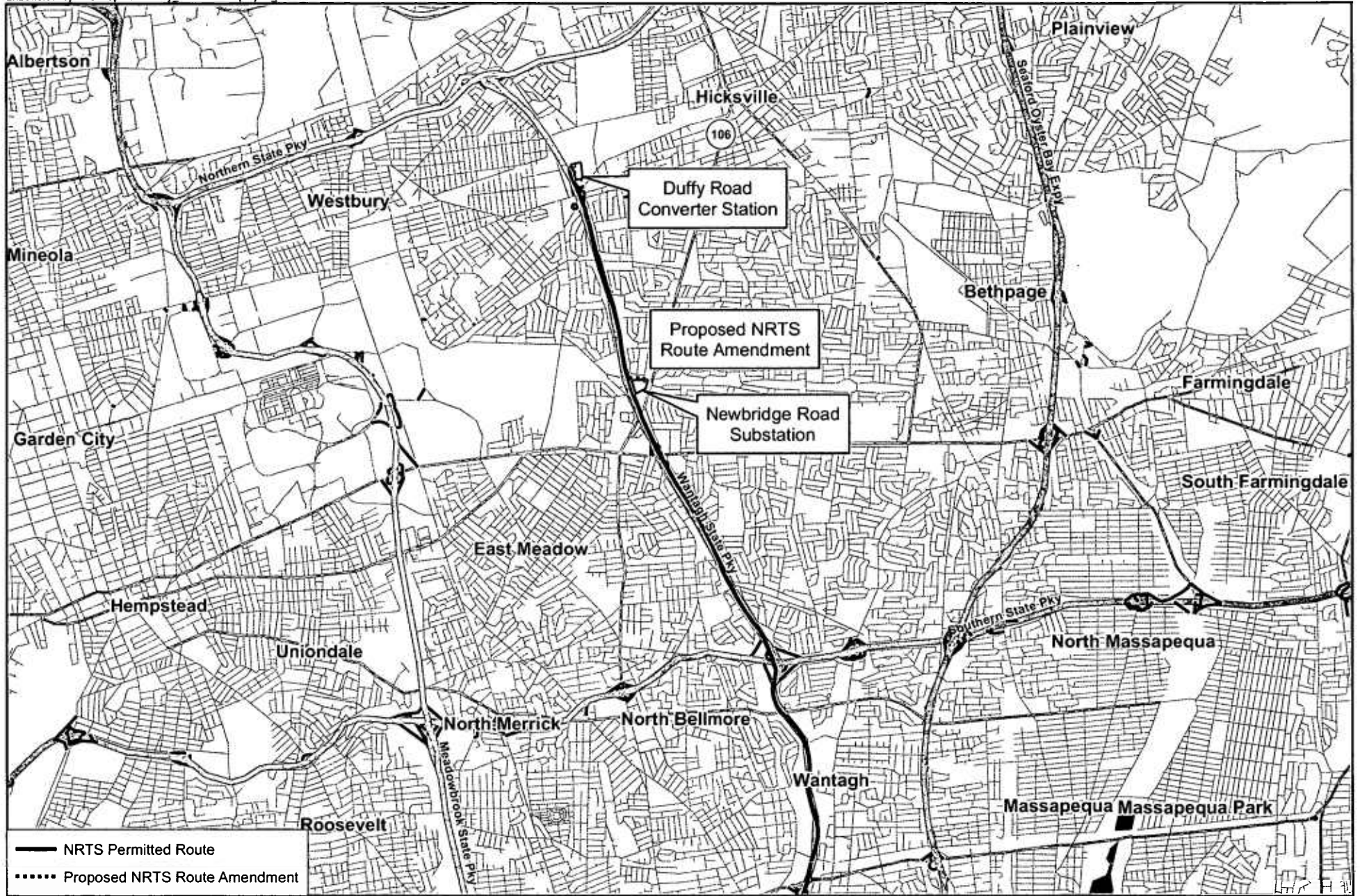
Figure 2-1 shows the regional location of the project area. The proposed cable route on a 1:24,000 scale New York State Department of Transportation (NYSDOT) base map is provided in Figure 2-2.

## **2.3 Aerial Photographs**

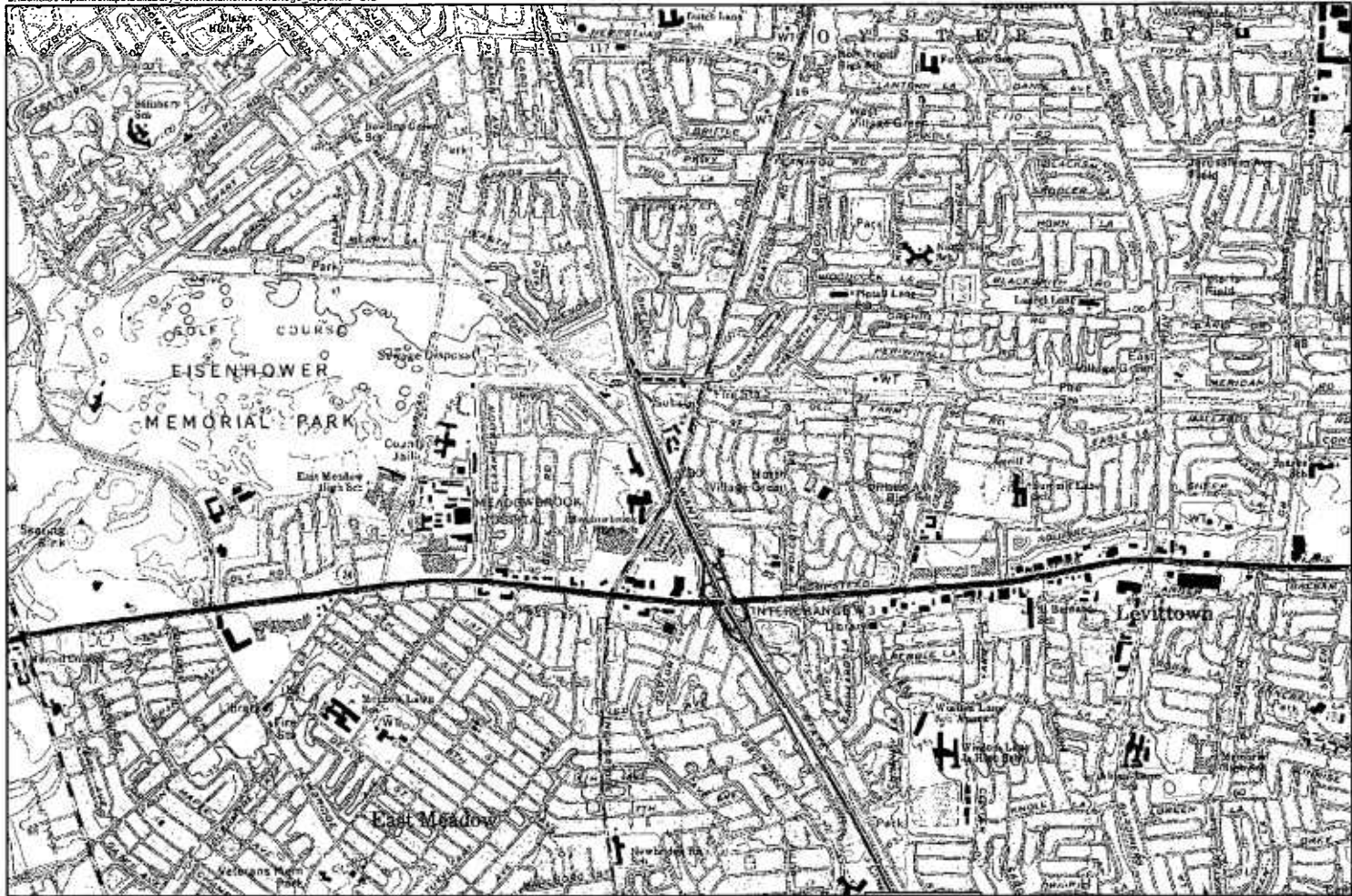
Figure 2-3 shows the location of the permitted AC cable route in relation to the proposed route amendment on an aerial photograph. The approximate locations of the 10- by 20-foot horizontal directional drilling (HDD) entry and exit pits are also shown on Figure 2-3. Aerial photo coverage for the proposed cable route was obtained from the New York State Geographic Information System Clearinghouse and is dated April 2000. The land use features shown on the aerial photo were identified as being consistent with current conditions based on a field review of the project area completed on Friday, March 18, 2005.

## **2.4 Supplemental Right-of-Way Information**


Figure E-2-1 in Exhibit E-2 depicts the proposed location of the NeptuneRTS AC cable within the LIRR ROW and the locations of LIPA's existing 138 kV transmission line and LIPA's proposed 345 kV transmission line.



**FIGURE 2-1  
PROJECT NEPTUNE:  
PROJECT AREA MAP  
FOR SALISBURY PARK  
DRIVE ROUTE AMENDMENT**

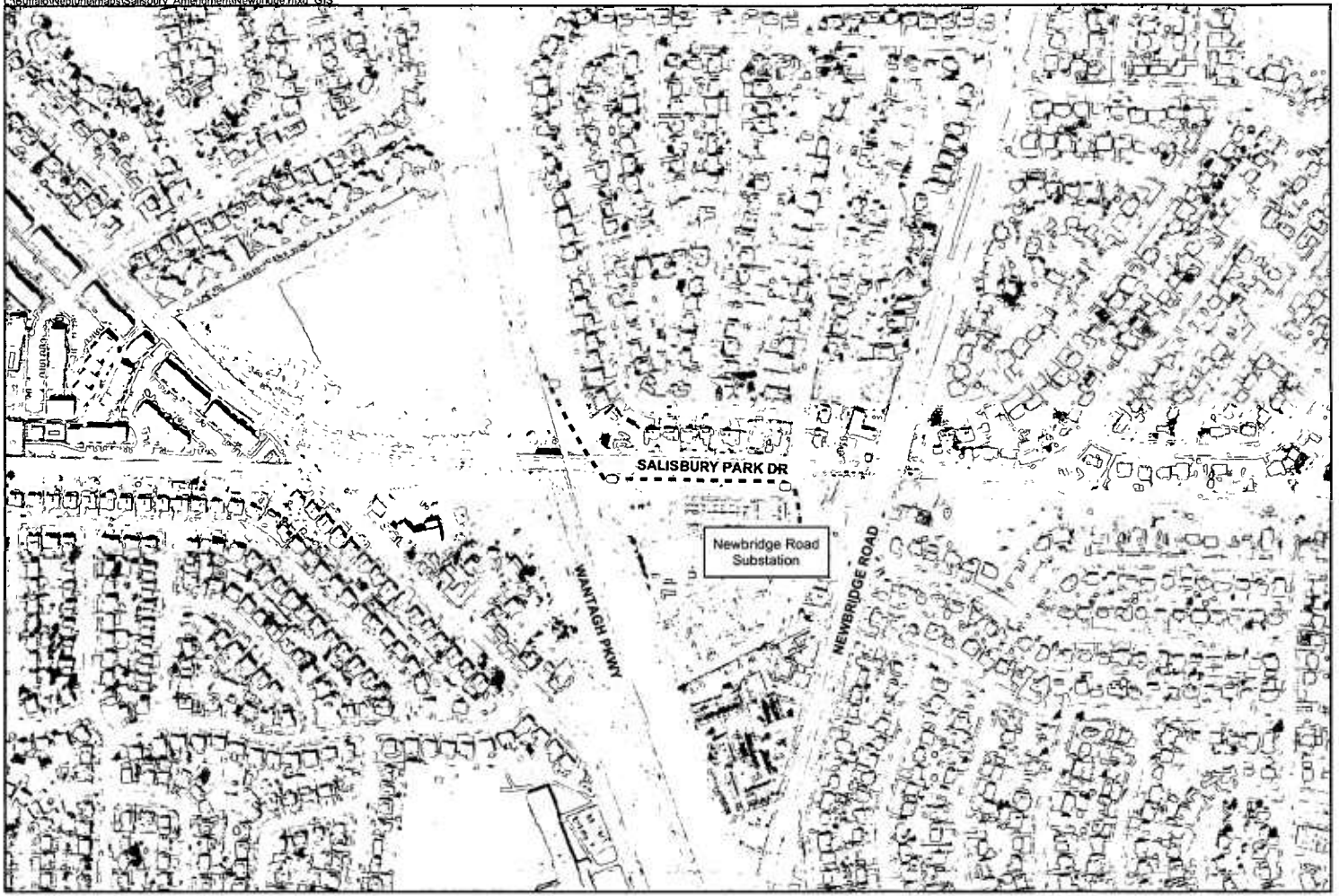


NRTS Permitted Route  
 Proposed NRTS Alternative HDD Route



0      0.25      0.5      1  
Miles

**FIGURE 2-2**  
**PROJECT NEPTUNE:**  
**PROJECT LOCATION MAP FOR**  
**SALISBURY PARK DRIVE**  
**ROUTE AMENDMENT**



- Permitted AC Route
- Permitted DC Route
- - - Proposed NRTS Alternative AC Cable Route
- Directional Drill Pit (10 x 20 Feet)



**FIGURE 2-3  
PROJECT NEPTUNE:  
AERIAL IMAGERY MAP FOR  
SALISBURY PARK DRIVE  
ROUTE AMENDMENT**

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## Exhibit 4

### Environmental Impact

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## **EXHIBIT 4 – ENVIRONMENTAL IMPACT**

### **4.3 Land Use**

The proposed modifications to the project will not cause any new impacts to land use. Land uses immediately bordering the proposed cable route include the shoulder and ROW of the Wantagh State Parkway and Salisbury Park Drive. Adjacent land uses include a residential area north of Salisbury Park Drive within approximately 100 feet of the cable route and additional residential areas and public land west of the parkway.

Utilization of the Wantagh State Parkway ROW and LIRR ROW for the placement of the cable avoids many potential impacts to existing and planned land uses. Implementation of HDD technology for the cable installation further minimizes impacts. No construction activities will occur on or immediately adjacent to the Wantagh State Parkway or Salisbury Park Drive; therefore, transportation on these roadways will not be affected. Some minor noise disturbance to residences north of Salisbury Park Drive may occur during the excavation of the entry and exit pits during the HDD installation phase of the project. However, this will be a temporary, minor impact and will be mitigated by limiting drilling activities to daylight hours on weekdays between 7:00 a.m. and 6:00 p.m.

### **4.5 Cultural Resources**

The New York State Office of Parks Recreation and Historic Preservation (OPRHP) has conducted a preliminary review of the proposed cable route and has determined that a field evaluation is required to either: a) document that the areas of potential effect (APEs) associated with the HDD entry and exit pits have been significantly disturbed and therefore have no potential to contain cultural resources; or b) in the absence of significant prior disturbance, complete subsurface testing to document the presence/absence of cultural resources. The requested field evaluation of the project area will be completed as part of the EM&CP process. In accordance with Condition 73 of the Amended Certificate Conditions, "The Certificate Holder shall refrain from undertaking construction in areas where cultural resource surveys have not been completed



and until such time as the results of any additional cultural resource surveys that are required have been reviewed by the appropriate authorities, including OPRHP and DPS...”

## 4.6 Terrestrial Ecology and Wetlands

The proposed modifications to the project will not cause any new impacts to terrestrial ecology or wetlands. Wetlands potentially present along the cable route were initially evaluated through a review of New York State Department of Environmental Conservation (NYSDEC) Freshwater Wetlands maps and United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps. A field visit was completed along the route on Friday, March 18, 2005, to document field conditions. Recent aerial photographs were also reviewed to assist in the identification of terrestrial habitats along the cable route. The potential occurrence of threatened and endangered species and significant habitats in the vicinity of the project area was assessed by reviewing recent agency correspondence and relevant materials provided for the proposed Newbridge Road Connector Project, which occurs in the immediate vicinity of the proposed cable amendment.

### 4.6.1 Vegetation

The proposed modifications to the project will not cause any new impacts to vegetation. The proposed cable route traverses two vegetation communities: mowed roadside/pathway and successional shrubland. Both of these communities are characteristic of disturbed environments. The mowed roadside/pathway community occupies approximately 150 feet of the route adjacent to the Wantagh State Parkway. The predominant vegetation within this community along the ROW includes vetch (*V. sativa*), goldenrod (*Solidago spp.*), ragweed (*Ambrosia artemisifolia*), and Queen Anne’s lace (*Daucus corota*).

The successional shrubland community comprises the remainder of the route. Dominant vegetation in this community includes raspberry (*Rubus idaeus*) in the herbaceous layer, Japanese knotweed (*Polygonum cuspidatum*), honeysuckle (*Lonicera sp.*), grape vine (*Vitis vinifera*), and sugar maple (*Acer saccharum*) in the shrub layer, and black cherry (*Prunus serotina*), black locust (*Robinia pseudoacacia*), and American beech (*Fagus grandifolia*) in the tree layer.

Impacts to vegetation along the cable route will be significantly minimized through the use of HDD technology to install the cable. The area of vegetation disturbance will primarily be limited to three 10- by 20-foot HDD entry and exit pits. One of these exit pits will be located within the grassy area on the Wantagh State Parkway ROW, while the other two will be in overgrown areas on the LIRR ROW. The majority of the final 140 feet of the cable that will be installed by cut and cover techniques is within the graded and filled substation boundary and is therefore clear of vegetation. The total vegetated area affected by the HDD cable installation is less than 0.1 acre. All disturbed areas of vegetation within the ROW of the cable route will be restored according to a project-specific revegetation plan being incorporated into the NeptuneRTS EM&CP.

In addition to the minor area that would be cleared to accommodate the HDD installation, some selective tree clearing may be required on and immediately adjacent to the proposed cable route for maintenance and cable integrity purposes. Any selective tree clearing would have a minor effect on vegetation given the disturbed nature of the area and small number of trees that would be affected. The existing tree line along the edge of Salisbury Park Drive that serves as a visual screen between the roadway and substation will not be affected.

#### **4.6.2 Wetlands**

The proposed cable route crosses no NYSDEC or NWI mapped wetlands. The absence of wetlands and other surface waters was confirmed during a field reconnaissance of the project area on March 18, 2005. Consequently, the proposed project will have no effect on wetlands.

#### **4.6.3 Threatened and Endangered Species**

According to a list of protected species and habitats provided by the NYSDEC and USFWS in the fall of 2004 for the Newbridge Road Connector Project, which occurs immediately adjacent to the proposed NeptuneRTS cable reroute, no threatened or endangered species or critical habitats are known to occur in the vicinity of the project area. Based on this information, as well as the disturbed nature and size of the project area, the proposed action would have no effect on threatened or endangered species.

## **4.7 Topography, Geology, and Soils**

### **4.7.1 Geology**

The proposed modifications to the project will not cause any new impacts to geology. The project area is within the Atlantic Coastal Plain Province. Bedrock in this portion of Long Island is found at depths greater than 2,000 feet below sea level and surficial materials, comprising sand and gravel, extend to a depth of about 120 feet below sea level.

The directional drilling associated with the project will generally be at depths of 42 inches. Drilling will have a negligible impact on geologic resources due to the small area of the borehole (10-inch diameter) and shallow drill depth.

### **4.7.2 Topography**

The proposed modifications to the project will not cause any impacts to topography. The northern end of the cable route traverses a flat area with an elevation of approximately 100 feet above mean sea level (amsl). The route crosses a relatively steep-sloped area on either side of Salisbury Park Drive, and then runs along a flat area at the base of this slope to the tie-in location at the substation.

Impacts to topography will be limited to shallow excavations required for the HDD entry and exit pits. These areas will be restored to original site conditions following construction; therefore, there will be no permanent impact on local topography.

### **4.7.3 Soils**

The proposed modifications to the project will not cause any significant impacts to soils. Soils traversed by the cable are classified as Urban Land. These soils include disturbed areas that no longer exhibit properties of native soils and are generally the result of cut and fill material that has been brought into the area during past construction and building activities. Impacts to soils will be minimal and limited to the immediate area of the HDD operations (e.g., entry and exit pits) and along the final 140 feet of the cable that will be installed by cut and cover. The total

area of surface disturbance required for the project will be less than 0.1-acre. Following construction, all disturbed areas will be regraded and seeded to minimize erosion.

#### **4.8 Transportation**

Coordinating construction schedules with LIPA where possible, utilizing HDD technology and locating entry and exit pits within the Wantagh Parkway's grassy median and the Long Island Railroad ROW construction will minimize impacts on transportation.

#### **4.11 Transmission Line EMF**

To evaluate potential EMF from the proposed relocated cable along the LIRR ROW, an EMF study was undertaken by E/PRO Consulting LLC that includes a computer simulation of the magnetic field levels from the proposed cable. The study and results are presented in Appendix C.

The EMF computer simulation of magnetic field levels produced by the proposed NeptuneRTS cable, the proposed 345kV Newbridge Road Connector Project, and existing electric lines within the LIRR ROW demonstrates that magnetic field levels are well below the maximum levels at the edge of ROW as set out by the New York State Public Service Commission (200 milligauss for magnetic fields).

Due to the line configuration, no electric fields will result from the operation of the new cables. At no time will the electric fields exceed the maximum levels at the edge of ROW as set out by the New York State Public Service Commission (1.6 kV per meter).

In addition to electric and magnetic fields, the study also looked at potential interference with radio and television. No additional radio noise, telecommunication, or television interference will be produced as a result of the Project.

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**Exhibit E-2**

**Description of Terminal Facility**

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## EXHIBIT E-2 – LOCATION OF FACILITIES

### E-2.1 Converter Station

The amended route of the NeptuneRTS AC cable will terminate at the northeast side of the Newbridge Road Substation where it will connect to a new 345 kV Gas Insulated Substation (GIS) bus arrangement having a minimum of two SF6 breakers and two interconnecting 345/138 kV autotransformers with secondary side interconnections onto the 138 kV bus.

Figure E-2-1 shows the layout of the Newbridge Road Substation and the route of the AC cable in the vicinity of the substation, as well as other utility lines in the vicinity of the proposed cable route.

Figure E-2-1 has been redacted because it contains a layout of “critical infrastructure” as defined in section 86(5) of the Public Officers Law. Figure E-2-1 has been filed with the Public Service Commission’s Record Access Officer.



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**Exhibit E-5**

**Effects on Communications**

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## **EXHIBIT E-5 – EFFECTS ON COMMUNICATIONS**

At 345 kV and above, there is a potential for transmission lines to cause radio and telecommunication noise and television interference near the transmission line. These impacts were studied as part of the EMF study presented in Appendix C.

In summary, no additional radio noise, telecommunication, or television interference will be produced as a result of the project due to the use of a shielded, underground cable and burial depth to approximately 27 feet below grade.

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# Appendix C

## Magnetic Field Analysis

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**MAGNETIC FIELD ANALYSIS**

**NEPTUNE Regional Transmission  
System  
Salisbury Road Article VII  
Amendment Application**

**Prepared for**

**Neptune Regional Transmission System, LLC**

**by**



**E/PRO Consulting, LLC  
Contract # 10664**

Prepared by:

*Thomas J. F. Ordon*  
Thomas J. F. Ordon, P.E.



# NEPTUNE Regional Transmission System, Salisbury Road Article VII Amendment – Magnetic Field Analysis

By Thomas J. F. Ordon, P.E.

**INTRODUCTION:** The Neptune Regional System (NeptuneRTS) proposes to locate a portion of its 345kV underground AC cable south of and parallel to Salisbury Park Drive, so as to accommodate the Long Island Power Authority's (LIPA) Newbridge Road Connector Project. In this study, the existing magnetic fields and the post-construction magnetic fields along the adjusted route of NeptuneRTS's 345kV line have been calculated. The location selected for the calculation was near the northwest corner of the Newbridge Road Substation, just south of Salisbury Park Drive and east of the Wantagh State Parkway where the subject line is 20 feet north of and parallel to the 345kV AC cable of LIPA's Newbridge Road Connector Project.

**CALCULATIONS:** The magnetic field levels were calculated using C3CORONA, the corona and field effects computer program developed by the Bonneville Power Administration and the U. S. Department of Energy. To facilitate the investigation, calculations were developed along a profile that was oriented at right angles (north to south) to the proposed NeptuneRTS underground AC cable. The levels were calculated at the height of one meter above ground.

The computer model not only included data for the subject line but also for other transmission facilities within the right-of-way corridor that would contribute to the cumulative magnetic field levels, specifically:

- the NeptuneRTS 345kV cable
- the Newbridge Connector Project 345kV cable (LIPA)
- the # 644 69kV overhead circuit (LIPA)
- the # 475 69kV underground cable (LIPA)

Input parameters used in the computer program were:

- the physical location and special geometry of the underground and overhead power conductors and overhead ground wires
- the physical specifications of the power conductors and overhead ground wires
- the operating voltages and currents
- the phasing orientation of the power conductors

The phase currents used in the computer calculations are the winter normal current ratings except in the case of NeptuneRTS's AC cable where the current was defined as being the "normal continuous load" of the circuit. The phasing for the overhead circuit (#644) is the actual phasing. The phasing for the underground circuits was selected to provide the worst case (i.e. producing the maximum magnetic field levels).

NeptuneRTS and Keyspan provided all the information used in the calculations to E/PRO.

Selected circuit parameters used in the calculations are shown in the table below:

CIRCUIT	HORIZONTAL COORDINATE	VOLTAGE	PHASE CURRENT	PHASING
NeptuneRTS	0	345kV	1116 A	C-B-A (N to S)
Newbridge Rd. Connector	+ 20	345kV	1397 A	A-B-C (N to S)
#644 (O.H.)	+ 45	69kV	614A	B-C-A (top to bottom)
#475 (U.G.)	+ 47.5	69kV	1246 A	A-B-C (N to S)

The presence of any other electrical facilities or utility lines that might affect the cumulative magnetic field levels was not identified.

**RESULTS:** The results of the calculations are presented in the attached figures. Each figure shows the calculated levels along a profile extending southerly from Salisbury Park Drive, crossing the centerline of the NeptuneRTS circuit and proceeding toward the substation.

- **FIGURE 1 - NeptuneRTS Calculated Magnetic Fields – Existing Configuration** shows the calculated magnetic field levels before either of the 345kV cables are installed.
- **FIGURE 2 - NeptuneRTS Calculated Magnetic Fields – Intermediate Configuration** shows the calculated magnetic field levels after the construction of the NeptuneRTS 345kV cable.
- **FIGURE 3 – NeptuneRTS Calculated Magnetic Fields – Final Configuration** shows the calculated magnetic field levels after the construction of the NeptuneRTS 345kV cable and the Newbridge Road Connector 345kV cable.

A comparison of the graphs indicates that the construction and operation of Neptune RTS 345kV AC cable contributes very little to the cumulative magnetic field levels at the assessment site. (Horizontal coordinate 0 on the graphs.) The largest magnetic field is and will be produced by the Newbridge Road Connector Project 345kV cable (Horizontal coordinate +20 on the graphs.)

The subject line will be installed approximately 27 feet below grade while the existing underground circuits and the Newbridge Road Connector Project are approximately 4-6 feet below grade. The installation depth of the NeptuneRTS 345kV AC cable results in its magnetic fields being attenuated at the ground line.

Finally, because of the installation depth, NeptuneRTS's 345kV AC cable will not interfere with communications. Any interference, if detected, may be caused by corona effects produced by above ground facilities (i.e. the overhead transmission and distribution facilities including substation equipment).

FIGURE 1 - NeptuneRTS Calculated Magnetic Fields - Existing Configuration

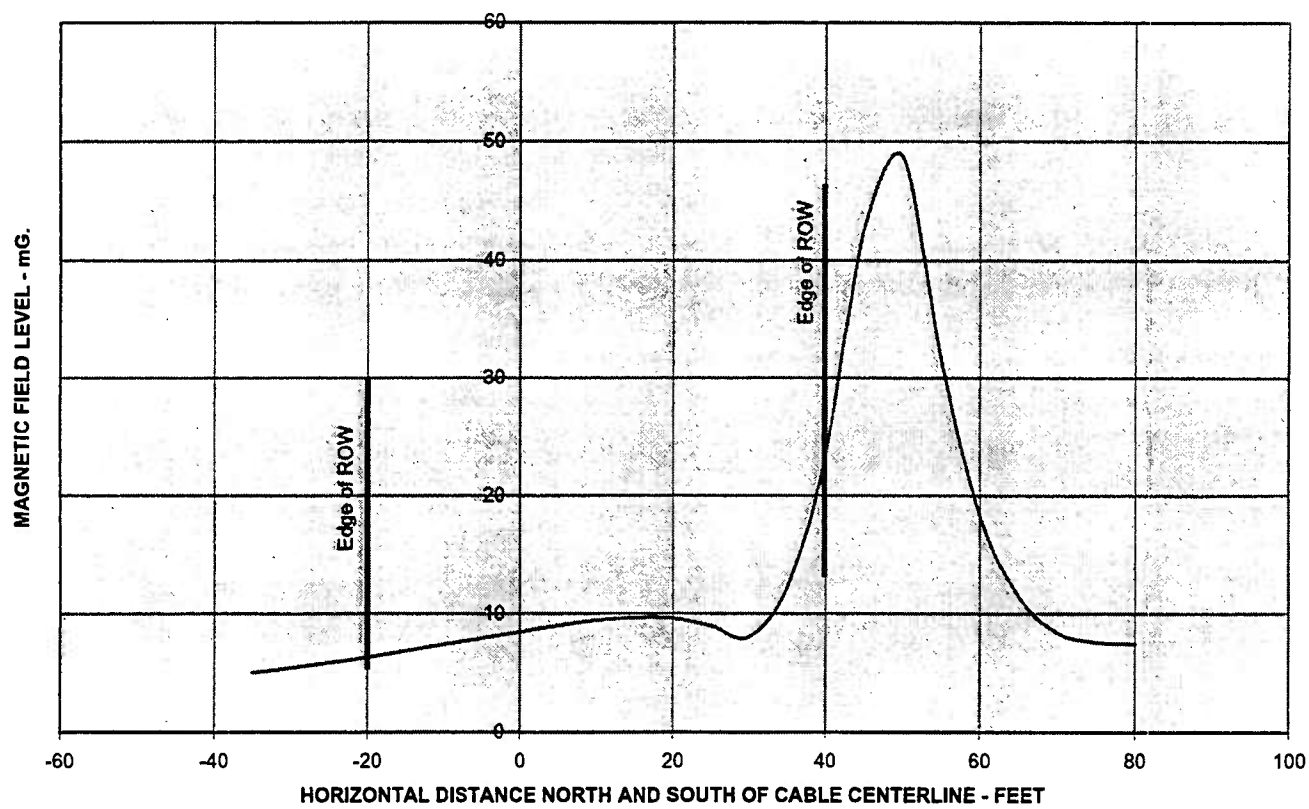




FIGURE 2 - NeptuneRTS Calculated Magnetic Fields - Intermediate Configuration

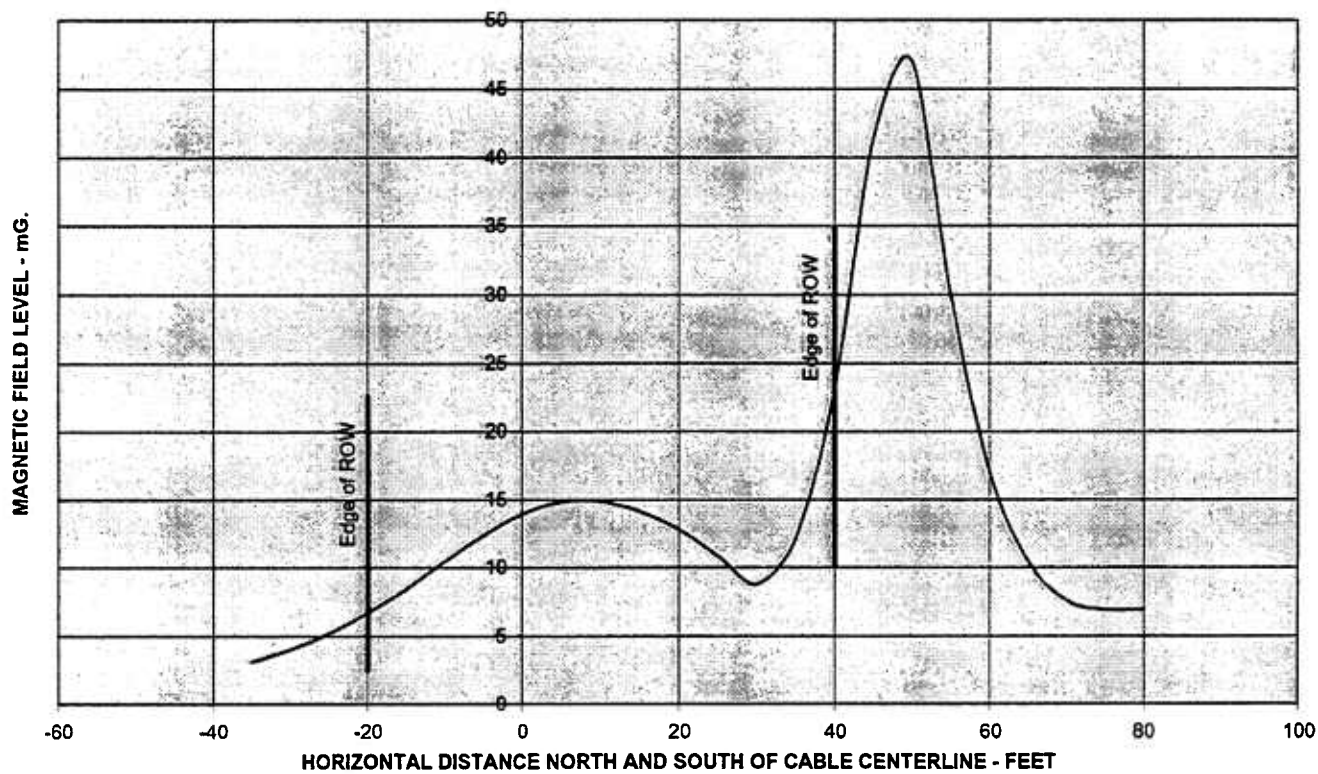


FIGURE 3 - NeptuneRTS Calculated Magnetic Fields - Final Configuration

