



APPLICATION ACCEPTED: September 24, 2007  
PLANNING COMMISSION: February 13, 2008  
BOARD OF SUPERVISORS: February 25, 2008 @ 3:30 pm

# County of Fairfax, Virginia

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January 29, 2008

## STAFF REPORT

APPLICATION SEA 81-S-053  
and 2232-S07-10

### SPRINGFIELD DISTRICT

**APPLICANT:** Virginia Electric & Power Company

**ZONING:** R-1, WS

**PARCEL:** 55-3 ((1)) 31A

**ACREAGE:** 10 acres

**PLAN MAP:** Residential @ 1-2 du/ac and Public Facilities

**SE CATEGORY:** Category 1; Use 1 (Electrical Substation) and Use 2 (Petroleum Control and Distribution Station)

**PROPOSAL:** Amend a previously approved special exception and approval of 2232 review to allow the addition of a third transformer to an existing electrical substation (also the site of a gas pumping and distribution station)

### STAFF RECOMMENDATIONS:

Staff recommends that the Planning Commission find that the facility proposed under 2232-S07-10 does satisfy the criteria of location, character and extent as specified in Sect. 15.2-2232 of the Code of Virginia, and is substantially in accord with the provisions of the Comprehensive Plan.

O:\tswag\VA Power SEA 81-S-053\SEA 81-S-053.doc

**Department of Planning and Zoning**  
Zoning Evaluation Division  
12055 Government Center Parkway, Suite 801  
Fairfax, Virginia 22035-5509  
Phone 703 324-1290  
FAX 703 324-3924  
[www.fairfaxcounty.gov/dpz/](http://www.fairfaxcounty.gov/dpz/)

Excellence \* Innovation \* Stewardship  
Integrity \* Teamwork \* Public Service

Staff recommends approval of SEA 81-S-053, subject to the proposed development conditions contained in Appendix 1.

Staff recommends approval of a modification of the transitional screening requirements to allow the use of existing vegetation and as shown on the SE Plat.

Staff recommends approval of a modification to the barrier requirements in favor of that shown on the SE Plat.

It should be noted that it is not the intent of the staff to recommend that the Board, in adopting any conditions, relieve the applicant/owner from compliance with the provisions of any applicable ordinances, regulations, or adopted standards; and that, should this application be approved, such approval does not interfere with, abrogate or annul any easements, covenants, or other agreements between parties, as they may apply to the property subject to this application.

It should be further noted that the content of this report reflects the analysis and recommendation of staff; it does not reflect the position of the Board of Supervisors.

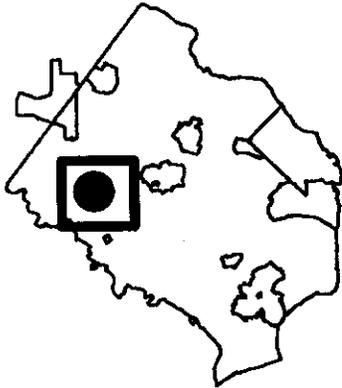
For information, contact the Zoning Evaluation Division, Department of Planning and Zoning, 12055 Government Center Parkway, Suite 801, Fairfax, Virginia 22035-5505, (703) 324-1290 or TTY 711 (Virginia Relay Center).



Americans with Disabilities Act (ADA): Reasonable accommodation is available upon 7 days advance notice.  
For additional information on ADA call (703) 324-1334 or TTY 711 (Virginia Relay Center).

# Special Exception Amendment

SEA 81-S-053



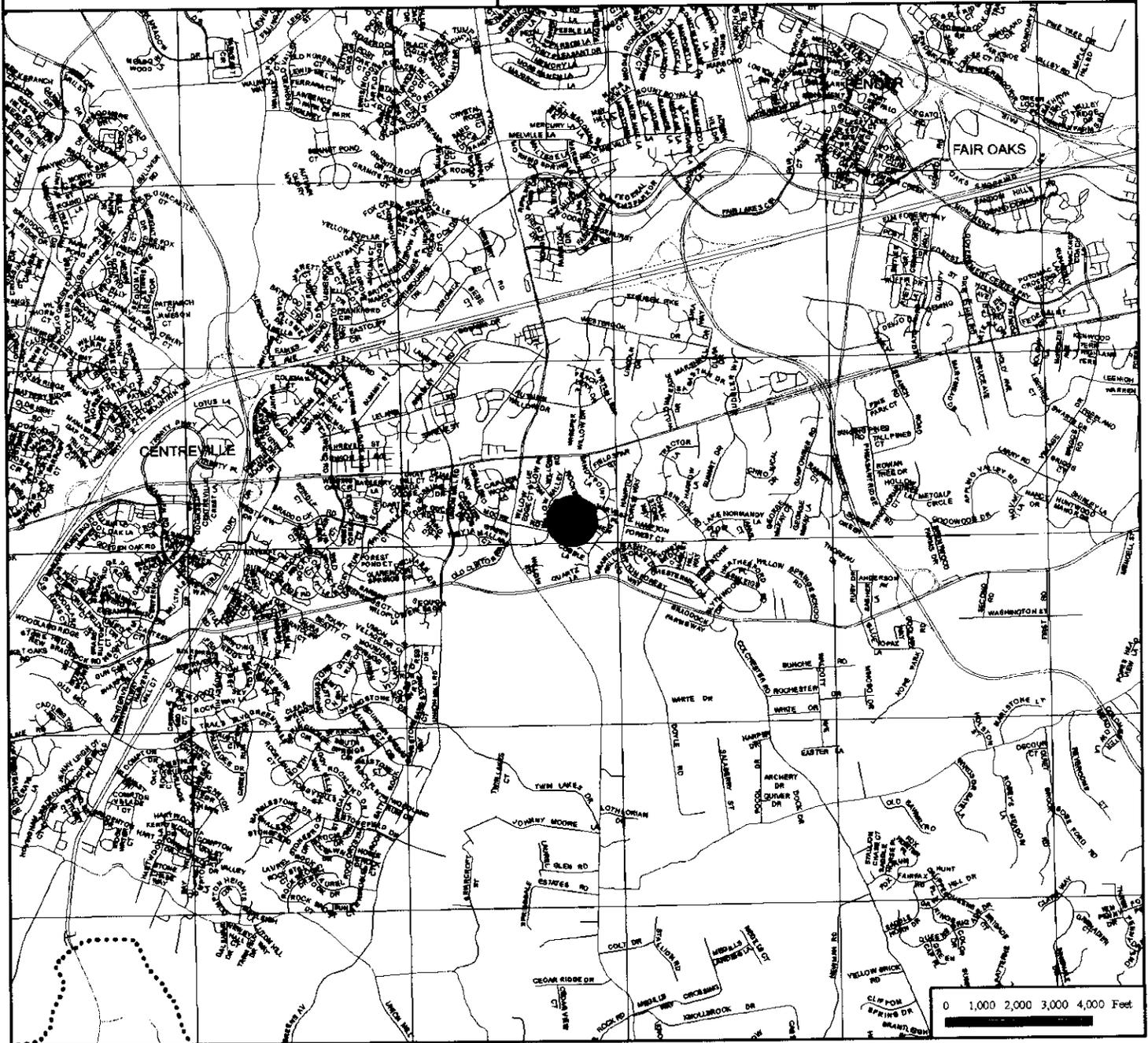
**Applicant:**  
**Accepted:**  
**Proposed:**

VIRGINIA ELECTRIC & POWER COMPANY

09/24/2007

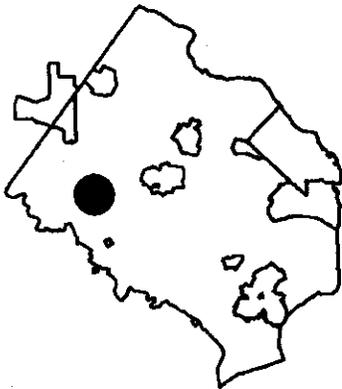
TO AMEND SE 81-S-053 PREVIOUSLY APPROVED FOR A PETROLEUM CONTROL AND DISTRIBUTION STATION TO PERMIT EXPANSION OF AN EXISTING ELECTRIC SUBSTATION AND ASSOCIATED MODIFICATIONS TO SITE DESIGN

**Area:** 10 AC OF LAND; DISTRICT - SPRINGFIELD  
**Zoning Dist Sect:** 03-0104  
**Art 9 Group and Use:** 1-01 1-02  
**Located:** 13100 MOORE ROAD  
**Zoning:** R-1  
**Plan Area:** 3  
**Overlay Dist:** WS  
**Map Ref Num:** 055-3- /01/ /0031A



# Special Exception Amendment

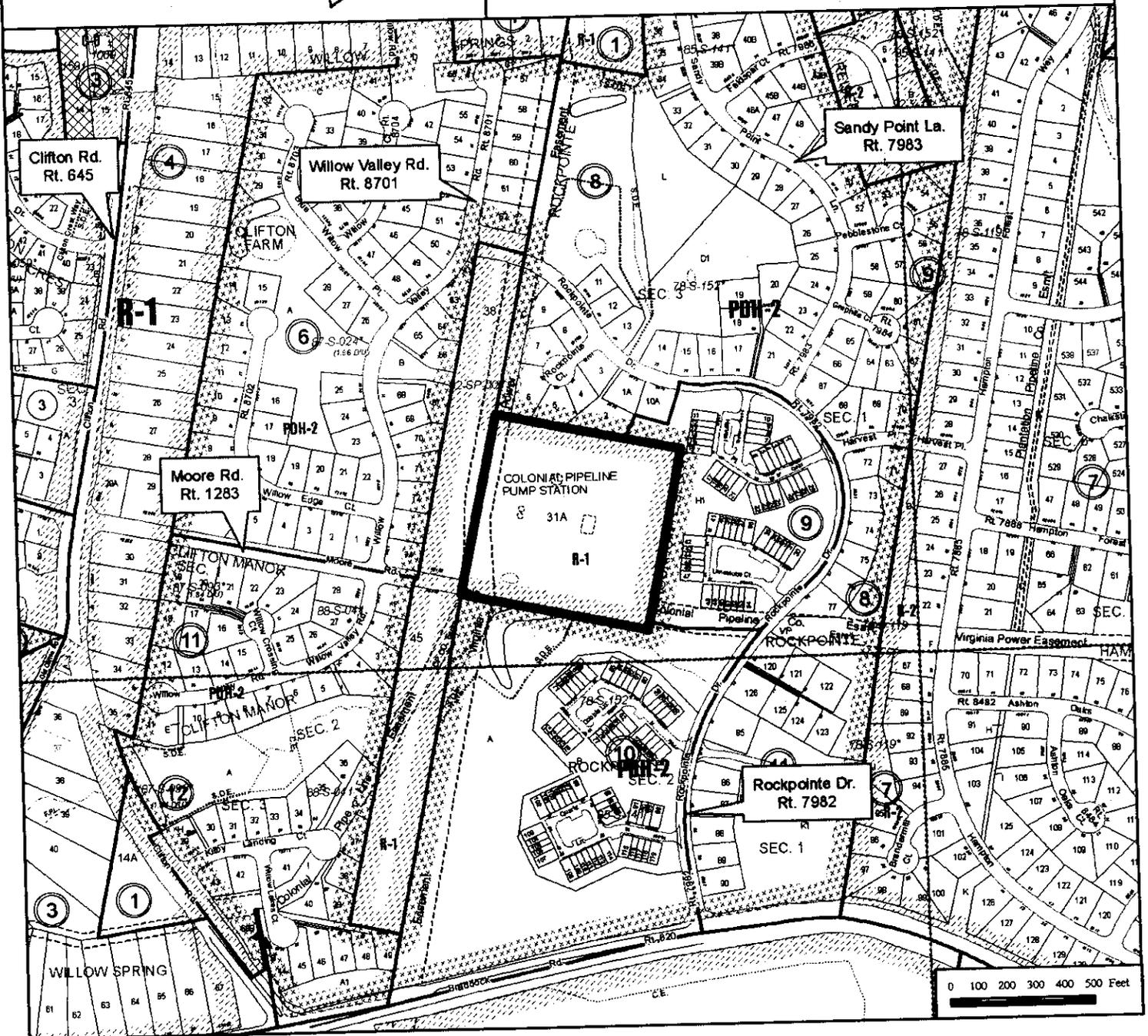
## SEA 81-S-053



Applicant:  
Accepted:  
Proposed:

VIRGINIA ELECTRIC & POWER COMPANY  
09/24/2007  
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VEGETATION MAP  
 CENTRAL GAS PIPELINE CO.  
 CENTREVILLE SUB STATION

3635 CONCORD PARKWAY, SUITE 300, CHARLottesville, VIRGINIA 22903  
 PHONE: (804) 961-1200 FAX: (804) 961-1211  
 GREENHORN & O'MARA  
 ENVIRONMENTAL  
 GEOGRAPHIC SCIENCES  
 GENERAL CIVIL

NO.	DATE	REVISION
1	8/13/07	PER COUNTY COMMENT OF 7/31/07
2	12/28/07	PER COUNTY COMMENT OF 10/29/07

APPLICATION NUMBERS  
 594 81 - S - 053 - 1  
 2322 - 507 - 10  
 2 of 4



Forest Cover Type	Dominant Species	Co-Dominant Species	Successional Stage	Condition	Acres
2	Maple Forest	Oak Hickory	Sub Climax	Essentially Good	3.30
5	Developed Land	N/A	N/A	N/A	6.70

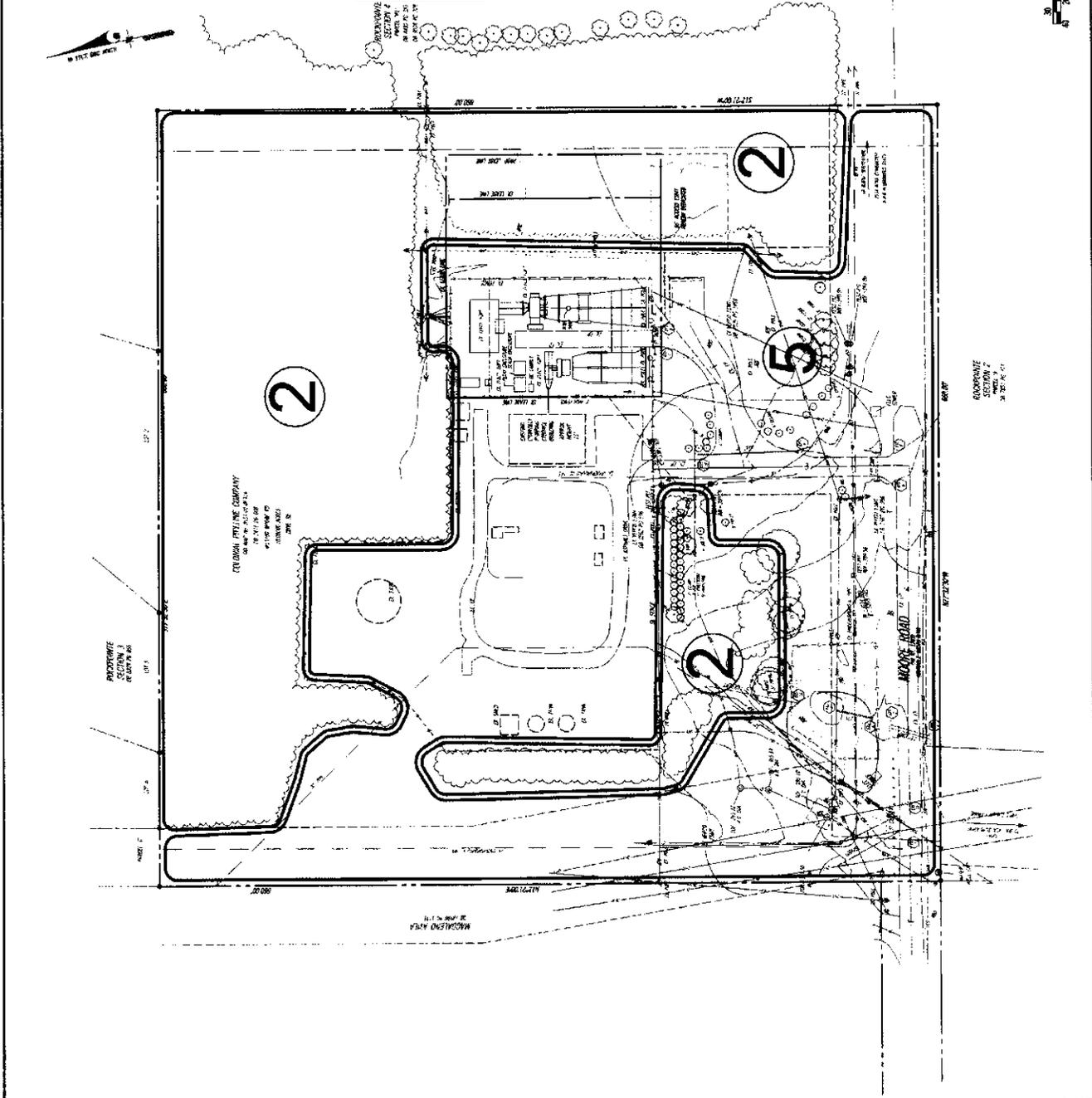
CONDITIONS/DESCRIPTIONS

FOREST COVER TYPE 2: THESE WOODED AREAS CONTAIN THE ONLY TREES OF ANY SUBSTANCE ON THE SITE. THE TREES RANGE IN SIZE FROM 2" DBH UP TO 30" DBH. DURING THE GENERAL HEALTH OF THE TREES IS GOOD. CONSIDERING THE LACK OF MAINTENANCE OVER THE PAST SEVERAL YEARS, A FEW DEAD AND DYING TREES WERE OBSERVED. THE DEAD AND DYING TREES WERE AND SHOWED NO SIGNS OF PHYSICAL STRESS OR INSECT INFESTATION.

FOREST COVER TYPE 5: THIS AREA IS THE PRESENT SITE PRESENT WITHIN THE EXISTING FENCED COMPOUND OR IN THE NEAR VICINITY OF THE FENCE.

LEGEND

- EXISTING POWER LINES
- FENCE, CHAIN LINK 7' HIGH W/ 3 STRANDS BARBED WIRE 1" HIGH @ OVERALL HEIGHT
- PROPERTY LINES
- DEAD TREES
- DYING TREES
- PROPOSED FENCE LINE AND LIMIT OF CLEARING
- LIMITS OF DISTURBANCE
- PROPOSED DRIVEWAY
- PROPOSED BY TELEPHONE CONSULTING SURVEYING POINT
- PROPOSED POLE
- EXISTING POLE
- PROPOSED POWER LINES
- PROPOSED DRIVEWAY, UTILITY AND STRUCTURE







**A GLOSSARY OF TERMS FREQUENTLY  
USED IN STAFF REPORTS MAY BE  
FOUND AT THE BACK OF THIS REPORT**

**DESCRIPTION OF THE APPLICATION**

**Proposal:**

The applicant is seeking approval of an amendment to a previously approved special exception and concurrent 2232 review to allow the addition of a third electrical transformer (and related site improvements) to an existing site. The site as currently developed includes both electrical transformers owned and operated by Virginia Electric and Power Company (Virginia Dominion Power) and petroleum pumping station facilities owned and operated by Colonial Pipeline.

**Waivers & Modifications:**

Modification of the transitional screening requirements in favor of that shown on the SE Plat to the south and west, and to allow the use of existing vegetation on all sides.

Modification to the barrier requirements in favor of that shown on the SE Plat

**LOCATION AND CHARACTER**

**Site Description:**

The application property is located at 13100 Moore Road, at the terminus of Moore Road, surrounded by Hayden Village (Rockpointe) residential subdivision to the north, east and south. To the west is long, narrow, residentially-zoned property and the Clifton Farm subdivision.

Single family attached homes are located in the Hayden Village subdivision due east and south of the subject property. Single family detached homes are located to the north and west in Hayden Village and Clifton Farm subdivisions, respectively. The surrounding area is planned for residential use at 1-2 dwelling units per acre and zoned predominately PDH-2, except for the directly-abutting property to the west, which is zoned R-1.

The site is currently developed with an electrical substation consisting of two transformers in a fenced compound, and petroleum product pumping station with three pumps. Access is provided from the end of Moore Road via a driveway across a portion of dedicated right-of-way. The western side of the site is crossed (north to south) by electrical transmission lines in easements, as well as an easement containing a buried petroleum pipeline. Stormwater management is provided for the site in a wet pond near the southwest corner of the property. The northern portion of

the 10 acre site is wooded, with a depth of between 120 feet up to 250 feet of vegetation. The eastern boundary also has an existing vegetated buffer of approximately 100 feet.

**Surrounding Area Description:**

Direction	Use	Zoning	Plan
South & East	Single Family Attached Residential (Hayden Village)	PDH-2	Residential; 1-2 du/ac
North	Single Family Detached Residential (Hayden Village)	PDH-2	Residential; 1-2 du/ac
West	Single Family Detached Residential	R-1	Residential; 1-2 du/ac

**BACKGROUND**

- On March 24, 1964, the Board of Zoning Appeals approved an application to construct a Petroleum Products Pumping Station on a portion of the 10 acre parcel.
- On February 9, 1965, the Board of Zoning Appeals approved application **S-26-65** to permit the erection of an electrical ground transformer station on the site.
- On September 14, 1981, **SE 81-S-053** was approved by the Board of Supervisors to permit the addition of a tank to the existing Petroleum Pumping Station. (See Appendix 3 for conditions and plat)

**COMPREHENSIVE PLAN PROVISIONS**

**Plan Area:** Area III  
**Plan Map:** Public Facility  
**Plan Text:**

The subject property is split planned on the Comprehensive Plan Map. The upper quarter is shown as part of the Fairfax Center Area and the lower three quarters of the subject property is planned for public facilities, governmental and institutional uses according to the Comprehensive Plan Map with the designation of an existing Public Service and Utility Facility - Electric Substation.

The upper quarter of the parcel is planned by the following citation:

In the Fairfax County Comprehensive Plan, 2007 Edition; Fairfax Center Area as amended through September 25, 2006, Land Unit R, Recommendations, Land Use; page 103; the Plan states:

**“Sub-unit R2**

This sub-unit is planned for single-family residential use at 2 dwelling units per acre at the overlay level. Visual buffering should be provided in any development plan for parcels fronting on Route 29.”

The lower three quarters of the subject property is not subject to site specific text but is shown on the Comprehensive Plan Map for use for Public Facilities.

*See Appendix 4 for additional plan text*

## **ANALYSIS**

### **Special Exception (SE) Plat (copy at front of staff report)**

*Title of SE Plat:* Colonial Gas Pipeline Co. Centreville Substation  
*Prepared By:* Greenhorne & O'Mara  
*Date:* August 2007 as revised through January 14, 2008

#### ***Plat Description:***

The SE Plat consists of four sheets.

**Sheet 1** shows the proposed layout of the site, as described below, including proposed landscaping, and includes the SE Plat notes and tabulations. The sheet also contains a cross-section showing the relationship between the site and the townhouses to the east.

**Sheet 2** shows the existing conditions, as well as an existing vegetation map.

**Sheet 3** shows the stormwater management plan for the site; **Sheet 4** shows the drainage divides for the area.

#### **Electrical Substation**

The SE Plat shows two existing transformers and one proposed transformer. All of the transformers are located on the eastern half of the site, with the new transformer to be located on the eastern side of the two existing structures. The cross section detail shows that the transformers will have a maximum height of 25 feet, with overhead “bus” structures (scaffold type structures) extending to a maximum height of 28 feet.

Two capacitor banks, 22.5 feet in height, are located directly southeast of the proposed transformer.

The electrical substation is, and will continue to be, an unmanned facility.

The existing substation is surrounded by a chain-link fence, seven feet in height. The proposed expansion will replace the eastern portion of that fence with an eight foot high masonry wall of cement panels (textured and tan in color).

In addition to the screening wall, the application proposes a noise attenuation wall directly along the eastern side of the new transformer. This wall will be 16 feet in height and constructed of PVC blocks with synthetic wood filler and upright steel support beams, and will be tan or earth-toned in color.

#### Petroleum Pumping Station (no changes proposed)

The petroleum pumping station facility is located in the center of the site and consists of three pumps, a large tank, a control building (25 feet in height) and several smaller shed and accessory structures. The petroleum pumping station is surrounded by a chain-link fence, and is not required to be staffed on a 24-hour basis, although staff may make two to three visits to the site per day.

#### Transitional Screening, Barrier, and Landscaping

No changes are proposed to the existing vegetation along the northern, western, and southern boundaries of the site. Along the entire northern boundary, the buffer is in excess of 100 feet in width (and for half the site, approximately 250 feet in width). To the west, the buffer consists of a row (approximately 20 feet in depth) of evergreen plantings along the western edge of the petroleum pumping station, with scattered trees towards the southwest. The far western edge of the site is clear, because it is encumbered by overhead power line easements. To the south, very little screening exists on-site (only scattered trees); however, the abutting property to the south is homeowner's association open space, and the closest units (to the southeast) are screened by 50 to 75 feet of existing vegetation.

To the east, towards the closest abutting residential units, a buffer of approximately 109 feet of existing vegetation exists today. To install the new transformer, the applicant will need to clear a portion of this area. The SE Plat shows that for the majority of the length of the buffer, approximately 65 feet of existing vegetation will remain, with an additional 5-10 feet of additional plantings along the interior (towards the south, adjacent to the new capacitor banks, the width of the planting area is 5-10 feet less).

In addition to on-site plantings, the applicant has provided an illustration showing additional plantings they have committed to installing in the open space area of Hayden Village to the east. The applicant has also committed to entering a cost sharing agreement for watering these plantings while they are getting established.

Staff has recommended draft development conditions to require these plantings and maintenance agreement.

As noted, both the current facilities are fenced. With the new transformer, the applicant proposes to replace the existing chain-link fence along the eastern boundary with a solid, eight foot high wall constructed of stamped concrete panels that will be tan in color and textured. The remainder of the electrical transformer will be fenced with a seven foot high chain-link fence.

Access (no changes proposed)

Access to the site is proposed to remain as that which exists today. Moore Road is dedicated up to the property line of the application property; however, the road has not been constructed (and therefore is not being maintained by VDOT) beyond the edge of the Clifton Farm subdivision. Access is provided through a driveway from the site through the adjacent right-of-way to the end of Moore Road.

Stormwater Management

Stormwater management for the site is currently provided in a wet pond located in the southwest corner of the site. In addition to this facility, with the new transformer, a dry pond is proposed to be added directly to the south of the electrical substation portion of the site, with an outfall pipe on the southern boundary.

**Land Use / 2232 Analysis (Appendix 4)**

Va. Code Sec. 15.2-2232, as amended, requires the Planning Commission to determine whether the general location or approximate location, character, and extent of the proposed facility are substantially in accord with the adopted Comprehensive Plan.

Location:

The subject property is planned for public, governmental and institutional uses for an electric substation as shown on the Fairfax County Comprehensive Plan map. The proposed transformer will be located in an existing electric power substation compound on a 10 acre parcel owned by Colonial Pipeline Company and also developed with a pump station and accessory structures. This satisfies the collocation criteria of the Comprehensive Plans to minimize visual and neighborhood impacts. The proposed expansion is intended to improve the service for residents in Fairfax County, in conformance with the Plan recommendations for a facility's location in relation to its service area. The proposed transformer will supply power to the surrounding area and the Fairfax County Public Safety and Transportation Operations Center. Public utilities are currently located at the site. The design for the proposed facility must comply with the requirements of the Zoning Ordinance and Public Facilities Manual.

Character:

The subject property is planned and developed for public utility use, while the surrounding area is planned and developed for residential uses. The subject property has varying types and widths of buffering/screening vegetation (stands of trees as well as screening and buffering vegetation) which mitigates the visual impact of the Colonial Pipeline Company structures and the VEPCO transformers, support equipment and site improvements from the surrounding residential area. The proposed height of the transformer, including the bus structures, is 28 feet. The applicant proposes maintain 50-70 feet of the existing vegetated buffer the eastern property boundary, and enhance that buffer with supplemental evergreen tree plantings. In addition, an 8 foot high masonry wall will be provided for the purpose of mitigating visual impacts to the adjacent Hayden Village along the eastern side of the new transformer, and VEPCO has negotiated with the Hayden Village Homeowner's Association to provide additional evergreen landscaping to be located in the open space to further buffer the units from the substation. These mitigation measures protect the residential character of the area surrounding the subject property.

Extent:

The proposed addition of an electric transformer to the VEPCO substation will occupy 14,500 square feet (approximately 3%) of the 10 acre subject property. The reduction in the eastern buffer adjacent to the transformers, from approximately 100 feet to a range of 50 to 70 feet will be mitigated by providing an 8 foot high wall and supplemental evergreen plantings along the western side of the buffer. The FAR is 0.03, and 86.67 % of the site is maintained as open space.

The projected increase in noise from the additional electric transformer will be mitigated by a 89-foot long, 16 foot high noise attenuation wall designed to reduce anticipated noise from the transformer to an acceptable level at the boundary line. (Colonial Pipeline Company has indicated that the noise problem from their facility will also be mitigated as outlined in Attachment I of Appendix 4.) The proposed facility will not result in human exposure to low level electromagnetic fields from electric transmission lines.

2232: Conclusion / Recommendation

Staff concludes that the subject proposal, Application 2232-S07-10, for VEPCO to add an electric transformer, located at 13100 Moore Road, Clifton, satisfies the criteria of location, character, and extent as specified in Section 15.2-2232 of the *Code of Virginia*, and recommends that the Planning Commission find the proposal substantially in accord with provisions of the adopted Comprehensive Plan.

**Transportation Analysis** (Attachment F of Appendix 4)

The electrical transformer is an unmanned site, which will be visited only infrequently for maintenance or emergencies. No transportation impacts are expected from the application.

The application property does not have public street frontage, although dedicated right-of-way for Moore Road does extend to the western edge of the application property. Moore Road is only constructed (as a stub road) and in the state system to the edge of the Clifton Farm subdivision. The property owner of the application property maintains a driveway through the ROW accessing the public street. It would be highly desirable for the applicant to correct this substandard condition, and construct Moore Road to the property line, with a cul-de-sac or other VDOT acceptable turn-around at the end of the road, either on or just off the property. The applicant has studied the feasibility of such construction; however, because of the easements, overhead transmission poles, and buried pipes in the southwestern corner of the site, a turn-around could not be dedicated and constructed without extending such a road halfway along the length of the southern boundary. Sufficient right-of-way does not exist in the current dedicated area to construct an appropriate turn-around. Additionally, the proposed application will not add any additional users to the road network, or any additional trips from the current users (after construction is complete), and the properties to the east and south of the application site are developed and do not need future road connections to Moore Road.

**Environmental Analysis** (Attachment 7 of Appendix 4)

The environmental analysis notes that additional screening should be provided above what is existing on the site; the applicant has clarified the SE Plat to accurately show existing vegetation, and has provided additional plantings both on and off the site. This issue is addressed.

The property is in an area likely to have asbestos soils, and as such staff has proposed a development condition that all site work should be done as recommended by the Health Department for work in areas with such soils. The applicant has already begun coordination with the Health Department to determine what measures will need to be taken.

Stationary noise has been a concern on this site, with noise emanating from both the electrical substation (two existing transformers with a third proposed) and the petroleum pumping site (three existing pumps). Both utilities have conducted noise studies, which have been reviewed by staff. The noise study provided by Colonial Pipeline has indicated that when Pump #2 is operated in suction mode, it exceeds the noise standard, when Pump #3 is operated, it exceeds the standard, and when Pumps #1 and 2 are operated together they exceed the noise standard. Therefore, Colonial Pipeline has indicated that, until such times as the pumps are reconstructed, reconfigured or moved, or other noise mitigation measures are employed, they will address the stationary noise issue by not operating Pump #3; not operating Pump #2; and not operating Pumps #1 and #2 at the

same time. Virginia Power has indicated that, with the proposed third transformer, their facility is likely to be just at the legal limit, and have therefore proposed the previously discussed noise wall to be installed along the eastern edge of the new transformer to ensure that standards are met. With this noise wall, the noise from the Virginia Power site will be within the legal limits. To ensure that these mitigation measures are implemented, staff has proposed a development condition requiring a noise mitigation plan to be submitted for review and approval by DPZ with development of the site. With the imposition of this condition, this issue is addressed.

Staff has identified that the undisturbed portions of the property are likely to contain historical or archeological resources. Staff has therefore proposed a development condition requiring a Phase I archaeological survey on those areas proposed to be disturbed, with additional work to be done if resources are found.

## ZONING ORDINANCE PROVISIONS

The proposed electrical substation is a Category 1 Special Exception within the R-1 Zoning District. Under the provisions of Section 9-104, Category 1 Special Exception uses are not required to comply with the lot size requirements or the bulk regulations. A site plan will be required in conformance with Article 17.

### Waivers and Modifications

- *Modification of the transitional screening requirements in favor of that shown on the SE Plat to the south and west, and to allow the use of existing vegetation on all sides*
- *Modification to the barrier requirements in favor of that shown on the SE Plat*

Category 1 special exceptions are required to provide a 50 foot wide transitional screening yard and a Barrier D, E or F (chain link or wood fence or masonry wall) where they abut single family detached residential (to the north and west) and a 35 foot wide transitional screening yard and Barrier D, E or F where they abut single family attached residential (to the south and east). The property currently exceeds the width requirement for transitional screening to the north and east, and provides some screening to the south and west, although those boundaries are impacted significantly by power line and petroleum pipe easements. The application maintains existing vegetation along all sides, and proposes to provide an eight foot tall masonry wall along the eastern side of the facility, and seven foot tall chain link fencing on all other sides, in accordance with the Zoning Ordinance requirements for the barrier. Additional plantings are provided along the eastern side, as well as in the HOA property abutting the site to the east.

Both portions of the site (the Colonial Pipeline facility, which is not changing, and the VEPCO facility, which is proposing to add a transformer) are currently surrounded by barrier fencing which is in conformance with (or exceeds in height) the requirements of

the Zoning Ordinance. The eastern boundary, most closing abutting the surrounding residential development, is proposing to replace the existing chain-link fence with a solid masonry wall. Because the fencing surrounds the facilities themselves, as opposed to being placed at the interior side of the transitional screening, and because the fencing and wall exceed the height requirements of the Zoning Ordinance (seven and eight feet provided vs. six feet required), the applicant has requested a modification of the barrier requirements in favor of the location and height shown on the SE Plat.

Staff does not object to the requested modifications.

### **Special Exception Requirements (Appendix 5)**

#### *General Special Exception Standards (Sect. 9-006)*

General Standards 1 and 2 require that the proposed use be in harmony with the adopted Comprehensive Plan and be in harmony with the general purpose and intent of the applicable zoning district regulations. As previously stated, the proposal is in harmony with the Comprehensive Plan for use and intensity. Category 1 Special Exceptions are not required to comply with the bulk regulations, but will be subject to site plan review. Therefore, staff believes these conditions have been met.

General Standards 3 and 4 require that the proposed use will be harmonious with and will not adversely affect the use or development of neighboring properties in accordance with the applicable zoning district regulations and the adopted Comprehensive Plan, and that pedestrian and vehicular traffic associated with the use will not create hazards or conflict with the existing and anticipated traffic in the neighborhood. As noted in the 2232 review, staff believes that the proposal has adequately addressed screening from the adjacent properties. There will be no pedestrian traffic associated with the use, and vehicular access to the site will be minimal. Therefore, staff believes these conditions have been met.

General Standards 5, 6, 7 and 8 require that landscaping, screening, open space, adequate utility, drainage, signage, parking and loading spaces be regulated in accordance with the Zoning Ordinance; however, the Board of Supervisors may impose more strict requirements for a given use than those set forth in the Ordinance. The only requested modification is for transitional screening, which is primarily to allow existing, mature vegetation to be utilized in the screening yards along the majority of the site. Staff believes these conditions have been met.

#### *Standards for all Category 1 Uses (Sect. 9-104)*

Standard 1 states that Category 1 special exception uses do not have to comply with the lot size requirements or the bulk regulations.

Standard 2 requires that the site not be used for the storage of materials or equipment, or for the repair or servicing of vehicles or equipment, or for the parking of vehicles

except those needed by employees connected with the operation of the immediate facility. No such uses are proposed, and staff has proposed a development condition to that effect.

Standard 3 requires that, in an R-District, there be a finding of no alternative site in a C or I District within 500 feet of the proposed location. No land is zoned to a C or I District within 500 feet of the application property.

Standard 4 requires that such uses be subject to site plan review.

### **Summary of Zoning Ordinance Requirements**

In staff's opinion, the application addresses the applicable Zoning Ordinance standards.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Conclusions**

The applicant proposes to construct an additional electrical transformer, two capacitor banks, and associated site modifications on a site which is developed with an electrical substation and a petroleum pumping station, and has been utilized for public facility purposes since the 1960s. Staff believes that the site is of sufficient size to accommodate the proposed uses, and that screening and noise concerns have been addressed with the proposed SE Plat and development conditions. Staff believes that the proposal is in harmony with the Comprehensive Plan and in conformance with the applicable Zoning Ordinance provisions.

### **Recommendations**

Staff recommends that the Planning Commission find that the facility proposed under 2232-S07-10 does satisfy the criteria of location, character and extent as specified in Sect. 15.2-2232 of the Code of Virginia, and is substantially in accord with the provisions of the Comprehensive Plan.

Staff recommends approval of SEA 81-S-053, subject to the proposed development conditions contained in Appendix 1.

Staff recommends approval of a modification of the transitional screening requirements to allow the use of existing vegetation and as shown on the SE Plat.

Staff recommends approval of a modification to the barrier requirements in favor of that shown on the SE Plat.

It should be noted that it is not the intent of Staff to recommend that the Board of Supervisors, in adopting any conditions proffered by the owner, relieve the applicant/owner from compliance with the provisions of any applicable ordinances, regulations, or adopted standards.

It should be further noted that the content of this report reflects the analysis and recommendations of Staff; it does not reflect the position of the Board of Supervisors.

## **APPENDICES**

1. Proposed Development Conditions
2. Affidavit
3. Prior Approval: SE 81-S-053
4. 2232 Analysis and Comprehensive Plan Citation
  - Attachment A: Statement of Justification
  - Attachment B: Environmental Analysis
  - Attachment C: Stormwater Management Review
  - Attachment D: Trails Analysis
  - Attachment E: Fairfax Water Analysis
  - Attachment F: Transportation Analysis
  - Attachment G: Historic Resources Analysis
  - Attachment H: FCPA Analysis
  - Attachment I: Letter from Colonial Pipeline
5. Applicable Zoning Ordinance Provisions
6. Glossary of Terms

**DEVELOPMENT CONDITIONS****SEA 81-S-053****January 29, 2008**

If it is the intent of the Board of Supervisors to approve SEA 81-S-053 located at 13100 Moore Road, Tax Map 55-3 ((1)) 31A, to permit the addition of a third transformer to an existing electrical substation and petroleum products pumping and distribution station pursuant to Section 3-104 of the Fairfax County Zoning Ordinance, staff recommends that the Board condition the approval by requiring conformance with the following development conditions, which supercede all previous conditions.

1. This Special Exception Amendment is granted for and runs with the land indicated in this application and is not transferable to other land.
2. This Special Exception Amendment is granted only for the purpose(s), structure(s), and/or use(s) indicated on the Special Exception Plat (SE Plat) approved with this application, as qualified by these development conditions. Other by-right or Special Permit uses may be permitted without amendment to this application, so long as such uses are in substantial conformance with this SE Plat.
3. This Special Exception is subject to the provisions of Article 17, Site Plans, as may be determined by the Director, Department of Public Works and Environmental Services (DPWES). Any plan submitted pursuant to this Special Exception shall be in substantial conformance with the approved SE Plat entitled "Colonial Gas Pipeline Co. Centreville Substation" consisting of four sheets, prepared by Greenhorne & O'Mara, dated August 2007 as revised through January 14, 2008. Minor modifications to the approved Special Exception may be permitted pursuant to Par. 4 of Sect. 9-004 of the Zoning Ordinance.
4. Prior to the issuance of a Non-residential Use Permit (Non-RUP), the applicant shall demonstrate that they have entered into an agreement with the Hayden Village Homeowners' Association (HOA) relating to additional screening to be planted on the Hayden Village HOA property to the east (Tax Map 55-3 ((9)) H1). This agreement shall include, but need not be limited to, number, size, species and location of additional planting, and responsibility for initial maintenance of such plantings.
5. The proposed barrier wall along the eastern side of the electrical transformer site shall be constructed of stamped concrete panels, tan in color, and with a maximum height of eight feet. Modifications to construction materials may be permitted in coordination with the Hayden Village HOA, as determined by the Zoning Administrator.
6. The limits of clearing and grading shown on the SE Plat shall be strictly adhered to.
7. The application property shall not be used for the storage of materials or equipment, the repair or servicing of vehicles or equipment, or the parking of vehicles except those in use by employees working at the site.

8. A tight interval (30 foot interval) Phase I archaeological survey shall be conducted on any areas to be disturbed, using a scope of work provided by the Cultural Resources Management and Protection Section of the Fairfax County Park Authority (CRMPS). If determined to be warranted by CRMPS from the Phase I survey, Phase II assessment and, if appropriate, Phase III data recovery shall be performed in accordance with scopes provided by CRMPS. Any Phase III scopes shall provide for public interpretation of the results. Draft and final reports (including any cultural resource studies, field notes, photographs and artifacts) produced as a result of the disturbance assessment, and Phase I, II and/or III studies shall be submitted to CRMPS for review and approval within 30 days of completion. No ground disturbing activities shall occur until such studies have been completed and approved.
9. Prior to issuance of a Non-RUP for the use, a sound pressure level study that demonstrates that the noise produced by the Stationary Noise Sources do not exceed the Maximum Permissible Sound Pressure Levels (MPSPL) set forth in Chapter 108 of the Fairfax County Code shall be submitted to the Department of Planning and Zoning, Zoning Enforcement Branch (ZEB) for review and approval. The facilities on the site shall be operated in accordance with the recommendations of this study, or an amended study with review and approval of ZEB. Upon demonstration that, despite diligent efforts by the Applicant, the noise study described herein has not been completed for the petroleum pumping station portion of the site, the Zoning Administrator may agree to a later date for the completion of the study.
10. If DPWES determines that a potential health risk exists due to the presence of asbestos-containing rock on the application property, the applicant shall:
  - (a) Take appropriate measures as determined by the Health Department to alert all construction personnel as to the potential health risks, and
  - (b) Implement appropriate construction techniques and safety procedures as determined by DPWES in coordination with the Health Department to minimize this risk. Such techniques may include, but are not limited to, dust suppression measures during all blasting and drilling activities and covered transportation of removed materials presenting this risk, and appropriate disposal.

The above proposed conditions are staff recommendations and do not reflect the position of the Board of Supervisors unless and until adopted by that Board.

This approval, contingent on the above noted conditions, shall not relieve the applicant from compliance with the provisions of any applicable ordinances, regulations, or adopted standards. The applicant shall be himself responsible for obtaining the required Non-Residential Use Permit through established procedures, and this Special Exception shall not be valid until this has been accomplished.

Pursuant to Section 9-015 of the Zoning Ordinance, this special exception shall automatically expire, without notice, thirty (30) months after the date of approval unless, at a minimum, the use has been established or construction has commenced and been diligently

prosecuted. The Board of Supervisors may grant additional time to establish the use or to commence construction if a written request for additional time is filed with the Zoning Administrator prior to the date of expiration of the special exception. The request must specify the amount of additional time requested, the basis for the amount of time requested and an explanation of why additional time is required.

## SPECIAL EXCEPTION AFFIDAVIT

DATE: 1-8-08  
(enter date affidavit is notarized)I, John J. Gattuso, do hereby state that I am an  
(enter name of applicant or authorized agent)(check one)             applicant  
                                  applicant's authorized agent listed in Par. 1(a) below      975536in Application No.(s): SEA 81-S-053-1  
(enter County-assigned application number(s), e.g. SE 88-V-001)

and that, to the best of my knowledge and belief, the following information is true:

1(a). The following constitutes a listing of the names and addresses of all **APPLICANTS, TITLE OWNERS, CONTRACT PURCHASERS, and LESSEES** of the land described in the application,\* and, if any of the foregoing is a **TRUSTEE,\*\*** each **BENEFICIARY** of such trust, and all **ATTORNEYS and REAL ESTATE BROKERS**, and all **AGENTS** who have acted on behalf of any of the foregoing with respect to the application:

**(NOTE:** All relationships to the application listed above in **BOLD** print are to be disclosed. Multiple relationships may be listed together, e.g., **Attorney/Agent, Contract Purchaser/Lessee, Applicant/Title Owner**, etc. For a multiparcel application, list the Tax Map Number(s) of the parcel(s) for each owner(s) in the Relationship column.)

NAME (enter first name, middle initial, and last name)	ADDRESS (enter number, street, city, state, and zip code)	RELATIONSHIP(S) (enter applicable relationships listed in <b>BOLD</b> above)
Colonial Pipeline Company	P.O. Box 349 Manassas, Virginia 20108	Title Owner
Virginia Electric and Power Company	2400 Grayland Avenue Richmond, Virginia 23220	Applicant/Easement Rights
Greenhome & O'Mara, Inc.	1227 Central Park Boulevard Fredericksburg, Virginia 22401	Agent for Applicant
John J. Gattuso	1227 Central Park Boulevard Fredericksburg, Virginia	Agent for Applicant

(check if applicable)             There are more relationships to be listed and Par. 1(a) is continued on a "Special Exception Attachment to Par. 1(a)" form.

\* In the case of a condominium, the title owner, contract purchaser, or lessee of 10% or more of the units in the condominium.

\*\* List as follows: Name of trustee, Trustee for (name of trust, if applicable), for the benefit of: (state name of each beneficiary).

SPECIAL EXCEPTION AFFIDAVIT

DATE: 1-8-08 (enter date affidavit is notarized)

975536

for Application No. (s): SEA 81-S-053-1 (enter County-assigned application number(s))

1(b). The following constitutes a listing\*\*\* of the SHAREHOLDERS of all corporations disclosed in this affidavit who own 10% or more of any class of stock issued by said corporation, and where such corporation has 10 or less shareholders, a listing of all of the shareholders:

(NOTE: Include SOLE PROPRIETORSHIPS, LIMITED LIABILITY COMPANIES, and REAL ESTATE INVESTMENT TRUSTS herein.)

CORPORATION INFORMATION

NAME & ADDRESS OF CORPORATION: (enter complete name and number, street, city, state, and zip code)

Colonial Pipeline Company
P.O. Box 349
Manassas, Virginia 20108

DESCRIPTION OF CORPORATION: (check one statement)

- [X] There are 10 or less shareholders, and all of the shareholders are listed below.
[ ] There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
[ ] There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

NAMES OF SHAREHOLDERS: (enter first name, middle initial and last name)

- (1) HUTTS, LLC (17) Phillips Petroleum International
(5) Koch Capital Investments Company, Investment Company
LLC
(8) Shell Pipeline Company, LP
(12) Industry Funds Management Pty Ltd
(15) ConocoPhillips Pipeline Company

(check if applicable) [X] There is more corporation information and Par. 1(b) is continued on a "Special Exception Affidavit Attachment 1(b)" form.

\*\*\* All listings which include partnerships, corporations, or trusts, to include the names of beneficiaries, must be broken down successively until: (a) only individual persons are listed or (b) the listing for a corporation having more than 10 shareholders has no shareholder owning 10% or more of any class of stock. In the case of an APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE\* of the land that is a partnership, corporation, or trust, such successive breakdown must include a listing and further breakdown of all of its partners, of its shareholders as required above, and of beneficiaries of any trusts. Such successive breakdown must also include breakdowns of any partnership, corporation, or trust owning 10% or more of the APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE\* of the land. Limited liability companies and real estate investment trusts and their equivalents are treated as corporations, with members being deemed the equivalent of shareholders; managing members shall also be listed. Use footnote numbers to designate partnerships or corporations, which have further listings on an attachment page, and reference the same footnote numbers on the attachment page.

Special Exception Attachment to Par. 1(b)

DATE: 1-8-08  
(enter date affidavit is notarized)

975526

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(1) HUTTS, LLC  
6001 Bollinger Canyon Road  
San Ramon, California 94583-2324

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Union Oil Company of California (2)

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(2) Union Oil Company of California  
6001 Bollinger Canyon Road  
San Ramon, California 94583-2324

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Unical Corporation (3)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

Special Exception Attachment to Par. 1(b)

DATE: 1-27-09  
(enter date affidavit is notarized)

97553 v

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(3) Unical Corporation  
6001 Bollinger Canyon Road  
San Ramon, California 94583-2324

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Chevron Corporation (4)

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(4) Chevron Corporation  
6001 Bollinger Canyon Road  
San Ramon, California 94583-2324

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

Special Exception Attachment to Par. 1(b)

DATE: 1-8-08  
(enter date affidavit is notarized)

975535

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(5) Koch Capital Investments Company, LLC  
P.O. Box 2256  
Wichita, Kansas 67201

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Koch Resources, LLC (6)

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(6) Koch Resources, LLC  
P.O. Box 2256  
Wichita, Kansas 67201

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Koch Industries, Inc. (7)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

**Special Exception Attachment to Par. 1(b)**

DATE: 1-8-08  
(enter date affidavit is notarized)

975536

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)  
(7) Koch Industries, Inc.  
P.O. Box 2256  
Wichita, Kansas 67201

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Charles Koch  
David Koch

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)  
(10) Shell Transportation Holdings, LLC  
105 N. Market Street, Suite 1324  
Wilmington, Delaware 19801

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Equilon Enterprises, LLC (11)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

Special Exception Attachment to Par. 1(b)

DATE: 1-8-08  
(enter date affidavit is notarized)

975536

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)  
(11) Equilon Enterprises, LLC  
910 Louisiana  
Houston, Texas 77002

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)  
TMR Company (Neither of these entities own 10% or  
SOPC Holdings West, LLC Colonial Pipeline Company)

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)  
(12) Industry Funds Management Pty Ltd  
Level 29, Casselden Place  
2 Lonsdale Street  
Melbourne, Victoria (3000) Australia

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)  
Industry Funds Management Pty Ltd is a  
100% Subsidiary of Industry Funds Services  
Pty Ltd (13)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

Special Exception Attachment to Par. 1(b)

DATE: 1-8-08  
(enter date affidavit is notarized)

975536

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(13) Industry Funds Services Pty Ltd  
Level 29, Casselden Place  
2 Lonsdale Street  
Melbourne, Victoria (3000) Australia

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Industry Funds Services Pty Ltd is a 100%  
Subsidiary of Industry Super Holdings Pty  
Ltd (14)

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(14) Industry Super Holding Pty Ltd  
Level 16, 360 Collin Street  
Melbourne, Victoria (3000) Australia

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Australian Super	(None of the listed Shareholders owns a
HESTA	10% interest or more in Colonial Pipeline
Cbus	Company)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

**Special Exception Attachment to Par. 1(b)**

DATE: 1-8-08  
(enter date affidavit is notarized)

975536

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(15) ConocoPhillips Pipeline Company  
600 North Dairy Ashford  
Houston, Texas 77252

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

ConocoPhillips Pipeline Company is a  
wholly owned Subsidiary of ConocoPhillips  
(16)

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(16) ConocoPhillips  
600 North Dairy Ashford  
Houston, Texas 77252

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

Special Exception Attachment to Par. 1(b)

DATE: 1-8-08  
(enter date affidavit is notarized)

975536

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)  
(17) Phillips Petroleum International Investment Company  
600 North Dairy Ashford  
Houston, Texas 77252

**DESCRIPTION OF CORPORATION:** (check one statement)  
 There are 10 or less shareholders, and all of the shareholders are listed below.  
 There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.  
 There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)  
Phillips Petroleum International  
Investment Company is a wholly owned  
Subsidiary of ConocoPhillips (18)

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)  
(18) ConocoPhillips  
600 North Dairy Ashford  
Houston, Texas 77252

**DESCRIPTION OF CORPORATION:** (check one statement)  
 There are 10 or less shareholders, and all of the shareholders are listed below.  
 There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.  
 There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

**Special Exception Attachment to Par. 1(b)**

DATE: 1-9-08  
(enter date affidavit is notarized)

975530

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(9) Shell Pipeline GP, LLC - General Partner  
P.O. Box 2648  
Houston, Texas 77252

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Royal Dutch/Shell Group (19)

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

(19) Royal Dutch/Shell Group  
Shell International  
P.O. Box 162  
2501 AN, The Hague, The Netherlands

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

Special Exception Attachment to Par. 1(b)

DATE: 1-8-08  
(enter date affidavit is notarized)

975530

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

Virginia Electric and Power Company  
2400 Grayland Avenue  
Richmond, VA 23220

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Dominion Resources, Inc.

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

Dominion Resources, Inc.  
120 Tredegar Street  
Richmond, VA 23219

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

**Special Exception Attachment to Par. 1(b)**

DATE: 1-8-08  
(enter date affidavit is notarized)

97553-6

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number (s))

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

Greenhorne & O'Mara, Inc.  
6110 Frost Place  
Laurel, Maryland 20707

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

Greenhorne & O'Mara Employees Stock  
Ownership Plan

**NAME & ADDRESS OF CORPORATION:** (enter complete name, number, street, city, state, and zip code)

Greenhorne & O'Mara Employees Stock Ownership Plan  
c/o Greenhorne & O'Mara, Inc.  
6110 Frost Place  
Laurel, Maryland 20707

**DESCRIPTION OF CORPORATION:** (check one statement)

- There are 10 or less shareholders, and all of the shareholders are listed below.
- There are more than 10 shareholders, and all of the shareholders owning 10% or more of any class of stock issued by said corporation are listed below.
- There are more than 10 shareholders, but no shareholder owns 10% or more of any class of stock issued by said corporation, and no shareholders are listed below.

**NAMES OF THE SHAREHOLDERS:** (enter first name, middle initial, and last name)

(check if applicable)  There is more corporation information and Par. 1(b) is continued further on a "Special Exception Attachment to Par. 1(b)" form.

SPECIAL EXCEPTION AFFIDAVIT

DATE: 1-8-08  
(enter date affidavit is notarized)

915530

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number(s))

1(c). The following constitutes a listing\*\*\* of all of the PARTNERS, both GENERAL and LIMITED, in any partnership disclosed in this affidavit:

PARTNERSHIP INFORMATION

**PARTNERSHIP NAME & ADDRESS:** (enter complete name, and number, street, city, state, and zip code)

(8) Shell Pipeline Company, LP  
P.O. Box 2648  
Houston, Texas 77252

(check if applicable)  The above-listed partnership has no limited partners.

**NAMES AND TITLE OF THE PARTNERS** (enter first name, middle initial, last name, and title, e.g.

**General Partner, Limited Partner, or General and Limited Partner)**

(9) Shell Pipeline GP, LLC (Does not own 10% of Colonial Pipeline Company)

(10) Shell Transportation Holdings, LLC

(check if applicable)  There is more partnership information and Par. 1(c) is continued on a "Special Exception Affidavit Attachment to Par. 1(c)" form.

\*\*\* All listings which include partnerships, corporations, or trusts, to include the names of beneficiaries, must be broken down successively until: (a) only individual persons are listed or (b) the listing for a corporation having more than 10 shareholders has no shareholder owning 10% or more of any class of stock. *In the case of an APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE\* of the land that is a partnership, corporation, or trust, such successive breakdown must include a listing and further breakdown of all of its partners, of its shareholders as required above, and of beneficiaries of any trusts. Such successive breakdown must also include breakdowns of any partnership, corporation, or trust owning 10% or more of the APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE\* of the land. Limited liability companies and real estate investment trusts and their equivalents are treated as corporations, with members being deemed the equivalent of shareholders; managing members shall also be listed.* Use footnote numbers to designate partnerships or corporations, which have further listings on an attachment page, and reference the same footnote numbers on the attachment page.

SPECIAL EXCEPTION AFFIDAVIT

DATE: 1-8-08  
(enter date affidavit is notarized)

975536

for Application No. (s): SEA 81-S-053-1  
(enter County-assigned application number(s))

1(d). One of the following boxes **must** be checked:

In addition to the names listed in Paragraphs 1(a), 1(b), and 1(c) above, the following is a listing of any and all other individuals who own in the aggregate (directly and as a shareholder, partner, and beneficiary of a trust) 10% or more of the **APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE\*** of the land:

Other than the names listed in Paragraphs 1(a), 1(b), and 1(c) above, no individual owns in the aggregate (directly and as a shareholder, partner, and beneficiary of a trust) 10% or more of the **APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE\*** of the land.

2. That no member of the Fairfax County Board of Supervisors, Planning Commission, or any member of his or her immediate household owns or has any financial interest in the subject land either individually, by ownership of stock in a corporation owning such land, or through an interest in a partnership owning such land.

**EXCEPT AS FOLLOWS:** (NOTE: If answer is none, enter "NONE" on the line below.)

NONE

(check if applicable)  There are more interests to be listed and Par. 2 is continued on a "Special Exception Attachment to Par. 2" form.

Application No.(s): SEA 81-S-053-1

(county-assigned application number(s), to be entered by County Staff)

**SPECIAL EXCEPTION AFFIDAVIT**

DATE: 1-8-08  
(enter date affidavit is notarized)

975536

3. That within the twelve-month period prior to the public hearing of this application, no member of the Fairfax County Board of Supervisors, Planning Commission, or any member of his or her immediate household, either directly or by way of partnership in which any of them is a partner, employee, agent, or attorney, or through a partner of any of them, or through a corporation in which any of them is an officer, director, employee, agent, or attorney or holds 10% or more of the outstanding bonds or shares of stock of a particular class, has, or has had any business or financial relationship, other than any ordinary depositor or customer relationship with or by a retail establishment, public utility, or bank, including any gift or donation having a value of more than \$100, singularly or in the aggregate, with any of those listed in Par. 1 above.

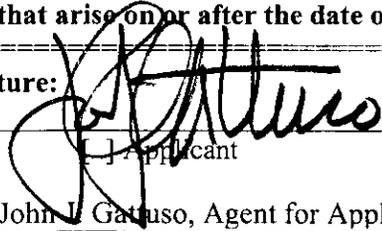
**EXCEPT AS FOLLOWS:** (NOTE: If answer is none, enter "NONE" on line below.)  
NONE

**NOTE:** Business or financial relationships of the type described in this paragraph that arise after the filing of this application and before each public hearing must be disclosed prior to the public hearings. See Par. 4 below.)

(check if applicable) [ ] There are more disclosures to be listed and Par. 3 is continued on a "Special Exception Attachment to Par. 3" form.

4. That the information contained in this affidavit is complete, that all partnerships, corporations, and trusts owning 10% or more of the APPLICANT, TITLE OWNER, CONTRACT PURCHASER, or LESSEE\* of the land have been listed and broken down, and that prior to each and every public hearing on this matter, I will reexamine this affidavit and provide any changed or supplemental information, including business or financial relationships of the type described in Paragraph 3 above, that arise on or after the date of this application.

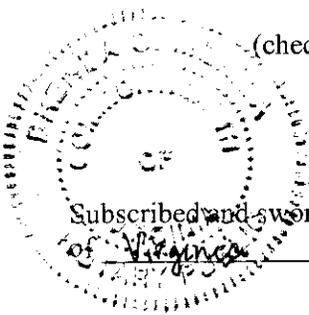
WITNESS the following signature:



(check one) [ ] Applicant [x] Applicant's Authorized Agent

John J. Gattuso, Agent for Applicant

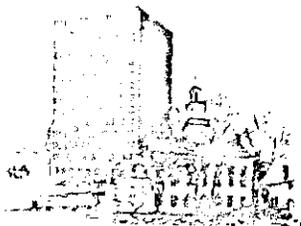
(type or print first name, middle initial, last name, and & title of signee)



Subscribed and sworn to before me this 8th day of January, 2008, in the State/Comm. of Virginia, County/City of Fairfax.

Paul D. [unclear] Reg# 4058787  
Notary Public

My commission expires: January 31, 2011



COMMONWEALTH OF VIRGINIA  
COUNTY OF FAIRFAX

4100 CHAIN BRIDGE ROAD  
FAIRFAX, VIRGINIA 22030



September 17, 1981

Mr. B. M. Paden  
P. O. Box 8538  
Richmond, Virginia 23226

Re: Special Exception  
Number 81-S-053

Dear Mr. Paden:

At a regular meeting of the Board of Supervisors held on September 14, 1981 the Board approved Special Exception Number 81-S-053 in the name of Colonial Pipeline Company, located at Tax Map 55-3((1))31A for use as a Petroleum Pumping Station Tank pursuant to Sect. 3-104 of the Fairfax County Zoning Ordinance, by requiring conformance with the following development conditions:

1. This Special Exception is granted for the location indicated in the application and is not transferable to other land.
2. This Special Exception is granted for the building and uses indicated on the plats submitted with the application only.
3. A copy of this Special Exception SHALL BE POSTED in a conspicuous place along with the Non-Residential Use Permit on the property of the use and be made available to all Departments of the County of Fairfax during hours of operation of the permitted use.
4. A site plan generally in conformance with the preliminary site plan herein, will be submitted for approval in accordance with the provisions of Article 17 unless the requirement is waived by the Director of the Department of Environmental Management.
5. A fire hydrant will be provided at the location in accordance with the requirement of the County Fire Marshall's Office.

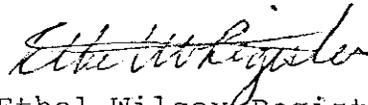
September 14, 1981

This approval, contingent on the above noted conditions shall not relieve the applicant from compliance with the provisions of any applicable ordinances, regulations, or adopted standards. The applicant shall be himself responsible for obtaining the required Non-Residential Use Permit through established procedures, and this Special Exception shall not be valid until this has been complied with.

Under provisions of Section 9-014 of the Zoning Ordinance, this Special Exception shall automatically expire without notice eighteen months after the effective date of the exception unless construction has commenced or an extension has been granted by the Board of Supervisors because of the occurrence of conditions unforeseen at the time of the granting of this Special Exception. Any request for extension should cite justification for the extension and be filed with the Zoning Administrator not less than thirty (30) days prior to the expiration date.

If you have any questions concerning this Special Exception, please call me.

Very truly yours,



Ethel Wilcox Register  
Clerk to the Board

EWR/sh

cc: Mr. Patteson  
Mr. Knowlton  
Mr. Covington  
Mr. Sandhu





MEMORANDUM

**TO:** Regina Coyle, Director  
 Zoning Evaluation Division  
 Department of Planning and Zoning

**FROM:** David B. Marshall, Chief   
 Facilities Planning Branch, Planning Division  
 Department of Planning and Zoning

**SUBJECT:** Section 15.2-2232 Review  
**Application 2232-S07-10**  
**Dominion Virginia Power Company – DVP/**  
**Virginia Electric and Power Company -VEPCO**  
 13100 Moore Road, Clifton  
 TAX MAP: 55-3 ((1)) 31A

**REFERENCE:** SEA 81-S-053-1

**DATE:** January 24, 2008

In accordance with the Standard Operating Procedures approved by the Board of Supervisors on July 25, 1994, which provide guidance to Department of Planning and Zoning (“DPZ”) staff regarding the review of public facilities projects pursuant to Va. Code Sec. 15.2-2232, the Facilities Planning Branch of the Planning Division offers the following comments on the site modifications and structural additions to collocate and install one new electric transformer to an existing electric substation. This review is concurrent with Special Exception Amendment 81-S-053-1 for the purpose of amending SE 81-S-053 previously approved for petroleum control and distribution station to permit electric substation.

**PROJECT DESCRIPTION**

(Attachment A)

As the applicant, the Dominion Virginia Power-DVP /Virginia Electric and Power Company-VEPCO (subsequently referred to as “DVP”) proposes to collocate and install one new electric transformer, related equipment and site improvements within its portion of the existing substation located at 13100 Moore Road, Clifton, Virginia. The additional 75 MVA electric transformer proposed to be constructed by DVP will require the construction of an 8-foot tall screening wall along the eastern edge of the proposed eastern driveway extension. A landscape buffer along the eastern boundary will be reduced from approximately 100 feet to a range of that range of 50 feet to 70 feet wide and supplemented with evergreen plantings. The applicant will provide supplemental plantings on the adjacent property to the east. A 16-foot high noise attenuation wall will also be constructed along the western side of the proposed access road next to the new transformer. The proposed construction will expand the existing on-site DVP electric distribution facility presently servicing this area of the County.

The subject property consists of 10 acres owned by Colonial Pipeline Company. Existing Colonial Pipeline Company structures on the site include a Pump Control Building, an above ground pressure relief tank and accessory buildings or tanks located in the western portion of the property. The DVP electric substation is located in the eastern portion of the site. Presently, this portion of the site contains two DVP electrical transformers (one of which serves the pump control building exclusively) and the second provides load distribution to the DVP immediate service area. Two high voltage transmission lines supported by lattice steel tower structures are located within an existing DVP electric corridor as well as a Colonial Pipeline gas line corridor (located within the property to the south and west).

Proposed improvements will include the following new electric transformer and related site improvements (all dimensions and areas are approximate):

- Proposed Electric Transformer and related equipment (a circuit support structure and two capacitor banks)
- Site Improvements – These will accommodate the proposed electric transformer and include the following elements:
  - Storm water improvements;
  - Two driveway extensions to provide access to the new transformer;
  - 89-foot long, 16-foot high noise attenuation wall along the eastern side of the proposed transformer (earth tone (beige or tan) colors composed of PVC blocks with synthetic wood filler and upright steel support beams); and
  - 8-foot high concrete “stone” wall. The simulated stone concrete wall will consist of stamped concrete panels in “ledge stone” texture that is colored “Pueblo” tan;
  - Supplemental evergreen plantings will be added to a treed buffer with that ranges from 50 feet to 70 feet in width within the eastern property boundary. Additional evergreen plantings will be provided on the property to the east.

**Proposed Number of Employees:** The electric substation is an unmanned facility, having only weekly to monthly inspections.

**Traffic/Parking:** The proposed transformer will be unmanned and require only routine maintenance. It will have no impact on the supporting transportation infrastructure of the county.

**Area Being Served:** The transformers (two existing and one proposed) will serve the Colonial Pipeline operations and the surrounding load area which consists of 7,450 DVP customers along Clifton Road, Stringfellow Road (south of I-66) and along the Rte. 29 corridor between Centreville and Monument Drive, including the new Fairfax County Public Safety and Transportation

Operations Center.

## **PROJECT JUSTIFICATION**

According to the applicant, there are two transformers on the site: Transformer TX#1 is used exclusively to serve the Colonial Pipeline operations while Transformer TX#2 serves the surrounding load area via three distribution circuits. This load area includes approximately 7,450 of DVP's customers along Clifton Road, Stringfellow Road (south of I-66) and along the Rte. 29 corridor between Centreville and Monument Drive (including the new Fairfax County Public Safety and Transportation Operations Center). Centreville Substation also provides critical emergency load support to over 20,000 customers served from DVP's Burke, Pender and Sully Substations.

The applicant has further explained that since completion of the last project to relieve load from Centreville Substation (prior to summer 2003), growth in the Rte. 29 corridor has loaded Centreville Transformer TX#2 over 90% of its nameplate rating (46 MVA on a 50 MVA nameplate). Loading on the surrounding substations of Pender and Sully has also increased such that without the surrounding substations of Pender and Sully, DVP's ability to operate its system in a safe and reliable manner will be severely challenged by hot summer weather in 2008. Also, without additional circuit capacity, transfer of load between substations is severely limited for emergency restoration. This means that during a substation transformer failure or abnormal circuit configuration (those times when the normal configuration of a circuit is interrupted or abnormally switched), restoration activities would be severely hampered due to unavailable contingency capacity at Centreville.

According to the applicant, in order to maintain reliable electric service to all customers, DVP will need to expand Centreville Substation to accommodate the installation of a 75 MVA transformer, two circuits, and all supporting equipment.

## **ALTERNATIVE SITES CONSIDERED FOR THE PROPOSAL** (Attachment A)

The site of the new transformer is adjacent to the Colonial Pipeline Company pump station and within an established Dominion Power substation containing existing petroleum pump facilities and electric transmission facilities, respectively. According to the applicant, there were no other nearby suitable properties for this use available in the vicinity that are zoned either commercial or industrial. An attempt to develop these facilities within an area not in close proximity to the existing electric substation would cause significantly more impact to the environment and surrounding properties due to the need for extension of new electric transmission lines to connect and serve the remote electric substation. According to the applicant, since DVP had an existing electric substation on this property, the expansion of the existing substation became the most reasonable choice for locating the new transformer at this location. The selection of this location takes into account economical, environmental and accessibility considerations. The site also keep existing electric and gas components collocated on one site. Therefore this project minimizes the impact to the environment by reducing the area of construction between existing and new facilities

and development of additional sites.

## **LOCATION AND CHARACTER OF THE AREA**

The proposed facility expansion will be located at 13100 Moore Road situated on the north side of Moore Road, surrounded by Hayden Village (Rockpointe) residential subdivision to the north, east and south. To the west is located the Colonial Pipeline and Dominion Power easement and the Clifton Farm subdivision.

Single family attached homes are located in the Hayden Village subdivision due east and south of the subject property. Single family detached homes are located to the north and west in Hayden Village and Clifton Farm subdivisions, respectively. A vacant parcel containing the Colonial Pipeline easement and the DVP easement, is located contiguous with the western boundary of the subject property. The Clifton Farm subdivision is located to the west of these utility easements. The surrounding area is planned for residential use at 1-2 dwelling units per acre and zoned predominately PDH-2 with some R-1.

## **ANTICIPATED IMPACTS ON ADJOINING PROPERTIES**

According to the applicant the anticipated impacts on adjoining properties are addressed in the following manner:

For aesthetic, security and safety purposes, the new transformer will be completely contained within an area bounded by an 8-foot high simulated "stone" concrete screening wall (immediately adjacent to the eastern side of the proposed electric transformer) and/or an 8-foot high chain link fence (the remaining perimeter around the transformers) supplemented by planting of evergreen trees in a vegetative buffer east of the substation compound within the subject property. Supplemental plantings will also be provided by DVP on the Hayden Village property adjacent to the townhomes located on Lime Court.

In anticipation of potential noise impacts from the proposed electric transformer, DVP commissioned a noise study by ATCO Noise Management dated December 3, 2007 that evaluated the potential noise impact of the additional transformer and proposed a noise attenuation wall to be built as part of this project (see Attachment A.) Sound readings were taken by ATCO Noise Management at the property lines in August 2007. The readings served a dual purpose: 1) to verify that the present Dominion substation equipment arrangement meets the Fairfax County ordinance for permissible sound pressure levels, and 2) to allow ATCO to model predicted sound levels following the substation expansion with its additional equipment. The modeling predicted that a properly designed transformer sound wall would bring the proposed station expansion into compliance with the sound ordinance, and will be confirmed with a final set of sound readings upon completion of the project. The landowner, Colonial Pipeline Company, is underway with independent sound mitigation efforts. Following their completion this winter, Dominion plans to take follow-up sound readings at the same property line locations. This will assure that the entire site is in compliance with the sound ordinance prior to substation expansion.

Colonial Pipeline Company commissioned a study for existing noise impacts from their operations and have taken mitigation measures.(see Attachment I.)

The expansion will meet the requirements of the National Electric Safety Code (NESC), including “Danger-High Voltage” signs posted at regular intervals on the external face of the wall. The facility gates will be closed and locked to prevent unauthorized access to the station. The existing security lighting is in compliance with current County regulations. No fire water tanks or improvements are expected to be developed for this project and no water or sanitary facilities are needed.

The Electromagnetic Fields produced by the Centreville Substation and its planned expansion will continue to be very low at the perimeter fence/wall of the facility. There will be no additional fuel oil or other hazardous material storage on this site that will require containment facilities. The transformers are filled with mineral oil and will contain no PCBs.

The underlying gravel surface and existing storm water management pond will serve as the primary and secondary containment for these facilities. DVP has a maintenance, inspection and monitoring plan for each facility in accordance with state regulations.

Minimal parking is required for this site and is located within the fenced area of the electric substation. Because the substation requires only routine maintenance and is generally associated with a gravel yard, no additional amount of impervious surface will be required and the overall site will have a minimum amount of impervious surface. Most of the parking required by the total site is for the use of the Colonial Pipeline Company.

Even though the existing gas pumping and distribution facility is exempt from local jurisdiction regulations, the facility has been designed such that all sediment and erosion control regulations and best management practices/storm water management requirements have been met for this site in accordance with state and local requirements. There are no floodplains, Resource Protection Areas, or Environmental Quality Corridors identified on this property in accordance with FEMA and Fairfax County mapping resources.

## **COMPREHENSIVE PLAN PROVISIONS**

The subject property is split planned on the Comprehensive Plan Map. The upper quarter is shown as part of the Fairfax Center Area and the lower three quarters of the subject property is planned for public facilities, governmental and institutional uses according to the Comprehensive Plan Map with the designation of an existing Public Service and Utility Facility - Electric Substation.

The upper quarter of the parcel is planned by the following citation:

In the Fairfax County Comprehensive Plan, 2007 Edition; Fairfax Center Area as amended through September 25, 2006, Land Unit R, Recommendations, Land Use; page 103; the Plan states:

**“Sub-unit R2**

This sub-unit is planned for single-family residential use at 2 dwelling units per acre at the overlay level. Visual buffering should be provided in any development plan for parcels fronting on Route 29.”

The lower three quarters of the subject property is planned by the following citation:

In the Fairfax County Comprehensive Plan, 2007 Edition; Bull Run Planning District as amended through March 12, 2007, BR7 Braddock Community Planning Sector; Recommendations, Land Use; page 87; the Plan states:

- “2. Non-residential uses requiring special exception or special permit approval should be rigorously reviewed. In general, these uses, if permitted at all, should only be located at the boundary of Low Density Residential Areas and Suburban Neighborhoods or where their impact on existing residences is minimal. These uses should be granted only if the following conditions are met:
- Access for the use is oriented to an arterial roadway;
  - The use is of a size and scale that will not adversely impact the character of the area in which it is located; and
  - The use is designed to mitigate impacts on the water quality of the Occoquan Reservoir...
4. As shown on the Plan map, the land generally located south of the Route 29 Corridor and north of Braddock Road in the Little Rocky Run watershed, that is in the approved sewer service area, is planned for residential use at 1-2 dwelling units per acre which is similar to the density of existing residential use in the area.”

In the Fairfax County Comprehensive, Policy Plan, 2007 Edition; Public Facilities as amended through January 10, 2005; COUNTYWIDE OBJECTIVES AND POLICIES; page 4, the Plan states:

**Objective 4: Mitigate the impact of public facilities on adjacent planned and existing land uses.**

- Policy e. Ensure that site size and development conforms to all requirements of the Fairfax County Zoning Ordinance and exceeds site acreage requirements, as possible, to achieve maximum compatibility with surrounding land uses.

In the Fairfax County Comprehensive, Policy Plan, 2007 Edition; Public Facilities as amended through January 10, 2005; Electrical and Land-Line Utility Services pages 33 through 37, the Plan states:

**“Objective 40: Locate electrical and land-line service facilities to provide maximum service levels as unobtrusively as possible. (See Figure 7.)**

- Policy a. Avoid areas of environmental sensitivity.
- Policy b. Collocate facilities such as distribution and transmission poles, switching and hub centers and electrical substations whenever feasible and appropriate to minimize visual and neighborhood impacts.
- Policy c. Plan for existing and future needs of facilities in conjunction with emerging development designs.
- Policy d. Provide adequate acreage for expansion of substations, hub centers and equipment areas and maintain levels of screening to accommodate expansion.
- Policy e. Locate future switching and hub centers, equipment areas, and electrical substations on sites, which shield nearby residences from noise, while affording privacy and safety...
- Policy h. Regulate new development to minimize unnecessary human exposure to unhealthful impacts of low level electromagnetic fields from electrical transmission lines.

**Objective 41: Meet service area requirements with a minimum of facilities and ensure that those facilities are designed to minimize impacts on adjacent properties.**

- Policy a. Provide justification for the proposed facility’s need. Specify alternative actions and justify why the proposed location and type of facility is the least disruptive.
- Policy b. Mitigate the visual impact of switching and hub centers, equipment areas and electrical substations from adjacent development. Land with existing mature vegetation is preferable, as are access roads which obscure entrances, berms which provide screening, and slopes that provide localized lower elevations...
- Policy e. Provide for the appropriate screening and buffering of proposed facilities.
- Policy i. Assure that radiation levels, individually and cumulatively, will be maintained at acceptable levels.”

## ZONING ANALYSIS

The property is zoned R-1 and that any development must be in substantial conformance with SE 81-S-053. SEA 81-S-053 has been accepted and is scheduled for a Planning Commission public hearing on February 13, 2008.

## **ENVIRONMENTAL ANALYSIS**

(Attachment B)

The staff of the Environment and Development Review Branch of the Planning Division in DPZ reviewed the application and noted the following issues:

### **Asbestos Soils**

#### **Issue:**

Fairfax County Soils Maps note the presence of naturally occurring asbestos throughout the entire site.

#### **Resolution:**

Staff recommends following the standard precautions for asbestos safety and suppression measures. Staff also recommends that the applicant implement a set of safety procedures typically associated with development in areas containing naturally occurring asbestos. These measures should include the use of safety masks, clothing and eye protection for workers on-site during construction phases, as well as dust suppression during construction phases to ensure that any asbestos containing materials do not become airborne. Staff encourages coordination with the Fairfax County Health Department to ensure proper precautions are observed.

### **Tree Cover**

#### **Issue:**

The vegetation plan indicated on the plat shows preservation of existing mature trees, and new supplemental plantings along the new fences. Staff has concerns that the existing vegetation is somewhat sparse and in a degraded condition.

#### **Resolution:**

Staff recommends supplemental plantings to screen the facility as well as bolster the tree cover on the site. The supplemental plantings should not just be limited to the areas along the fences, if possible. The supplemental plantings are encouraged to be evergreen, as the majority of trees on site are deciduous.

### **Stormwater Management/Water Quality**

#### **Issue:**

The property is in the Occoquan Reservoir watershed, a recognized environmentally sensitive area. The comprehensive plan provides guidance on the protection of this resource through water quality best management practices and land use principles.

**Resolution:**

Staff feels that the applicants have provided additional information regarding the adequacy of the proposed facilities. However, any final determination regarding the proposed storm water management (SWM) and best management (BMP) facilities and their ability to meet both the site and Occoquan watershed requirements for water quality and quantity controls will be made by staff in the Department of Public Works and Environmental Services (DPWES).

**ENVIRONMENTAL AND SITE REVIEW DIVISION** (Attachment C)  
**DEPARTMENT OF PUBLIC WORKS AND ENVIRONMENTAL SERVICES**

The staff of the Environmental and Site Review Division West Branch of the Department of Public Works and Environmental Services reviewed the application and provided the following comments:

Chesapeake Bay Preservation Ordinance

There is no Resource Protection Area on the site; it is located within the Water Supply Protection Overlay District.

Floodplain

There is no floodplain on the site.

Downstream Drainage Complaints

There is no complaint on file.

SWM

The applicant proposes to meet the requirements by using an onsite wet pond.

**COUNTYWIDE TRAILS PLAN** (Attachment D)

There are no trails depicted on the Countywide Trails Plan map adjacent to the subject property.

**FAIRFAX WATER** (Attachment E)

Fairfax Water has reviewed the subject application and has no comment.

**TRANSPORTATION ANALYSIS** (Attachment F)

Fairfax County Department of Transportation staff and Virginia Department of Transportation staff indicated that the applicant should complete Moore Road to state standards (construct to the site and provide an on-site cul-de-sac) including dedication and construction.

The applicant has studied the feasibility of such construction; however, because of the easements, overhead transmission poles, and buried pipes in the southwestern corner of the site, a turn-around could not be dedicated and constructed without extending such a road halfway along the length of the southern boundary. Sufficient right-of-way does not exist in the current dedicated area to construct an appropriate turn around. Additionally, the proposed application will not add any users to the road and the properties to the east and south of the application site are developed and do not need future road connections to Moore Road.

Due to the nature of the application (expansion of existing electrical substation), there appears to be no potential for a significant traffic impact.

## **HISTORIC RESOURCES**

(Attachment G)

This parcel is not included within the boundaries of a Fairfax County Historic Overlay District, is not listed on the Fairfax County Inventory of Historic Sites or documented in the Historic Resources Standing Sites Survey. No heritage resources have been identified or documented as being located on or adjacent to this parcel so as to be negatively impacted by the proposed installation of an additional electrical transformer.

The Fairfax County Comprehensive Plan, Area III, Bull Run Planning District, BR-7 Braddock Community Planning Sector, 2007 Edition, Heritage Resources, page 89 states:

### “Heritage Resources

The open spaces and residential areas of this sector are particularly likely to yield heritage resources, especially from the period of the Civil War. Heritage resource survey work should precede development or redevelopment for the purpose of preservation or recovery of significant heritage resources.”

Recommendation: The Cultural Resource and Protection Section of the Fairfax County Park Authority should provide comment on this application to comply with the Comprehensive Plan language cited above.

## **PARKS**

(Attachment H)

Fairfax County Park Authority (FCPA) staff provided the following comment:

Based on FCPA staff review, staff has determined that this application bears no adverse impact on land or resources of the Park Authority.

## **CONFORMANCE WITH THE COMPREHENSIVE PLAN**

Section 15.2-2232 of the *Code of Virginia*, as amended, charges the Planning Commission with the determination whether the general location or approximate location, character, and extent of the proposed facility are substantially in accord with the adopted Comprehensive Plan.

- Location

The subject property is planned for public, governmental and institutional uses for an electric substation as shown on the Fairfax County Comprehensive Plan map. The proposed transformer will be located in an existing electric power substation compound on a 10-acre parcel owned by Colonial Pipeline Company and developed with their pump station and accessory structures. This satisfies the collocation criteria of the Comprehensive Plans to minimize visual and neighborhood impacts. The proposed expansion is intended to improve the service for residents in Fairfax County, in conformance with the Plan recommendations for a facility's location in relation to its service area. The proposed transformer will supply power to the surrounding area and the Fairfax County Public Safety and Transportation Operations Center. Public utilities are currently located at the site. The design for the proposed facility must comply with the requirements of the Zoning Ordinance and Public Facilities Manual.

- Character

The subject property has varying types and widths of buffering/screening vegetation (stands of trees as well as screening and buffering vegetation) which mitigates the visual impact of the Colonial Pipeline Company structures and the DVP transformers, support equipment and site improvements from the surrounding residential area. The proposed height of the transformer is 28 feet. The applicant proposes to maintain and enhance the 50-70 foot wide vegetated buffer with supplemental evergreen tree plantings adjacent to the eastern property boundary. In addition, an 8-foot high masonry wall for the purpose of mitigating visual impacts to the adjacent Hayden Village will be located east of the new transformer to provide further mitigation of the visual impact of the electric substation transformers upon adjacent residential development. DVP has negotiated with the Hayden Village Homeowner's Association, to provide additional evergreen landscaping to be located adjacent to the townhomes on Lime Court to further buffer any visual impact from the electric substation. These mitigation measures protect the residential character of the area surrounding the subject property.

- Extent

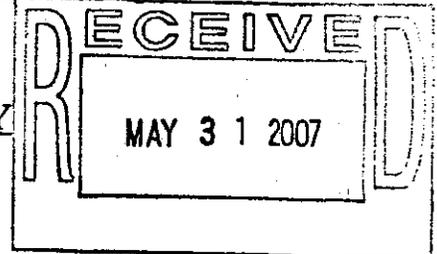
The proposed addition of an electric transformer to the DVP electric substation will occupy 14,500 square feet of the 10 acres subject property, approximately 3% of the subject property. The reduction in the eastern buffer adjacent to the transformers, from approximately 100 feet to a range of 50 to 70 feet will be mitigated by providing an 8-foot high wall and supplemental evergreen plantings along the western side of the buffer. The FAR is .03 and 86.67 % of the site is maintained as open space.

**COUNTY OF FAIRFAX, VIRGINIA**  
**APPLICATION FOR DETERMINATION**  
**PURSUANT TO**  
**SECTION 15.2-2232 OF THE CODE OF VIRGINIA**  
  
**Application Number:** 2232-507-10  
(assigned by staff)

*The application contains three parts: I. Application Summary; II. Statement of Justification; and I Telecommunication Proposal Details. Please do not staple, bind or hole-punch this application. Please provide at least one copy of all pages, including maps and drawings, on 8.5 x 11 inch paper.*

(Please Type or Print All Requested Information)

**PART I: APPLICATION SUMMARY**



**ADDRESS OF PROPOSED USE**

Street Address 13100 Moore Road

City/Town Clifton, Virginia Zip Code 20124

**APPLICANT(S)**

Name of Applicant Virginia Electric and Power Company

Street Address 2400 Grayland Avenue

City/Town Richmond State VA Zip Code 23220

Telephone Number: Work ( 804 ) 257-4668 Fax ( 804 ) 257-4716

E-mail Address DAVE\_CROWL@DOM.COM

Name of Applicant's Agent/Contact (if applicable) John J. Gattuso  
c/o Greenhorne & O'Mara, Inc.

Agent's Street Address 3635 Concorde Parkway, Suite 300

City/Town Chantilly State VA Zip Code 20151

Telephone: Work ( 703 ) 263-1220 Fax ( 703 ) 263-1221

**PROPOSED USE**

Street Address 13100 Moore Road

Fairfax Co. Tax Map and Parcel Number(s) 0553-01-0031A

Brief Description of Proposed Use Addition of third electrical transformer to an existing electrical substation serving approximately 7450 customers along Clifton Road, Stringfellow Road (south of I-66) and along the Route 29 corridor between Centreville and Monument Drive.

Total Area of Subject Parcel(s) 10 acres (acres or square feet)

Portion of Site Occupied by Proposed Use 14,500 S.F. (acres or square feet)

Fairfax County Supervisor District Springfield

Planned Use of Subject Property (according to Fairfax County Comprehensive Plan)

Single family-residential use at 2 dwelling units per acre at the overlay level.

Zoning of Subject Property R-1

List all applicable Proffer Conditions, Development Plans, Special Exceptions, Special Permits or Variances previously approved and related to this site

SE-81-S-053

**PROPERTY OWNER(S) OF RECORD**

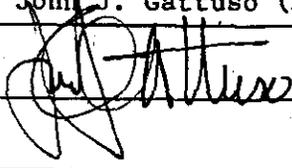
Owner Colonial Pipeline Company

Street Address P.O. Box 349

City/Town Manassas State VA Zip Code 20108

**PART II**, entitled "Statement of Justification," pages 4 through 6, shall be completed by all applicants and included as part of the application. **PART III**, entitled "Telecommunication Proposal Details," pages 7 through 9, also shall be completed and included for all proposed telecommunication uses.

Name of Applicant or Agent John J. Gattuso (Agent)

Signature of Applicant or Agent 

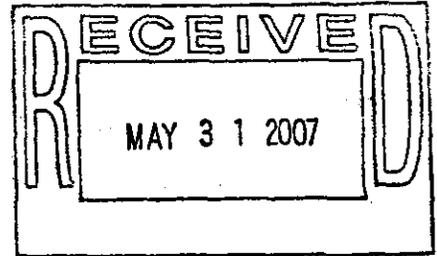
Date MAY 30, 2007

\*\*\*\*\*

*Please do not staple, bind or hole-punch this application. Please provide at least one copy of all pages, including maps and drawings, on 8.5 x 11 inch paper.*

**Submit completed application to:**

**Fairfax County  
Department of Planning and Zoning, Planning Division  
Herrity Building  
12055 Government Center Parkway, Suite 730  
Fairfax, Virginia 22035**



\*\*\*\*\*

**FOR STAFF USE ONLY**

Date application received: 5/30/07

By: DBM

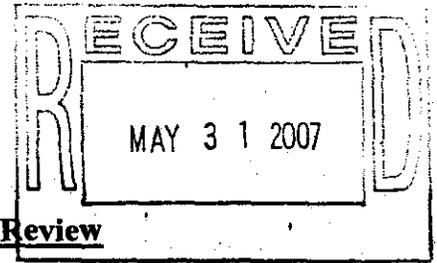
Additional information requested to complete application:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date application accepted:   /  /  

By: \_\_\_\_\_

**Virginia Electric and Power Company**  
**Centreville Electrical Substation**  
**Joint Special Exception Application and Public Facility Review**



**PART II STATEMENT OF JUSTIFICATION**

**Property Location:**

The subject property of this application is located in Fairfax County, Virginia and identified on the County GIS data base as part of tax map parcel 055-3-0031-A. The property owner is listed as Colonial Pipeline Co. The property address is 13100 Moore Road, and contains 10.00 acres. Dominion Virginia Power Company (DVP) has easement rights to a portion of the site. Existing Colonial Pipeline Company structures on the site include a Pump Control Building, and an above ground pressure relief tank. Also, the site presently contains two DVP electrical transformers (one of which serves the pump control building exclusively) and the second provides load distribution to the DVP immediate service area.

In addition, DVP proposes to co-locate and install one new electric transformer within its portion of the existing substation. DVP wishes to proceed concurrently with the Special Exception Application and Public Facility Review Application for this additional electric transformer. The property presently contains two high voltage transmission lines built on lattice steel tower structures located within an existing Virginia Power electric corridor as well as a Colonial Pipeline Company gas line corridor. This DVP project will be filed as an "Electric Substation" and will provide conversion of high voltage electricity to a serviceable level. An existing 100' wide Virginia Power Electric Transmission Easement containing existing electric transmission lines is within the property boundary. The proposed construction would be an extension of the existing on-site DVP electric distribution facility presently servicing this area of the County.

Under the economic section of the Comprehensive Plan, Objective 40, policy b, facilities should be co-located "whenever feasible and appropriate to minimize visual and neighborhood impacts." In this instance, the electric facility has already been co-located with the Colonial Pipeline Company distribution station. The additional electric transformer proposed to be constructed by DVP will require the construction of an 8 foot tall screen wall approximately sixty-three (63) feet closer to the property line than the location of the existing fence; however, the location of the screen wall does not affect the minimum 50 foot wide transition screen yard required by Article 13 of the Fairfax County Zoning Ordinance.

**Property Description:**

The Colonial Pipeline Company property encompasses 10.00 acres and is currently zoned R-1, Residential. The terrain is moderately flat and well drained with slopes ranging from 2 to 7 %. Soils on this site consist of types 152A+, 59B2 and 152B+. It is recognized that these soils are in the Orange soils group, where possible asbestos bearing

rocks are interspersed. DVP has contacted the Fairfax County Health Department and together have prepared a compliance plan to maintain safe working conditions. The portions of the property to remain undisturbed are covered with existing mature trees. No known areas of wetlands exist on the property and there are no known other environmentally sensitive areas, cemeteries, floodplains, RPA's, EQC's, etc. identified on this portion of the property.

The site is surrounded by existing residential development including the Hayden Village Townhouse Community to the north, south, and east, and Clifton Farm subdivision to the west.

#### **Proposed Facilities:**

#### **Purpose and Need:**

Presently, there are two transformers on the site: TX#1 is used exclusively to serve the Colonial Pipeline operations while TX#2 serves the surrounding load area via three distribution circuits. This load area includes approximately 7,450 of DVP's customers along Clifton Road, Stringfellow Road (south of I-66) and along the Rt. 29 corridor between Centreville and Monument Drive (including the new Fairfax County Public Safety Training Operations Center). Centreville Substation also provides critical emergency load support to over 20,000 customers served from DVP's Burke, Pender, and Sully Substations. Since completion of the last project to relieve load from Centreville Substation (prior to summer 2003), growth in the Rt. 29 corridor has loaded Centreville TX#2 over 90% of its nameplate rating (46 MVA on a 50 MVA nameplate). Loading on the surrounding substations of Pender and Sully has also increased such that without the load relief provided by the expansion of Centreville Substation, DVP's ability to operate its system in a safe and reliable manner will be severely challenged by hot summer weather in 2008. Also, without additional circuit capacity, transfer of load between substations is severely limited for emergency restoration. This means that during a substation transformer failure or abnormal circuit configuration (those times when the normal configuration of a circuit is interrupted or abnormally switched), restoration activities would be severely hampered due to unavailable contingency capacity at Centreville.

In order to maintain reliable electric service to all customers, DVP will need to expand Centreville Substation to accommodate the installation of a 75 MVA transformer, two circuits, and all supporting equipment.

#### **Operations, Safety and Environmental:**

The new transformer will be completely contained within an area bounded by an 8 foot masonry screen wall and/or an 8 foot high fence supplemented by planting of evergreen trees for aesthetic, security and safety purposes. The electric substation is an unmanned facility, having only weekly to monthly inspections. Minimal employees visiting the site will have no impact to the ground water availability or quality. Security lighting is existing and is in compliance with current County regulations. No fire water tanks or

improvements are expected to be developed for this project and no water or sanitary facilities are needed.

There will be no additional fuel oil or other hazardous material storage on this site that will require containment facilities. The transformers are filled with mineral oil and will contain no PCBs. The underlying gravel surface and existing storm water management pond will serve as the primary and secondary containment for these facilities. DVP has a maintenance, inspection and monitoring plan for each facility in accordance with state regulations.

Minimal parking is required for this site and is located within the fenced area of the electric substation. Because the substation requires only routine maintenance and is generally associated with a gravel yard no additional impervious pavement will be required. This allows the site to have a minimum amount of impervious surface, as required by the Environmental Section of the Comprehensive Plan. Most of the parking required by the total site is for the use of the Colonial Pipeline Company.

Even though the existing gas pumping and distribution facility is exempt from local jurisdiction regulations, the facility has been designed such that all sediment and erosion control regulations and best management practices/storm water management requirements have been met for this site in accordance with state and local requirements. There are no floodplains, RPAs, or EQCs identified on this property in accordance with FEMA and Fairfax County mapping resources.

Noise levels at this site, with the addition of the new transformer, will comply with the current noise level requirements of Fairfax County.

The proposed transformer and associated equipment shall not cause emissions levels to increase.

#### Land Use and Zoning:

The proposed use corresponds to the existing land use and is located in a residential area of Fairfax County. The site of the new transformer is adjacent to and within an established substation containing existing electric and gasoline transmission facilities. The subject property is currently zoned R-1 (Residential District). In accordance with the current zoning ordinance, the electrical substation facility use is permitted in the R-1 zoning district under the Special Exception provisions, Category 1 Light Public Utility Uses. DVP, when considering a location for a new facility in this area, looked for a suitable location that would provide a lesser impact to the surrounding area while having close proximity to the existing electric transmission facilities. This particular location presently houses the existing transformer for which the proposed transformer will serve in an additional capacity. The surrounding properties are zoned PDH-2 with outlying properties zoned R-1 and R-2. There were no other nearby suitable properties for this use available in the vicinity that are zoned either Commercial or Industrial.

An attempt to develop these facilities within an area not in close proximity to the existing electric substation would cause significantly more impact to the environment and surrounding properties due to the need for extension of new electric transmission lines to connect and serve the remote electric substation. Because DVP had an existing electric substation on this property, the expansion of the existing substation became the most reasonable choice for locating the new transformer at this location. The selection of this location takes into account economical, environmental and accessibility considerations, and also this site will keep existing electric and gas components co-located on one site. This in turn, minimizes the impact to the environment by reducing the area of construction between existing and new facilities and development of additional sites.

By placing the new transformer in close proximity to existing equipment, constructing an 8 foot tall masonry screen wall with supplemental evergreen planting and providing more than the minimum 50' transitional screen yard along the eastern property line of the facility, DVP will to the best of its ability, provide suitable screening for the development and protect neighboring properties from visual impacts of the facility. This screening process fulfills Objective 4, policy d of the Public Facility Section of the Comprehensive Plan, which seeks to "ensure that public facilities are properly screened and buffered in order to mitigate visual impact on adjacent planned development of a different use or nature."

No additional traffic will be generated by the addition to the existing facility and there will be minimal impact to adjacent roadways and properties.

In our opinion, the proposed uses will be in conformance with the applicable provisions of the Comprehensive Plan and regulations of the Fairfax County Zoning Ordinance and should pose minimal impact to the surrounding area.

## CONFORMITY WITH THE FAIRFAX COUNTY COMPREHENSIVE PLAN

### Land Use:

The land use section of the Comprehensive Plan provides for an adequate level of public service and facilities. Given the extent of new development in this sector of the County, and the existing land uses surrounding the existing facility as well as other local electric substations reaching their nominal capacity as outlined in the justification statement, and considering the co-location of these public facilities, the proposed additional transformer is needed to maintain adequate levels of electric service and back-feed capabilities in this area of Fairfax County. Therefore, the development of this facility meets the goals and objectives of the Land Use section of the Comprehensive Plan.

### Transportation:

The proposed transformer will be unmanned and require only routine maintenance. It will have no impact on the supporting transportation infrastructure of the county.

### Environment:

The design of the proposed facility meets the minimum design specifications set forth by Fairfax County. Transitional screening yards have been provided that meet or exceed the requirements stated in the Fairfax County Zoning Ordinance. The majority of the site perimeter, exceeds the minimum 50' transitional screening, and has retained existing vegetation which consists of a mixture of mature deciduous and evergreen trees. The area of the electric substation will be completely enclosed with an 8 foot tall chain link security fence and/or an 8 foot tall masonry screen wall.

The site will produce no emissions or emit any light pollution. Only the existing security lighting will be remain. There will be no impact on the surrounding surface or ground water quality. Best Management Practices (BMP's) were used in the design of this facility and storm water management detention facilities were designed in accordance with Fairfax County and the NVPDC BMP Handbook.

No additional parking is required for this site. Most of the parking required by the total site is for the use of the gas pumping station.

All sediment and erosion control practices for the addition to the existing electric substation have been designed to meet the minimum requirements of the local county regulations. There are no floodplains, RPAs, EQCs or other jurisdictional wetlands on-site.

### Economic Development:

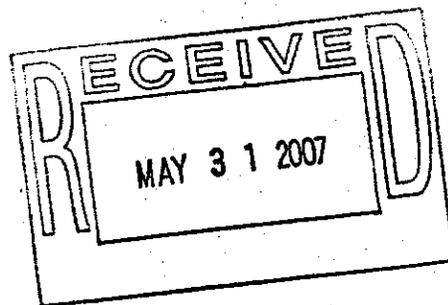
Under the economic development section of the Comprehensive Plan, Objective 40, policy b, facilities should be co-located "whenever feasible and appropriate to minimize visual neighborhood impacts." In this instance, the transformer will be placed on a site containing an existing Colonial Pipeline pumping and distribution station and an existing DVP substation. The location of this equipment within and adjacent to these existing gas and electric transmission facilities ensures that this equipment will be co-located such that it does not compromise the objectives of the Comprehensive Plan.

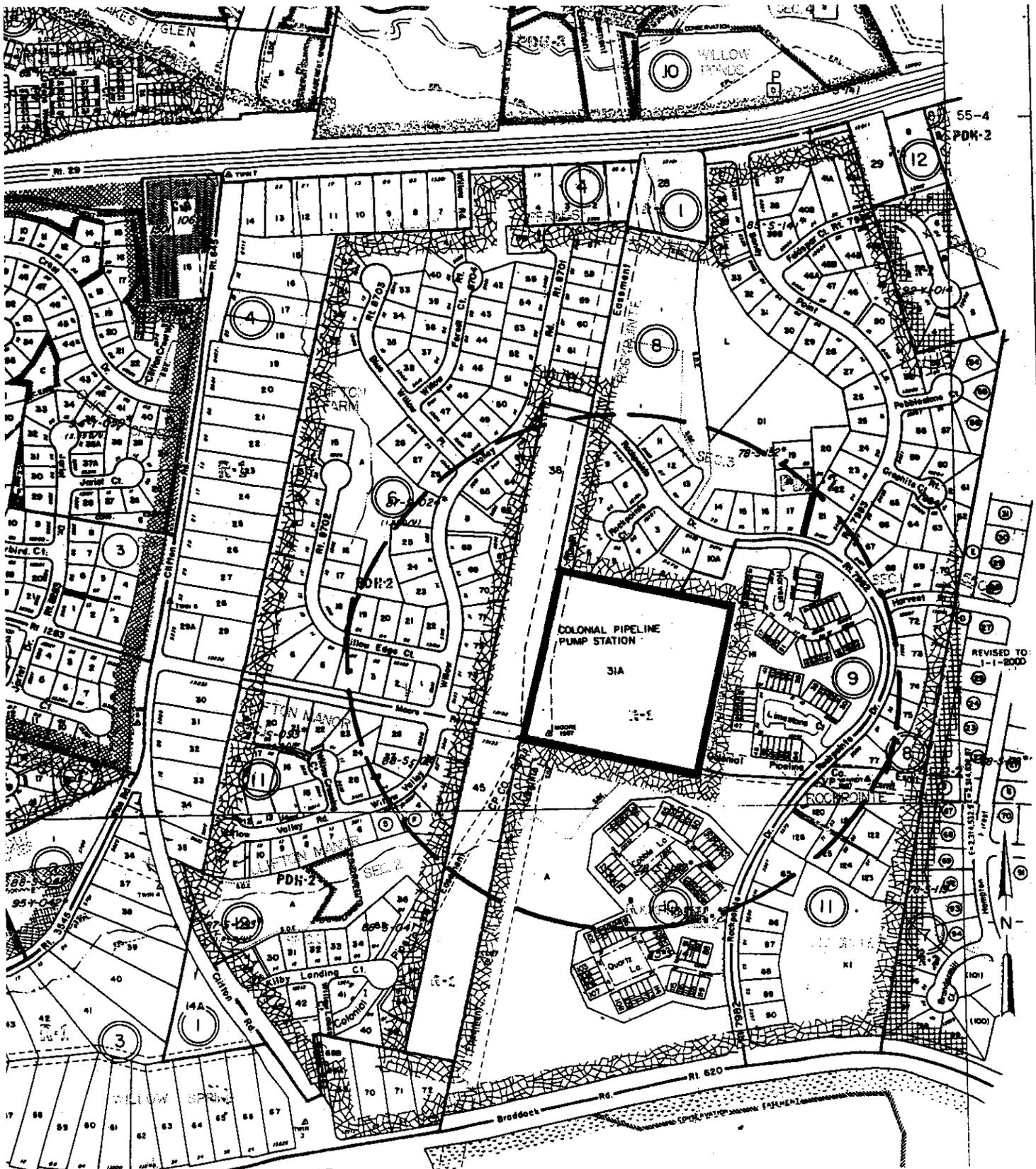
### Public Facilities:

The proposed electric distribution facility coincides with the goals of Fairfax County's Comprehensive Plan. The power transformers at Bull Run Station will soon reach their nominal capacity leaving no backup capabilities for the area. The proposed addition to the substation will provide a solution to this problem.

The expansion of this facility directly agrees with Objective 3, policy a, of the Public Facility Section of the Comprehensive Plan. The objective states new facilities are to be constructed "in size and quantity which is consistent with projected population needs." The proposed transformer is being implemented to meet the future needs of the residents that are served by this substation.

This concludes the Comprehensive Plan conformity summary for pertinent sections of the Comprehensive Plan. In our opinion, the proposed electric distribution substation complies with the goals and objectives outlined in the Comprehensive Plan as well as with the Zoning Ordinance regulations governing this Category I Light Public Utility Use.





55-4  
PDH-2

REVISED TO:  
1-1-2000

Tax Map No. 0553 01 0031A

138

82-W-054

R-C

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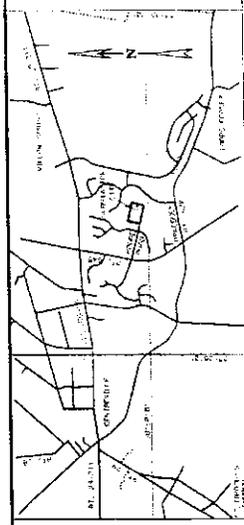


VEGETATION MAP  
 CENTREVILLE SUB STATION  
 COLONIAL GAS PIPELINE CO.

GENERAL CONTRACTOR  
 GREENHORN & O'NEAL  
 ENVIRONMENTAL  
 GEOGRAPHIC SCIENCES  
 2025 CONCORD PARKWAY, SUITE 200, QUANTICO, VIRGINIA 22131  
 PHONE: (703) 912-1120 FAX: (703) 912-1121

NO.	DATE	REVISION
1	9/13/07	PER COUNTY COMMENT OF 11/2/07
2	11/29/07	PER COUNTY COMMENT OF 10/29/07
3		
4		
5		

2 of 4  
 APPLICATION NUMBERS  
 STA 81 - S - 651 - 1  
 222 - 907 - 10



Forest Type	Comment Species	Successional Stage	Condition	Acreage
2	Dak. Hickory	Sub Climax	Generally Good	3.30
5	N.A.	N.A.	N.A.	6.78

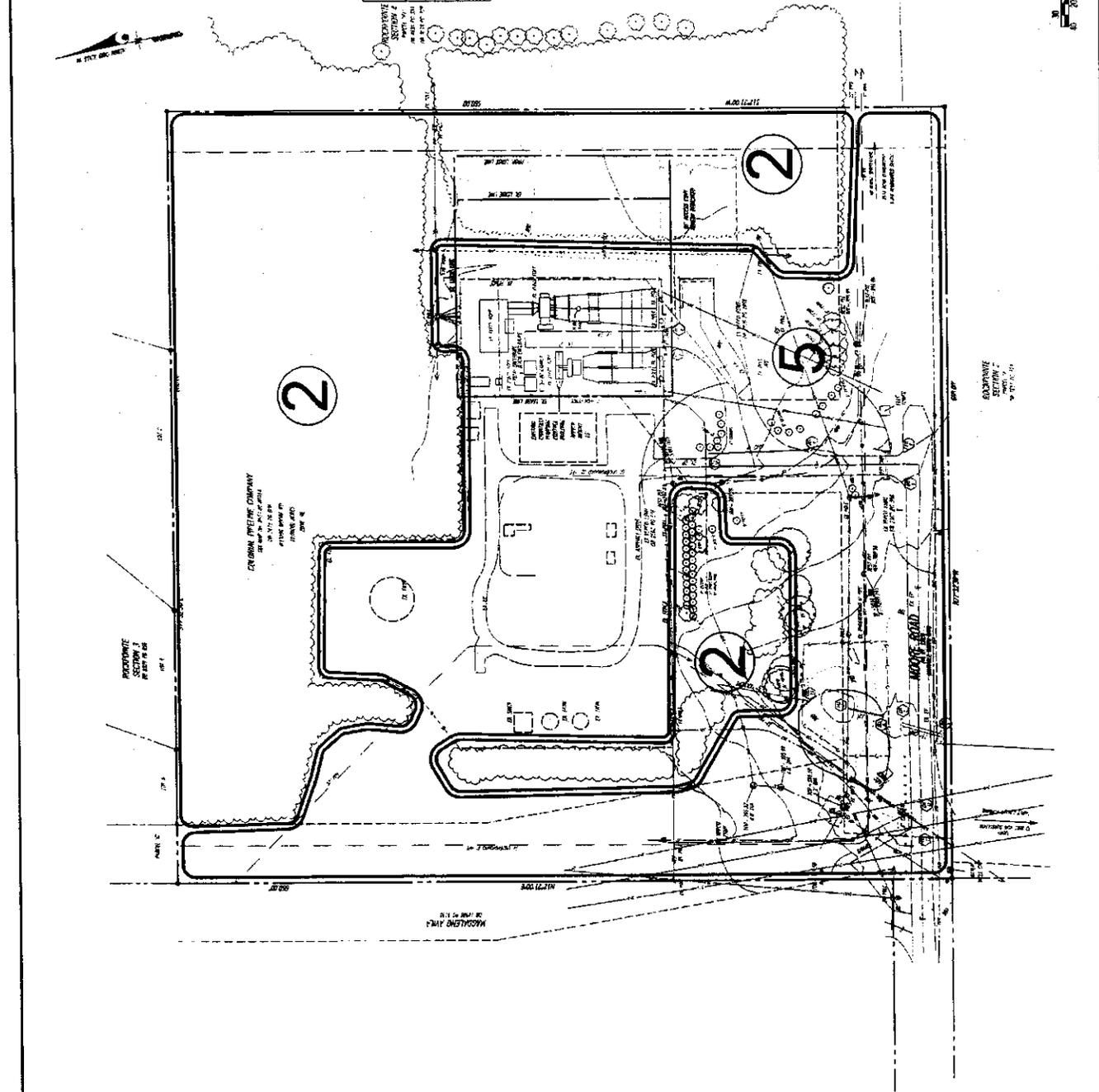
CONDITIONS/DESCRIPTIONS

FOREST COVER TYPE 2, THESE WOODED AREAS CONTAIN THE ONLY TREES OF ANY SUBSTANDING HEIGHT IN THE AREA. THE TREES ARE IN NEED OF LIMB PRUNING AND THINNING. THE GENERAL HEALTH OF THE TREES IS GOOD CONSIDERING THE LACK OF MAINTENANCE. OTHER TREES OBSERVED: 50% OF THE LIVE TREES WERE FULLY LEAFED AND SHOWED NO SIGNS OF PHYSICAL STRESS OR INSECT INFESTATION.

FOREST COVER TYPE 5, THIS AREA IS THE PRESENT SITE OF THE COMMON SUBSTATION FACILITY. NO TREES ARE PRESENT WITHIN THE EXISTING FENCED COMPOUND OR IN THE NEAR VICINITY OF THE FENCE.

LEGEND:

- EXISTING POWER LINES
- PROPOSED POWER LINES
- EXISTING DRIVEWAYS
- PROPOSED DRIVEWAYS
- EXISTING FENCES
- PROPOSED FENCES
- EXISTING PROPERTY LINES
- PROPOSED PROPERTY LINES
- EXISTING TREES
- PROPOSED TREE LINE AND LIMIT OF CLEARING
- LIMITS OF DISTURBANCE
- PROPOSED DRIVEWAY
- PROPOSED POWER LINES
- PROPOSED DRIVEWAYS
- PROPOSED FENCES
- PROPOSED PROPERTY LINES







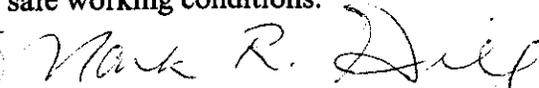
May 17, 2007

### Proposed Centreville Substation Expansion

Centreville Substation is located south of Rt. 29, at the east end of Moore Rd. Presently, there are two transformers installed: TX #1 is used exclusively to serve the Colonial Pipeline operations while TX #2 serves the surrounding load area via three distribution circuits. This load area includes approximately 7,450 of Dominion's customers along Clifton Road, Stringfellow Road (south of I-66) and along the Rt. 29 corridor between Centreville and Monument Drive (including the new Fairfax County Public Safety Training Operations Center). Centreville Substation also provides critical emergency load support to over 20,000 customers served from Dominion's Burke, Pender, and Sully Substations. Since completion of the last project to relieve load from Centreville Substation (prior to summer 2003), growth in the Rt. 29 corridor has loaded Centreville TX #2 over 90% of its nameplate rating (46 MVA on a 50 MVA nameplate). Loading on the surrounding substations of Pender and Sully has also increased such that without the load relief provided by the expansion of Centreville Substation, Dominion's ability to operate its system in a safe and reliable manner will be severely challenged by hot summer weather in 2008. Also, without additional circuit capacity, transfer of load between substations is severely limited for emergency restoration. This means that during a substation transformer failure or abnormal circuit configuration (those times when the normal configuration of a circuit is interrupted or abnormally switched), restoration activities would be severely hampered due to unavailable contingency capacity at Centreville.

In order to maintain reliable electric service to all customers, Dominion will need to expand Centreville Substation to accommodate the installation of a 75MVA transformer, two circuits, and all supporting equipment. In order for this installation to take place, it will be necessary to excavate and grade approximately 14,500 ft<sup>2</sup>; 45' x 171' for the transformer, and an additional 40' for access between the equipment and the fence. This expansion will still allow Dominion to maintain the required buffer of mature trees between our use and the PDH-2 use of Hayden Village Townhouses.

The substation is situated in an area that Fairfax County has indicated as the orange soils group; where possible asbestos bearing rocks are interspersed. We have contacted the Fairfax Health Department and together, have prepared a compliance plan to maintain safe working conditions.

  
Mark R. Gill P.E.  
Dominion Distribution System Planning



RECEIVED  
Department of Planning & Zoning

JUN 01 2007

Zoning Evaluation Div.



**KEY TO SITE PHOTOGRAPHS**



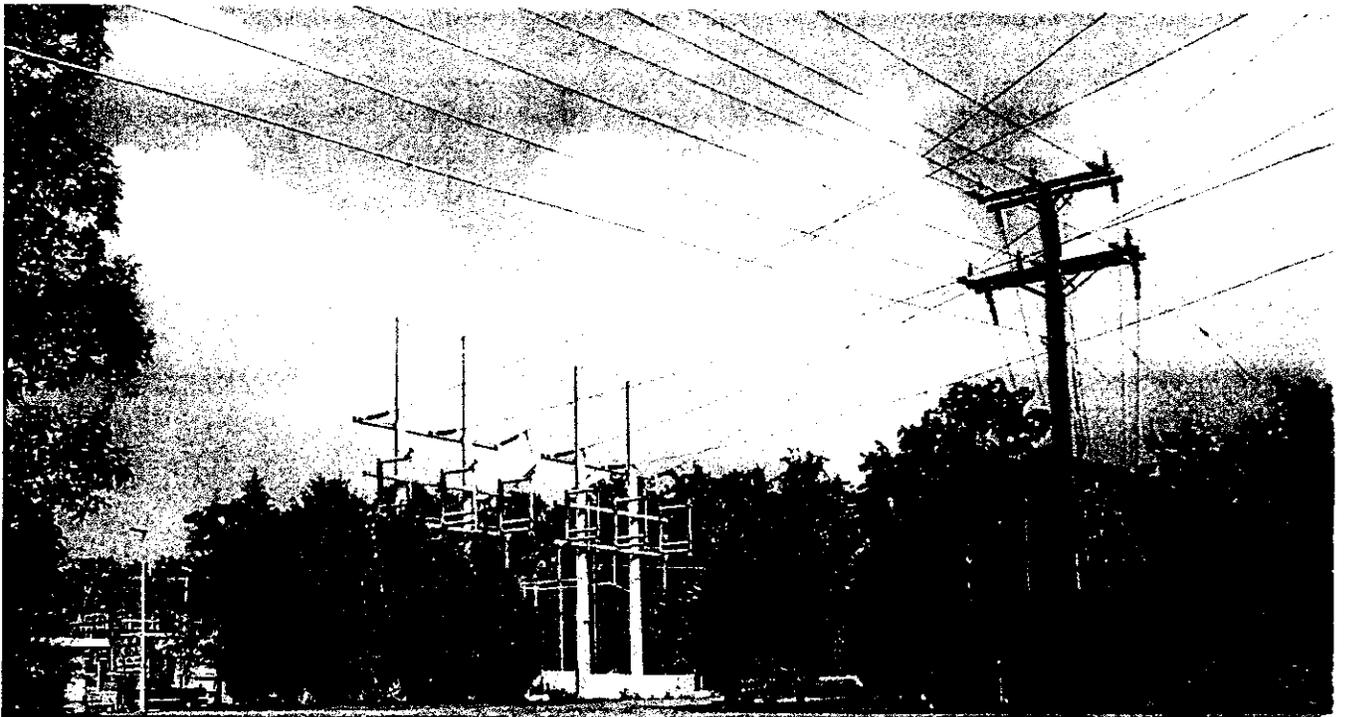


PHOTO NO 1: VIEW TOWARDS EXISTING SUB-STATION



PHOTO NO 2: VIEW LOOKING OUT OF SUB-STATION

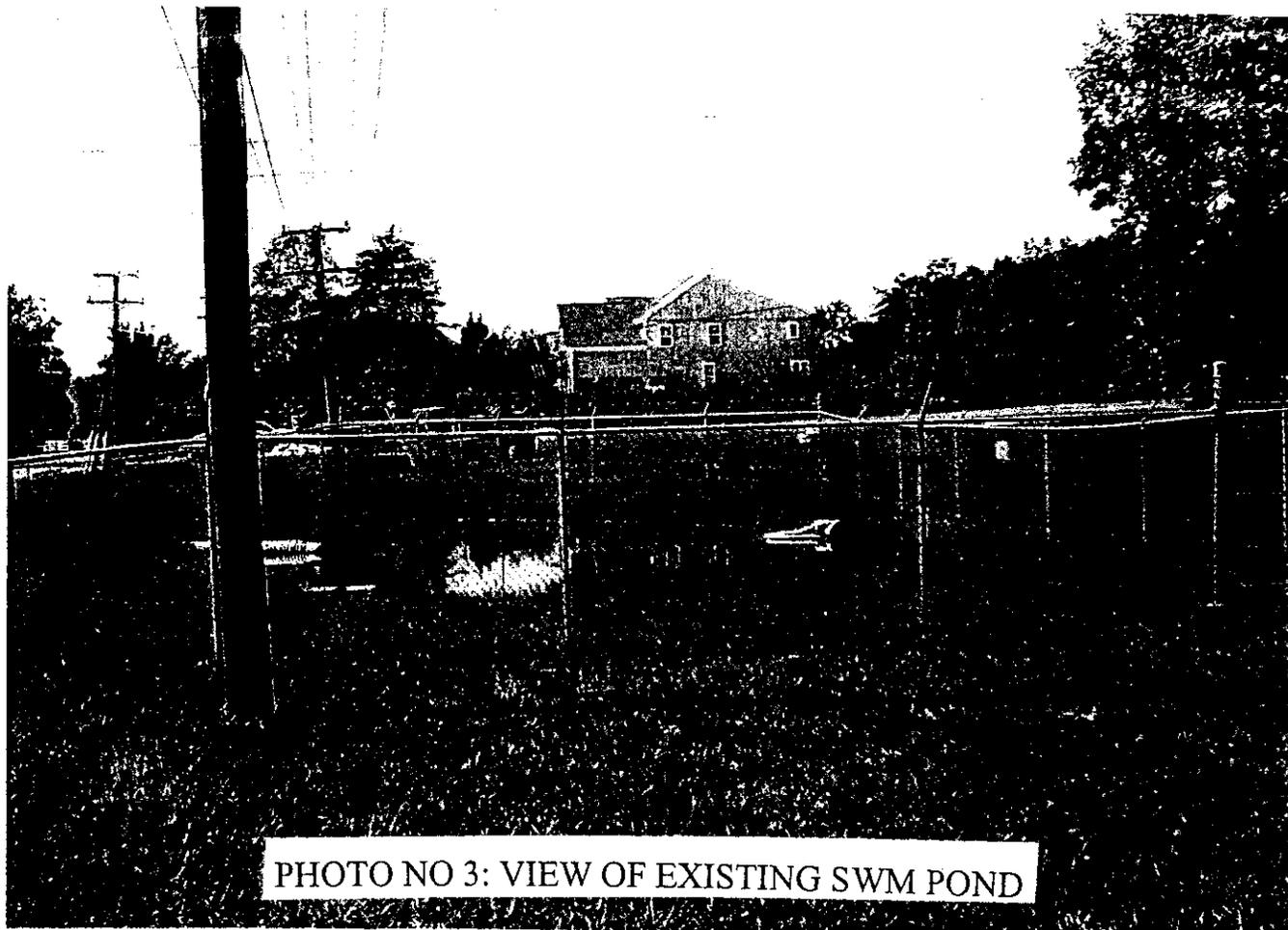


PHOTO NO 3: VIEW OF EXISTING SWM POND

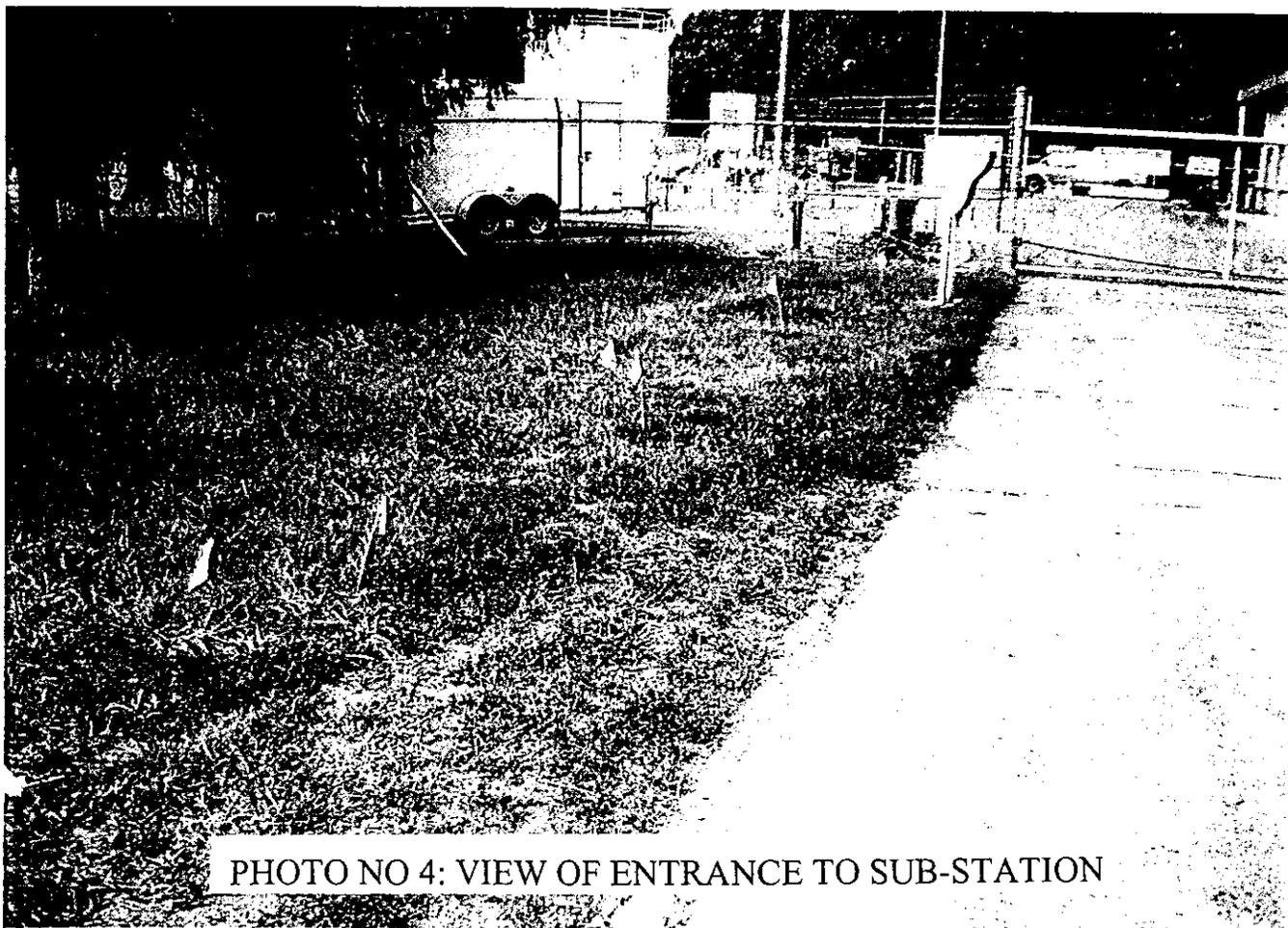


PHOTO NO 4: VIEW OF ENTRANCE TO SUB-STATION

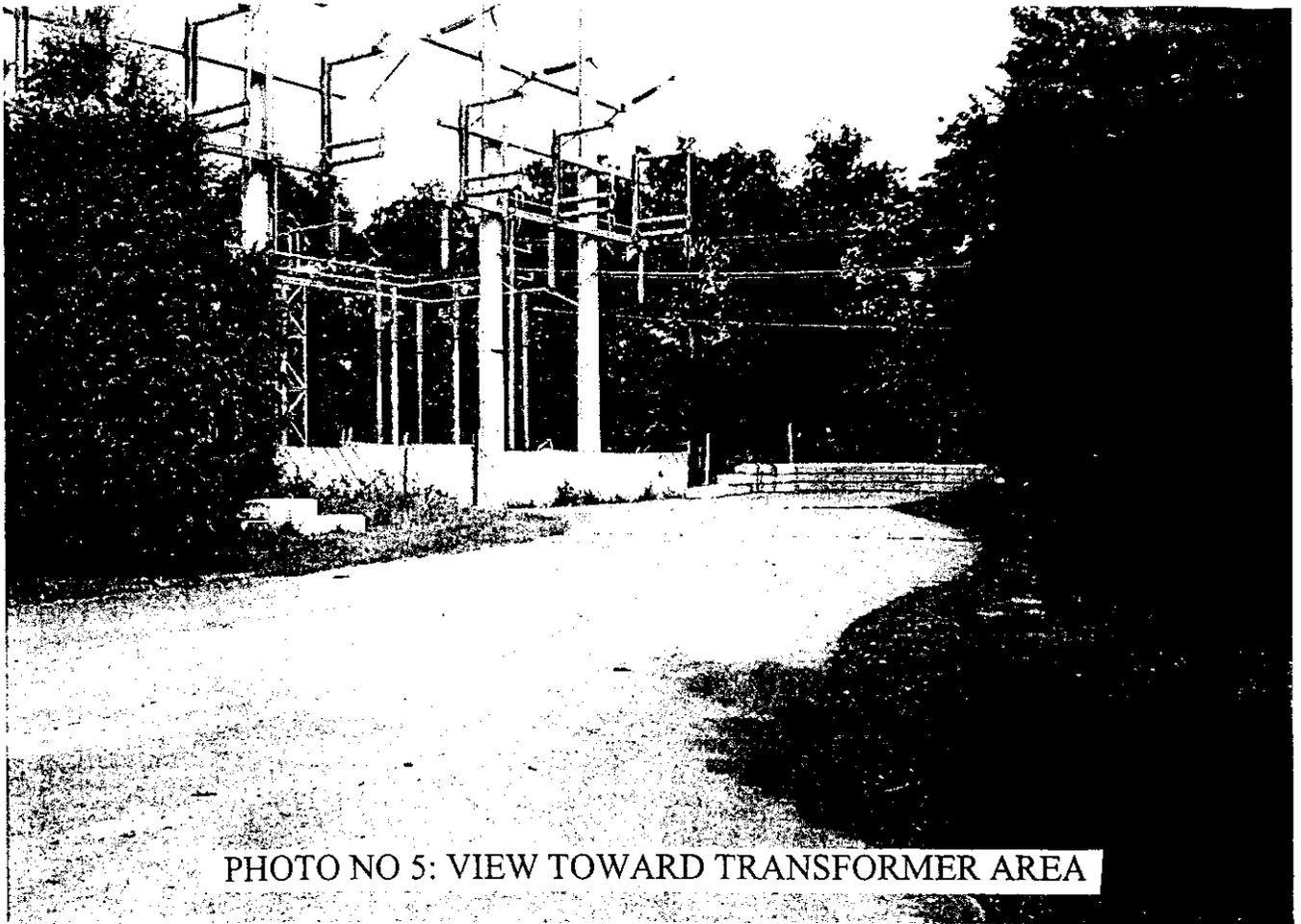


PHOTO NO 5: VIEW TOWARD TRANSFORMER AREA

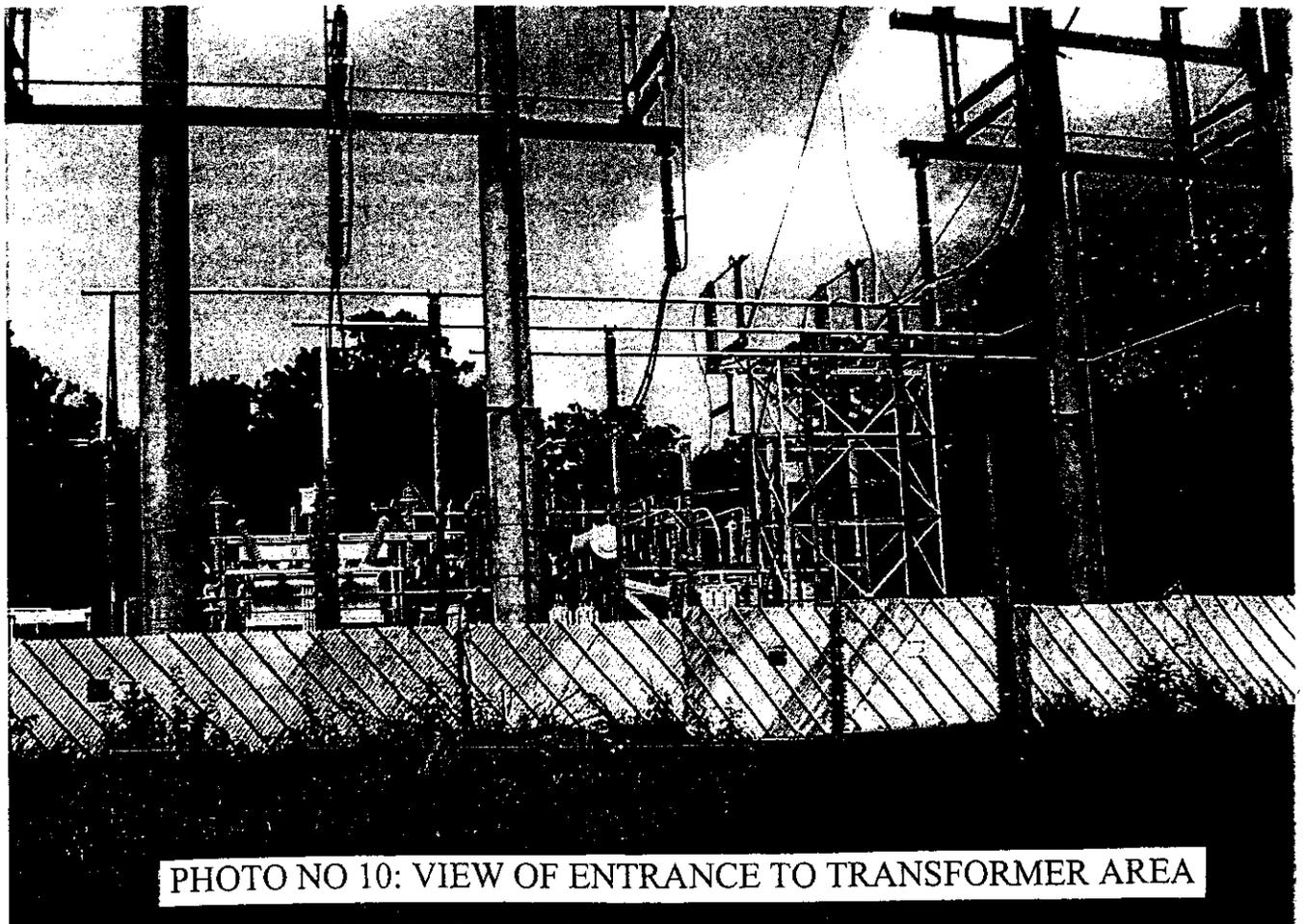


PHOTO NO 10: VIEW OF ENTRANCE TO TRANSFORMER AREA

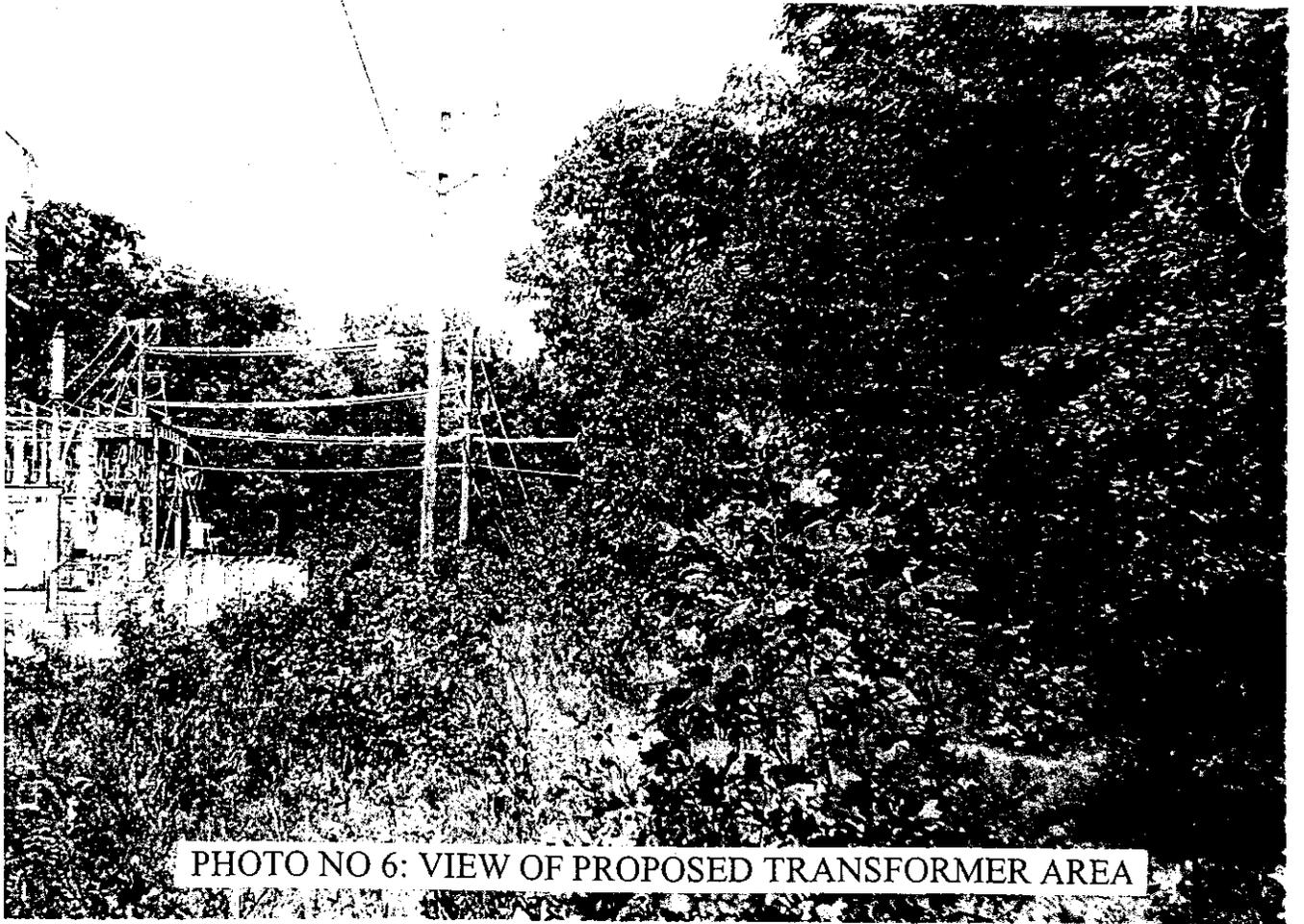


PHOTO NO 6: VIEW OF PROPOSED TRANSFORMER AREA

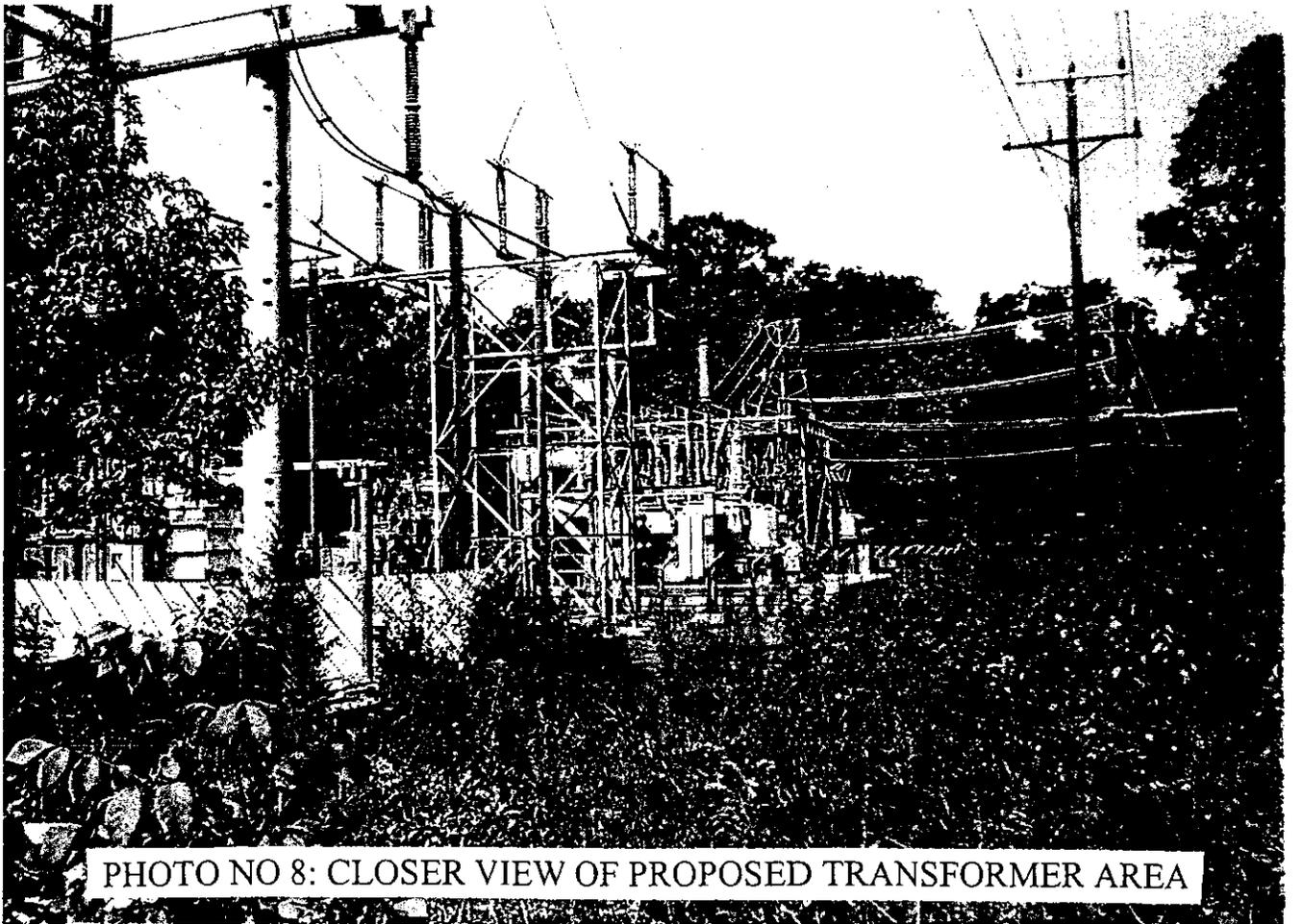


PHOTO NO 8: CLOSER VIEW OF PROPOSED TRANSFORMER AREA



PHOTO NO 7: VIEW ALONG REAR OF SUB-STATION

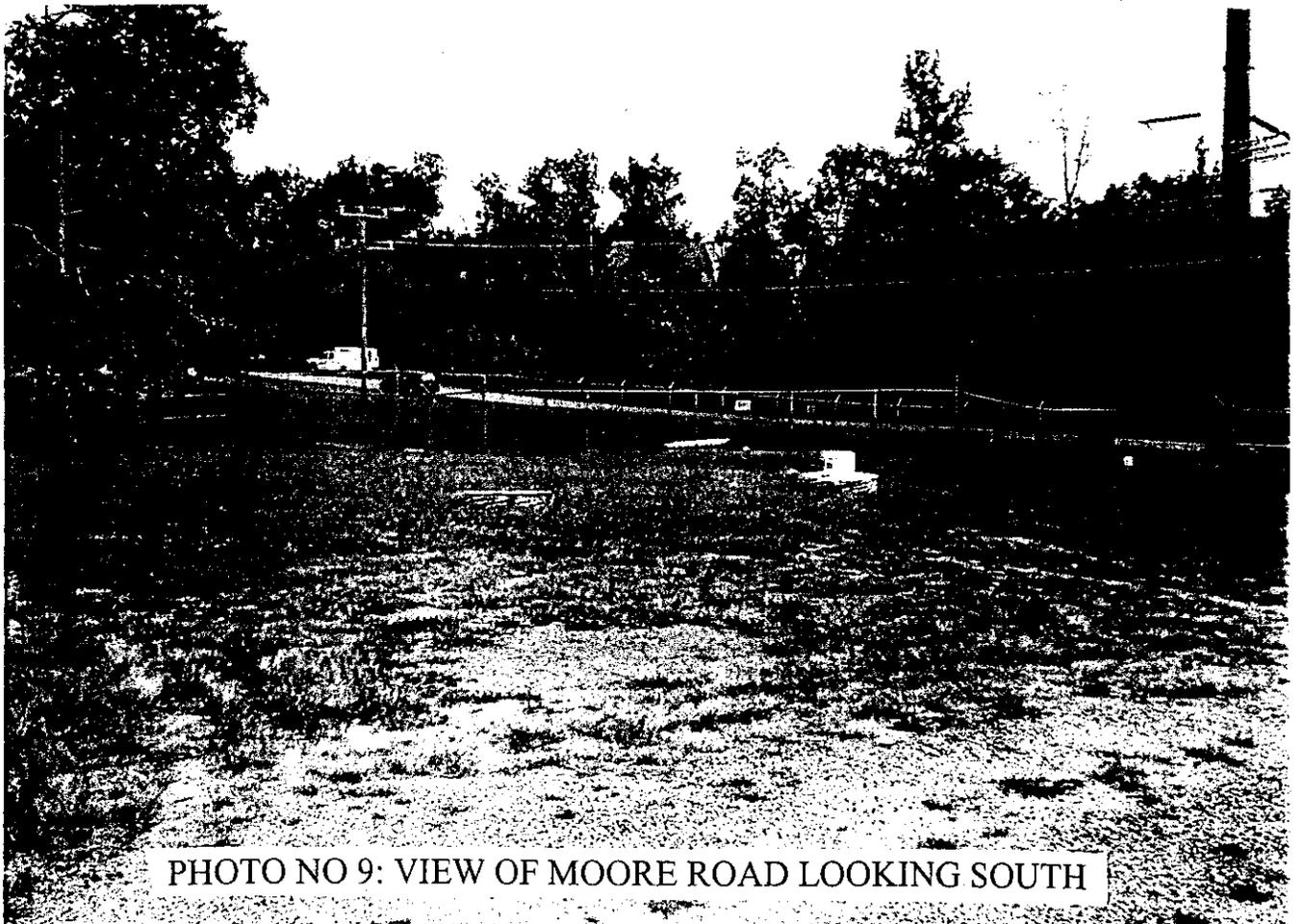
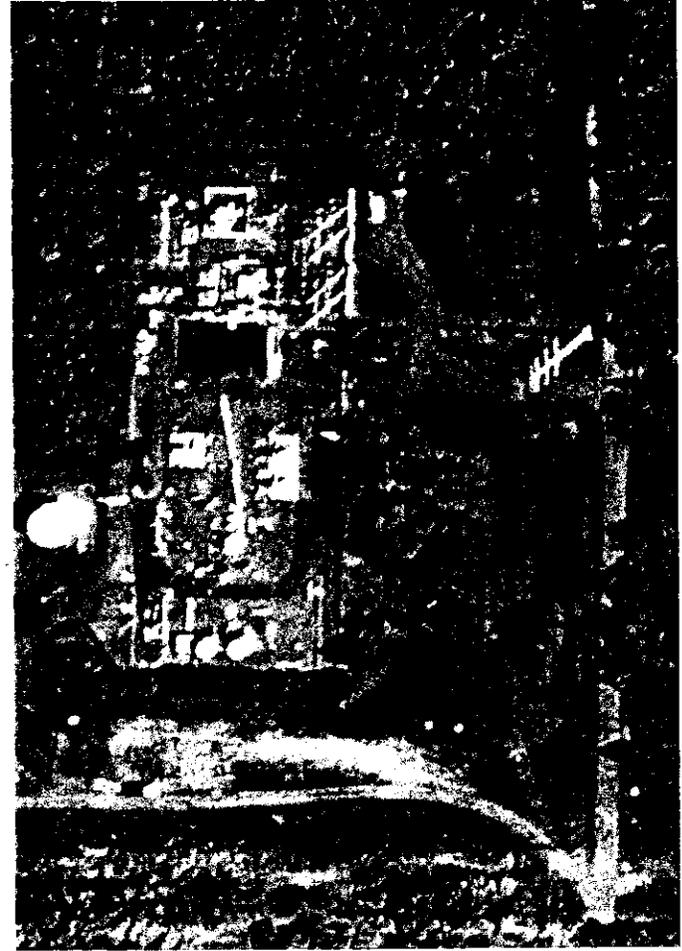
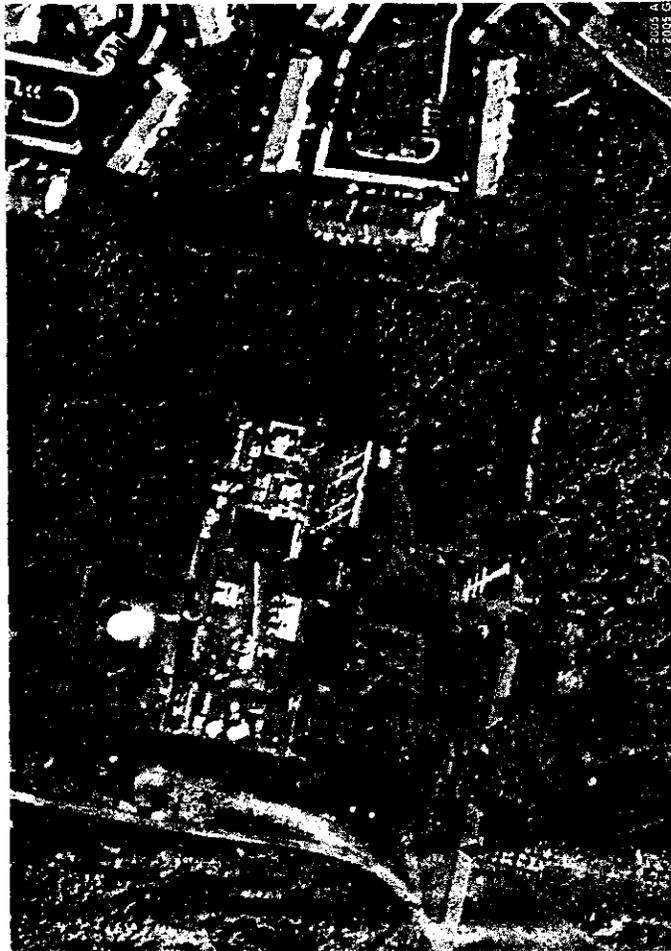
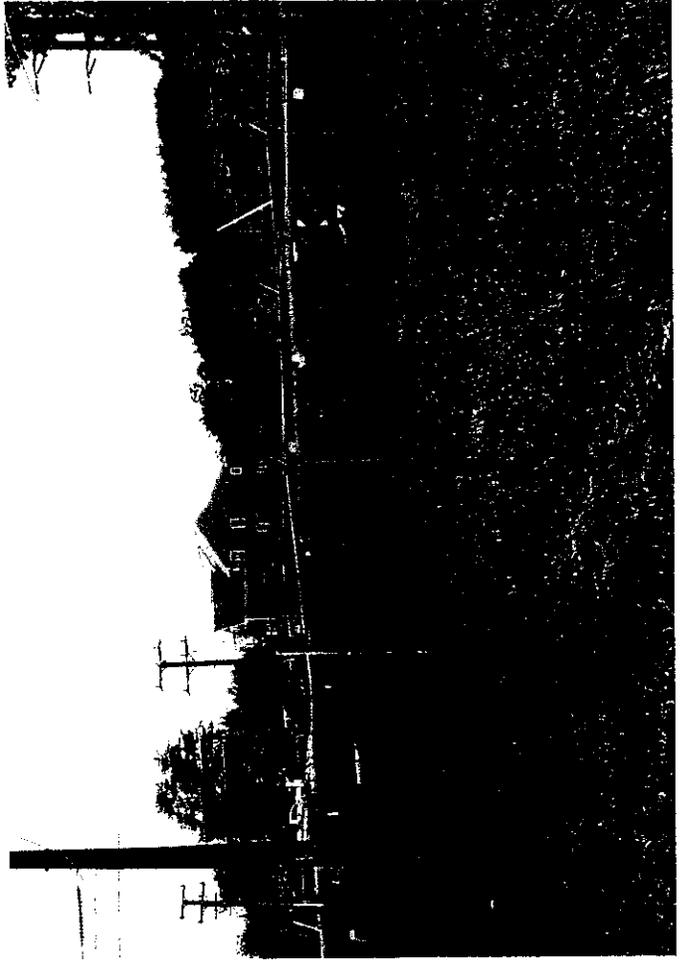
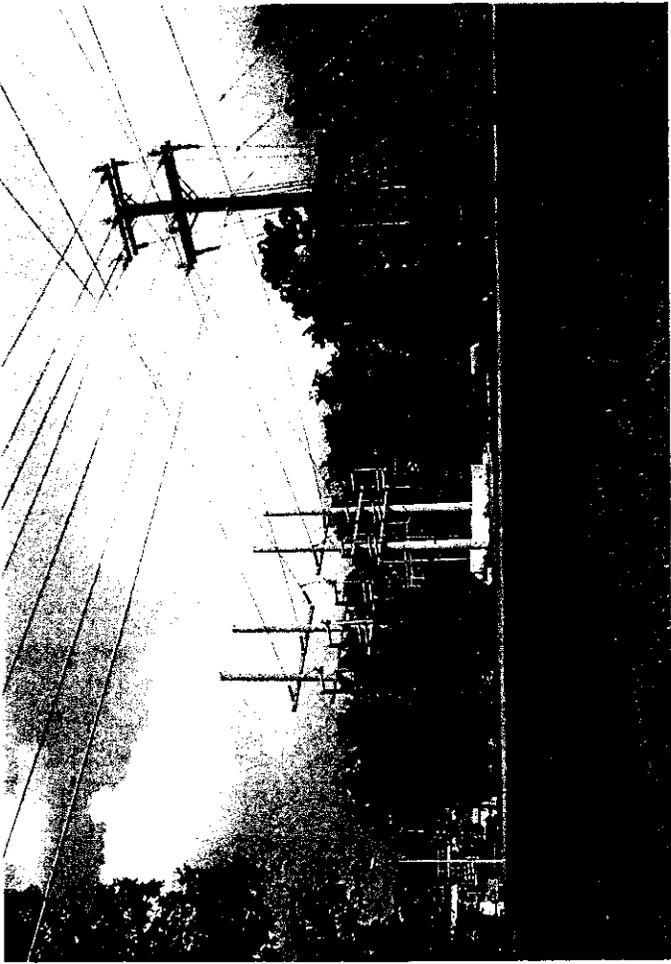
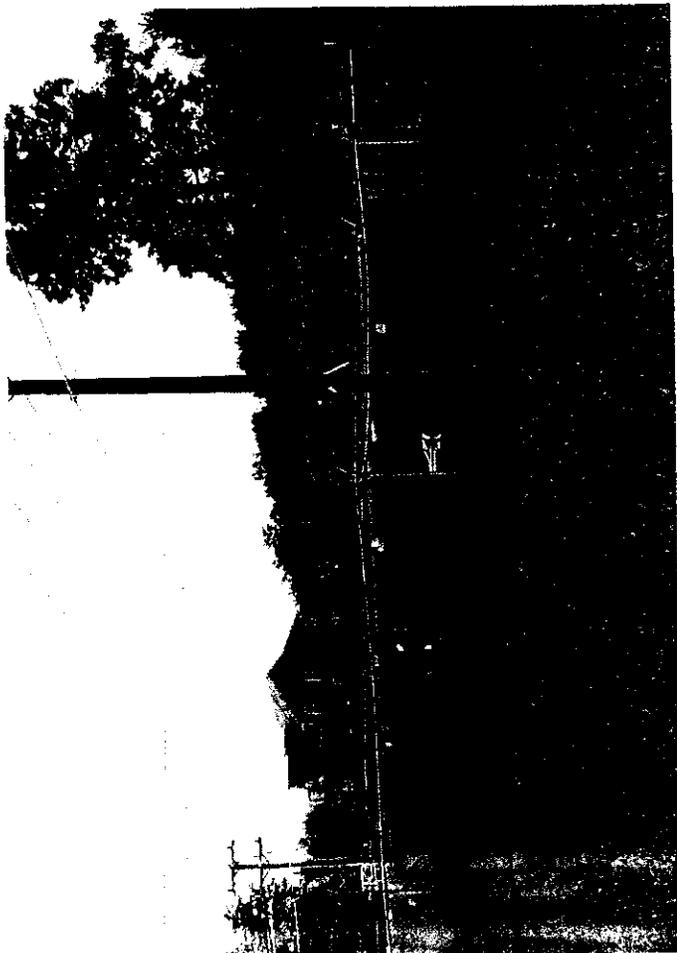
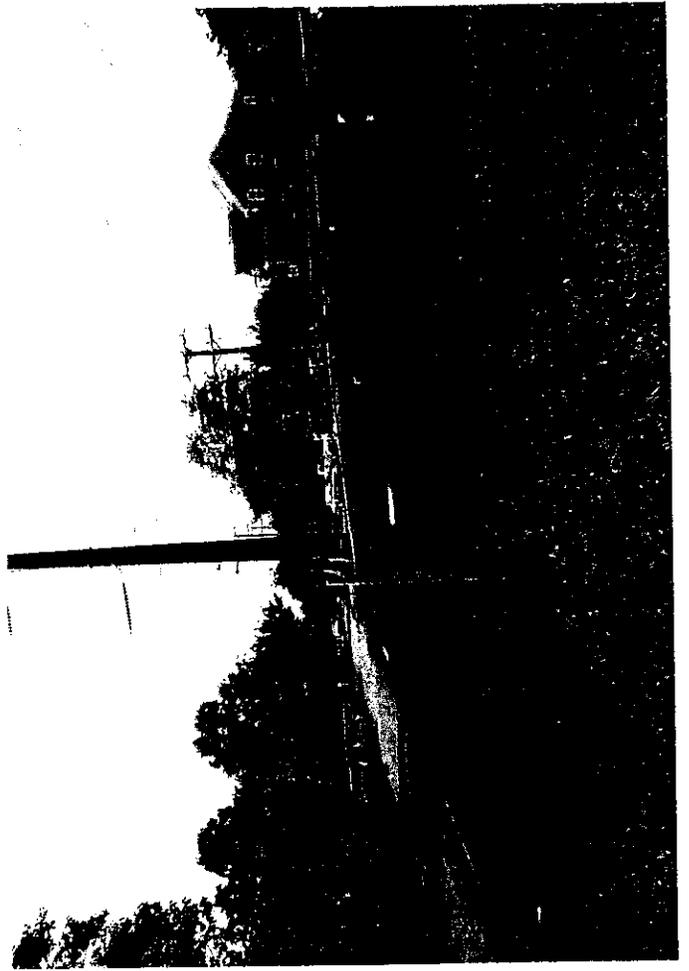
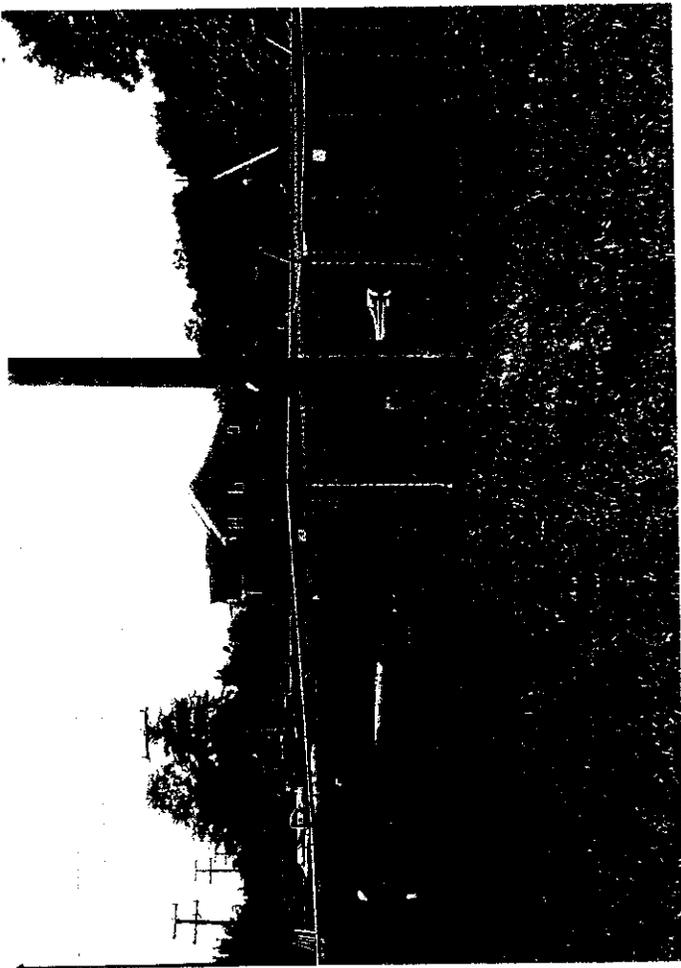
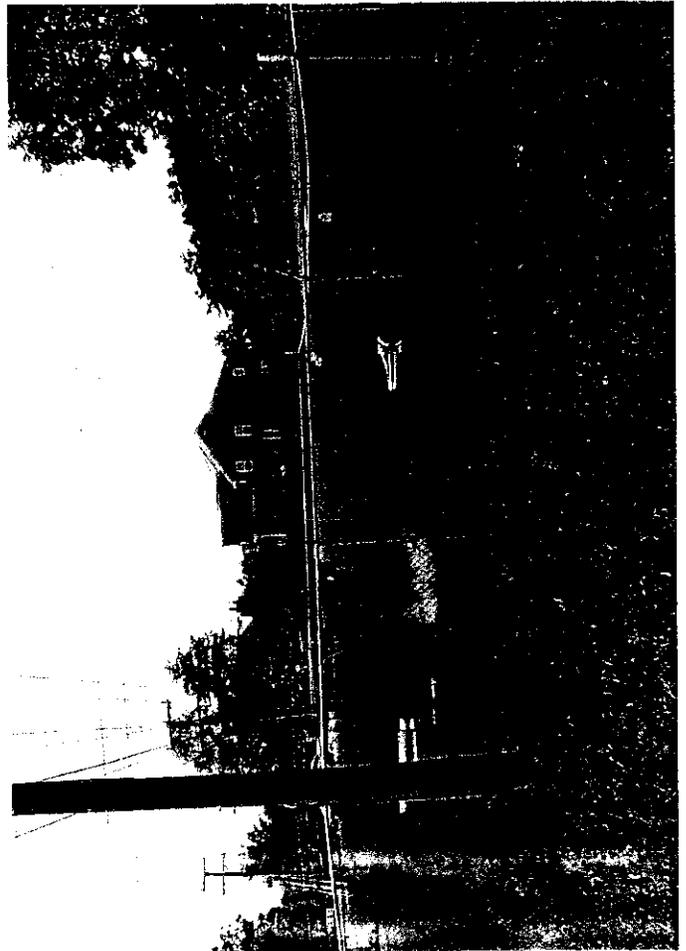
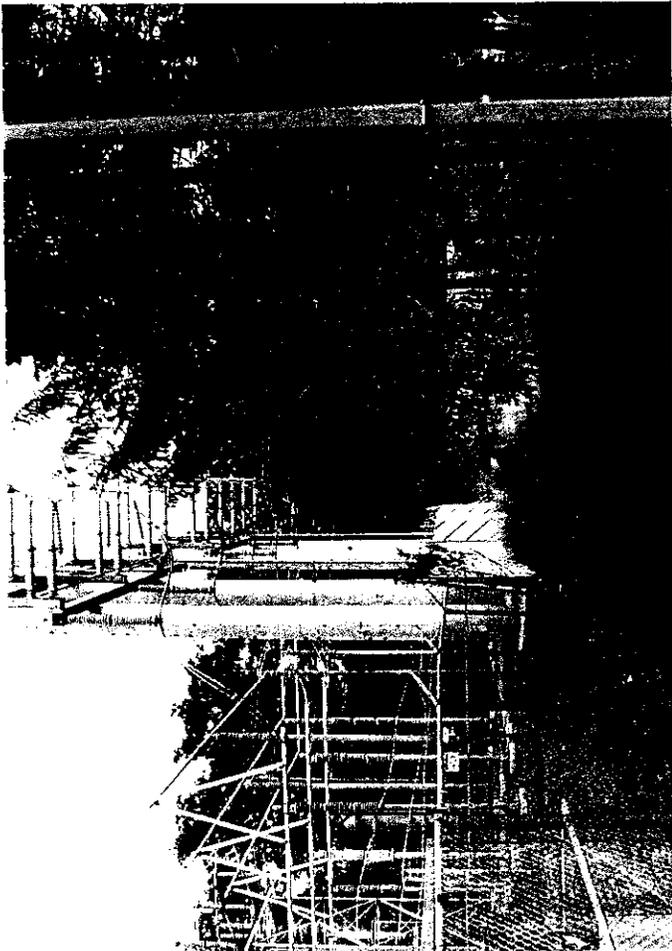
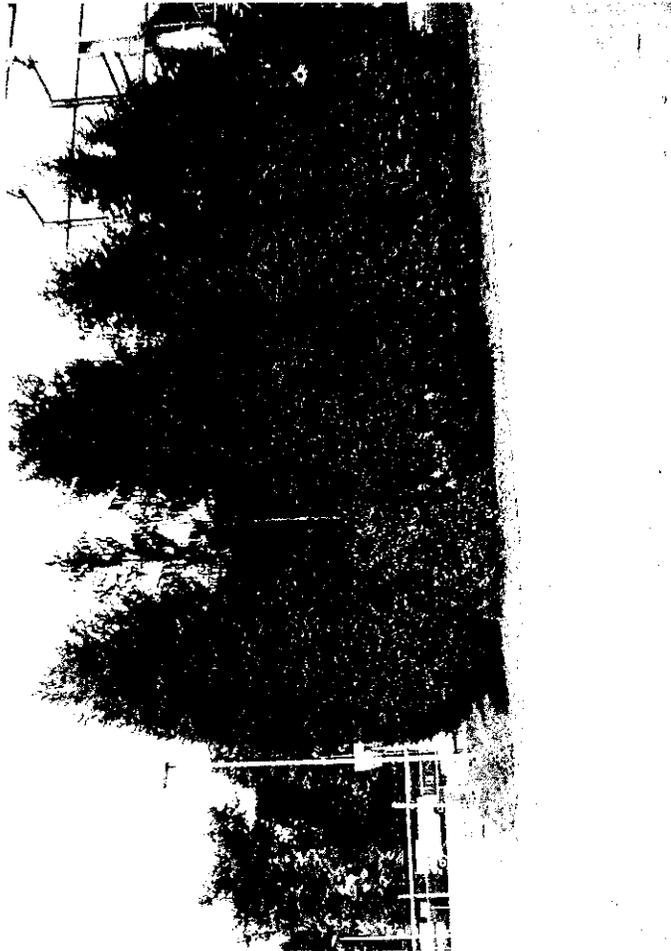
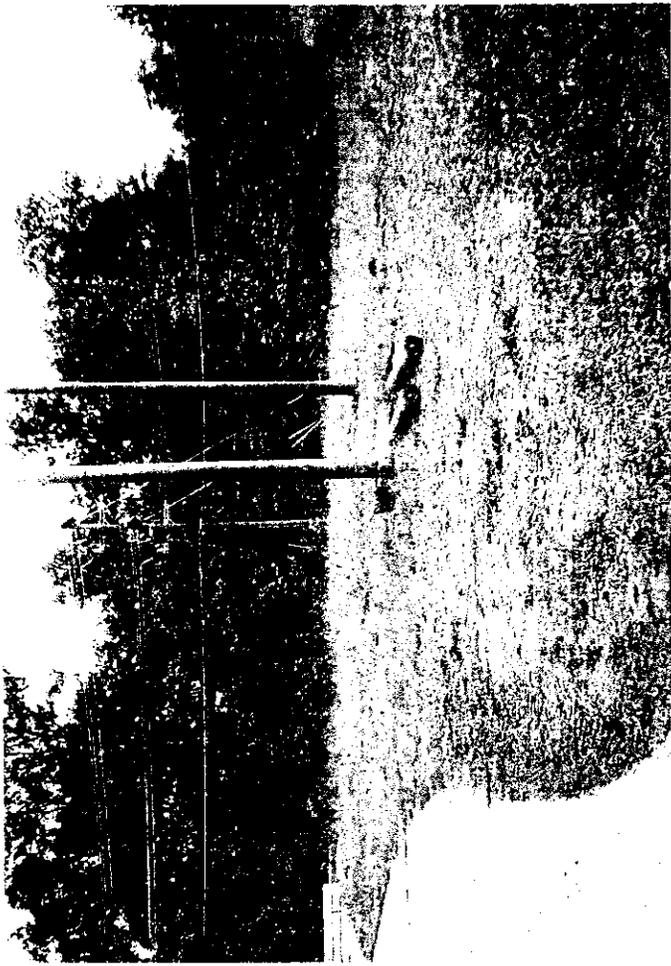


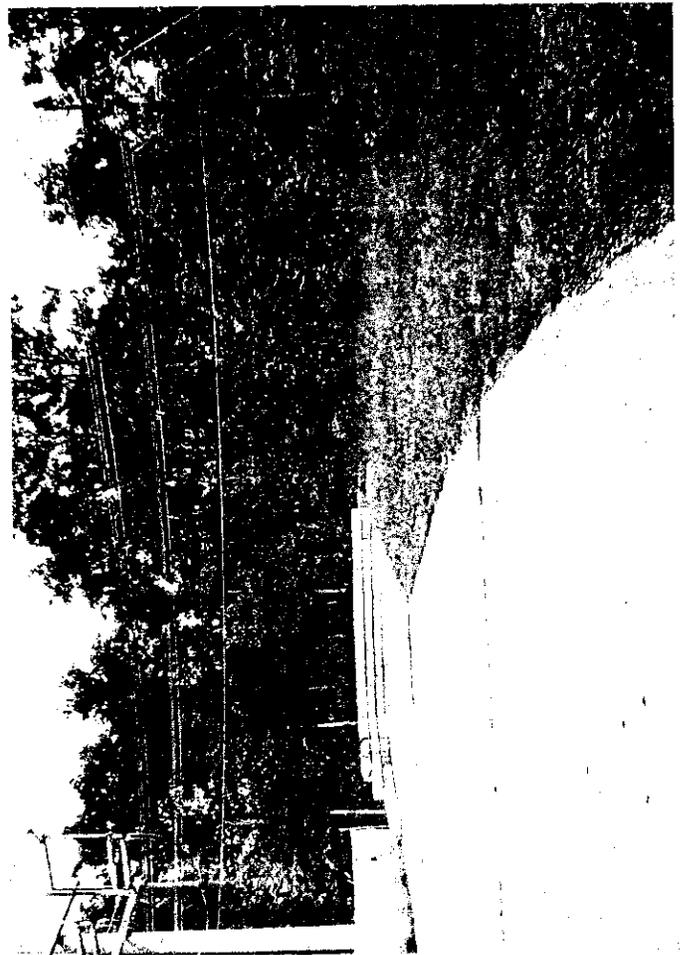
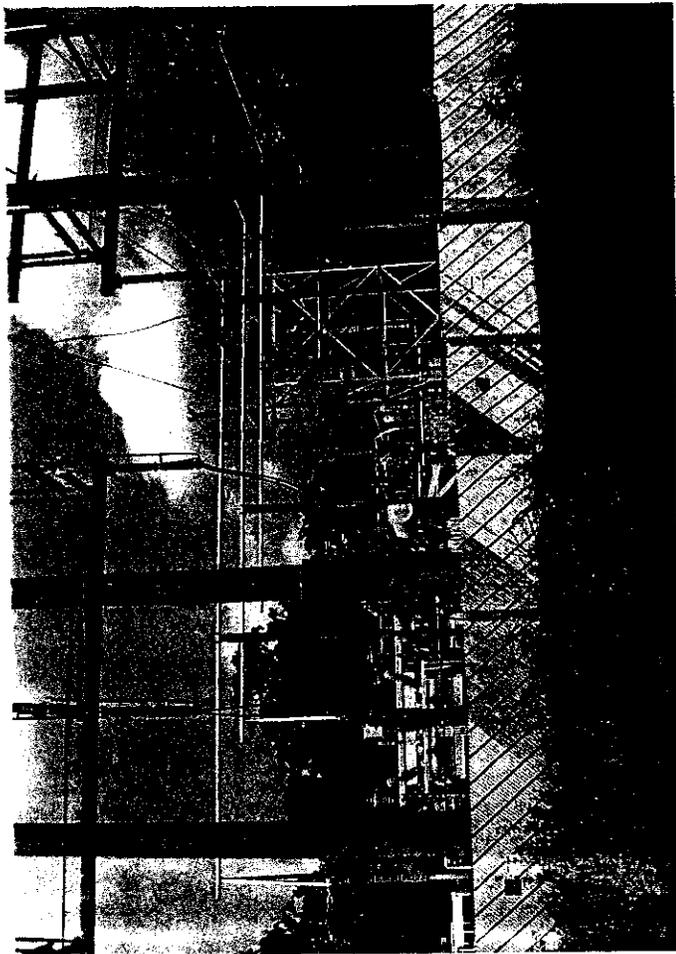
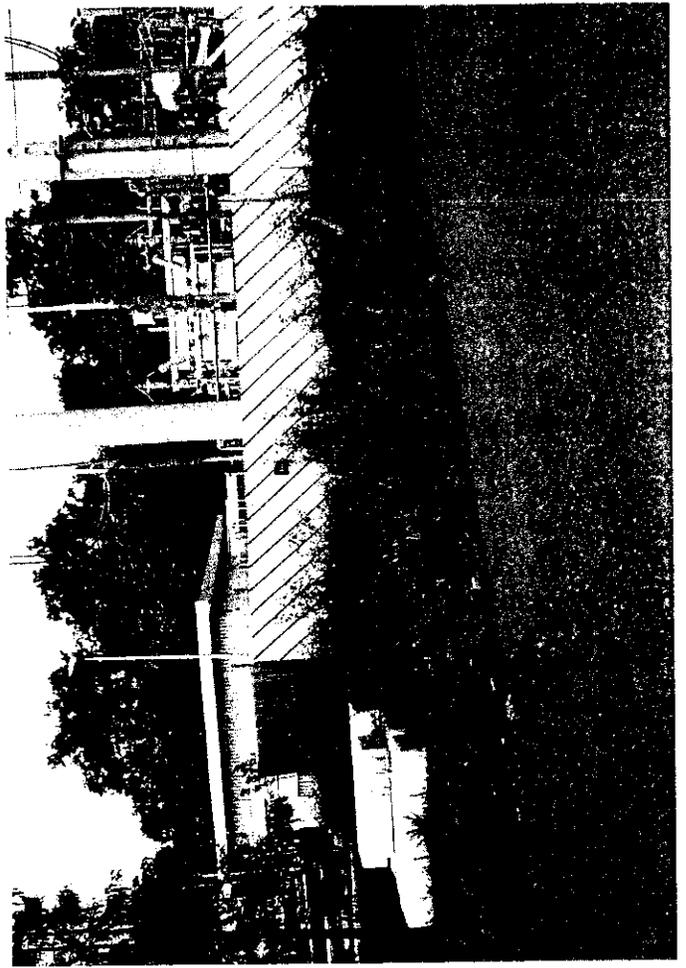
PHOTO NO 9: VIEW OF MOORE ROAD LOOKING SOUTH

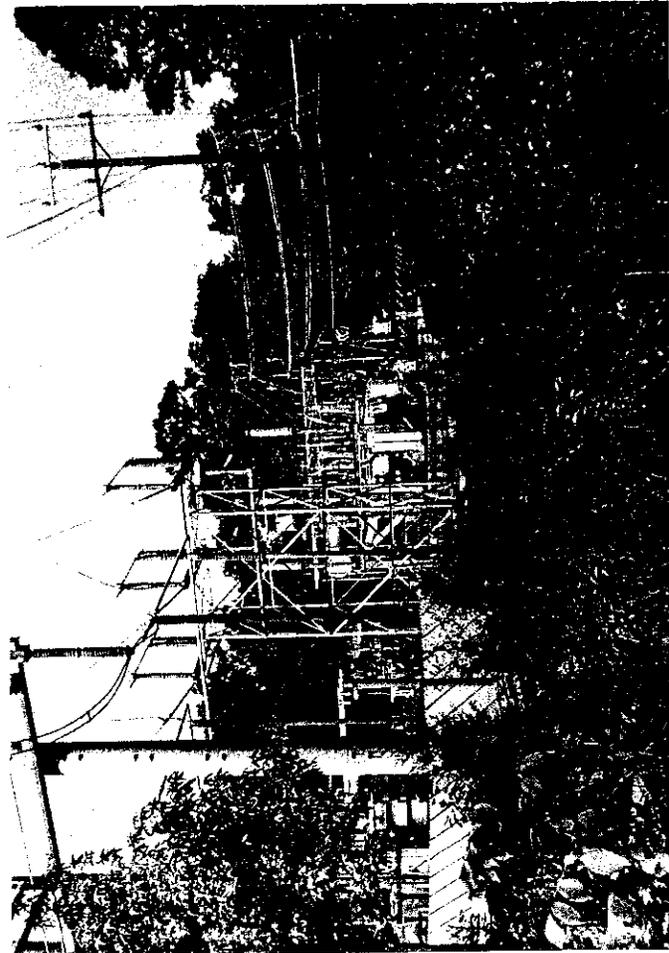
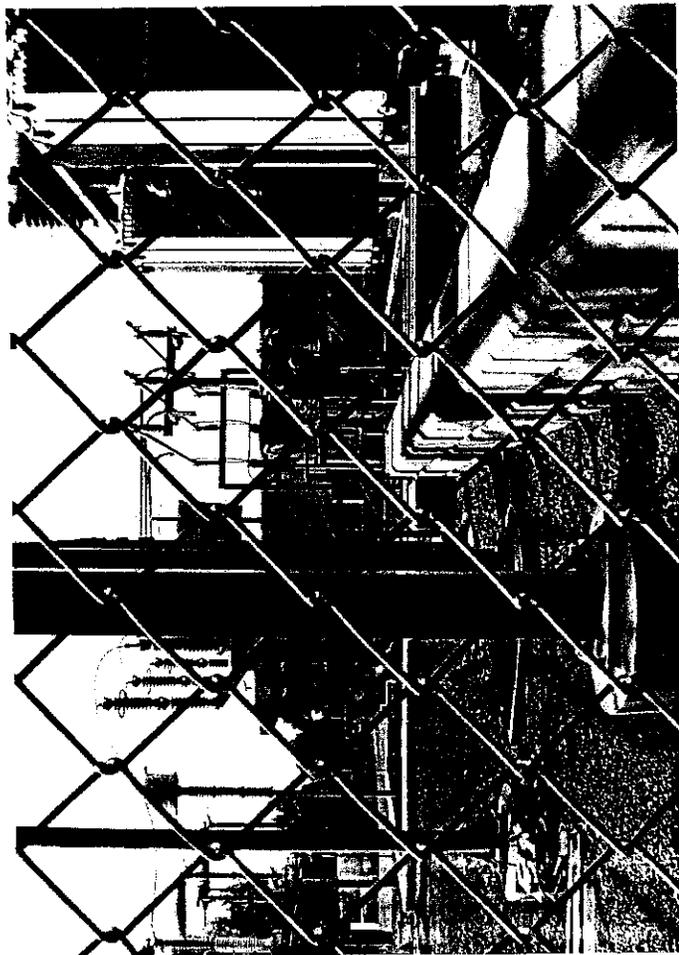








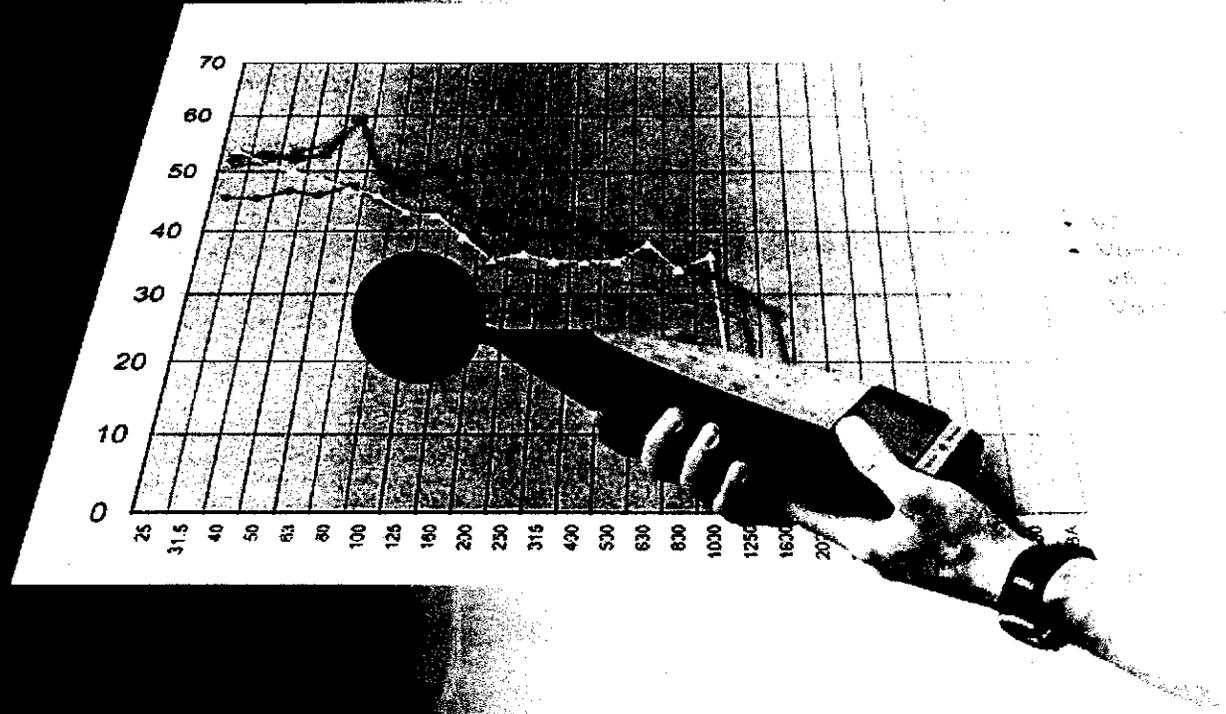




# NOISE ANALYSIS

## SPRINGVILLE TRANSFORMER STATION

### SPRINGVILLE COUNTY, VA



December 3, 2007

PREPARED FOR:

**Dominion**

PREPARED BY:

**ATCO** Noise Management

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## **EXECUTIVE SUMMARY**

Dominion is proposing to upgrade the Centreville Transformer Station in Fairfax County, Virginia. They requested that ATCO Noise Management (ATCO) complete a Noise Impact Assessment corresponding to their existing operation and planned upgrades.

ATCO personnel conducted Sound Pressure Level measurements of the significant noise sources associated with the transformer station during a site visit on August 23<sup>rd</sup> & 24<sup>th</sup>, 2007. Sound pressure levels were measured at the existing equipment and at the site property line with the equipment in operation. The purpose of the measurement methodology was to quantify the sound field generated by the existing equipment, determine whether it is in compliance with the Fairfax County permissible sound pressure level criteria, conduct modeling of the proposed upgrades and propose mitigation measures that are appropriate for the proposed facility.

Sound Power Levels were calculated for the two existing transformers and were used in a computer model to generate an individual source order ranking of the major noise sources at the property line and the nearest offsite sensitive receptor, a second floor condominium just east of the Site boundary. Because of increased distance, the sensitive receptors in other directions are well below the applicable criteria. Modeling was used to provide the overall facility sound level at the receptor and to generate a noise contour map that indicates overall sound level output from the facility.

Results from the measurements indicate that the current configuration of the Centreville Transformer Station meets the Fairfax County permissible sound pressure levels at the property line. A third transformer is proposed for the station. The Sound Power Level for the proposed transformer was estimated based on its NEMA rating and also from sound level measurements made on a similar transformer at another site. The operation of the proposed transformer will cause the station to exceed the standards. For that reason, the Dominion plans for the installation include noise mitigation measures to reduce the sound level of the station.

ATCO has developed and evaluated various noise control measures for this facility. The objectives of these measures are to reduce the overall sound level of the proposed facility to within the allowable levels of the Fairfax County Code. Because the host facility (Colonial Pipeline's Chantilly Station) also produces sound, the mitigation measures were intended to reduce the sound levels below the criteria to approximate the sound levels from the existing facility at the property lines and at the sensitive receptors. The analysis demonstrates the feasibility of expanding the capacity of the facility while meeting the Dominion goal of "No Net Increase of Sound" at the eastern property line or at the Condominiums to the east.

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## 1.0 INTRODUCTION

ATCO Noise Management (ATCO) was commissioned to conduct a Noise Impact Assessment at the Dominion Centreville Transformer Station. The facility is on land leased from the Colonial Pipeline Company's Chantilly Junction pumping station located in Fairfax County, Virginia. ATCO personnel (Mr. Doug Sheadel) conducted sound pressure level measurements of the existing transformer station equipment during a site visit on August 23<sup>rd</sup> and 24<sup>th</sup>, 2007. In addition to the equipment sound levels, the existing sound levels were measured at the property line under various community conditions. The results of the survey were used to evaluate compliance of the Dominion site with the Fairfax County criteria. Numerical noise modeling was conducted to evaluate the proposed expansion of the facility. The modeling of the existing facility allowed the model to be "calibrated" as it was used to simulate a known sound field. Then the proposed changes to the facility were introduced into the model to predict the resulting sounds from the expanded facility. Various mitigation measures were also introduced into the model to investigate the Dominion goal of "No Net Increase Of Sound" in facility sound levels at the eastern property line or the residences to the east.

*Winter test*

Some acoustical terms used in the following report are defined in Appendix A, "Guide and Definitions".

### 1.1 Site Description

The Centreville Industrial Substation is located at 13100 Moore Road, Centreville, in Fairfax County, Virginia. The station includes a wide collection of transformers, capacitors, switchgear, along with bus and circuit structures. A walking survey of the station identified only two sources of sound at the site – the two existing transformers. The transformers are essentially a continuous source of environmental sound. The only variation is when the cooling fans are operated, which infrequently happens during extended periods of high temperatures. Other noise producing equipment is operated on the surrounding site by the host, Colonial Pipeline Company. Figure 1 shows an overview of neighborhood in the area of the transformer station. When this industrial parcel was built, the area surrounding the site was sparsely populated. Currently the area is residentially developed to very near the property boundary in all directions.

The transformer station is generally unmanned. There is, on occasion, a need for maintenance, service or testing of the equipment. Two support vehicles were parked inside the compound during the first daytime noise survey, but they did not contribute sound to any survey measurement. The two monitoring locations and 11 property line measurement locations are shown in Figure 2. Figure 3 shows the existing equipment layout in the Dominion compound.



Figure 1  
Centreville Substation in the Context of the Current Neighborhood

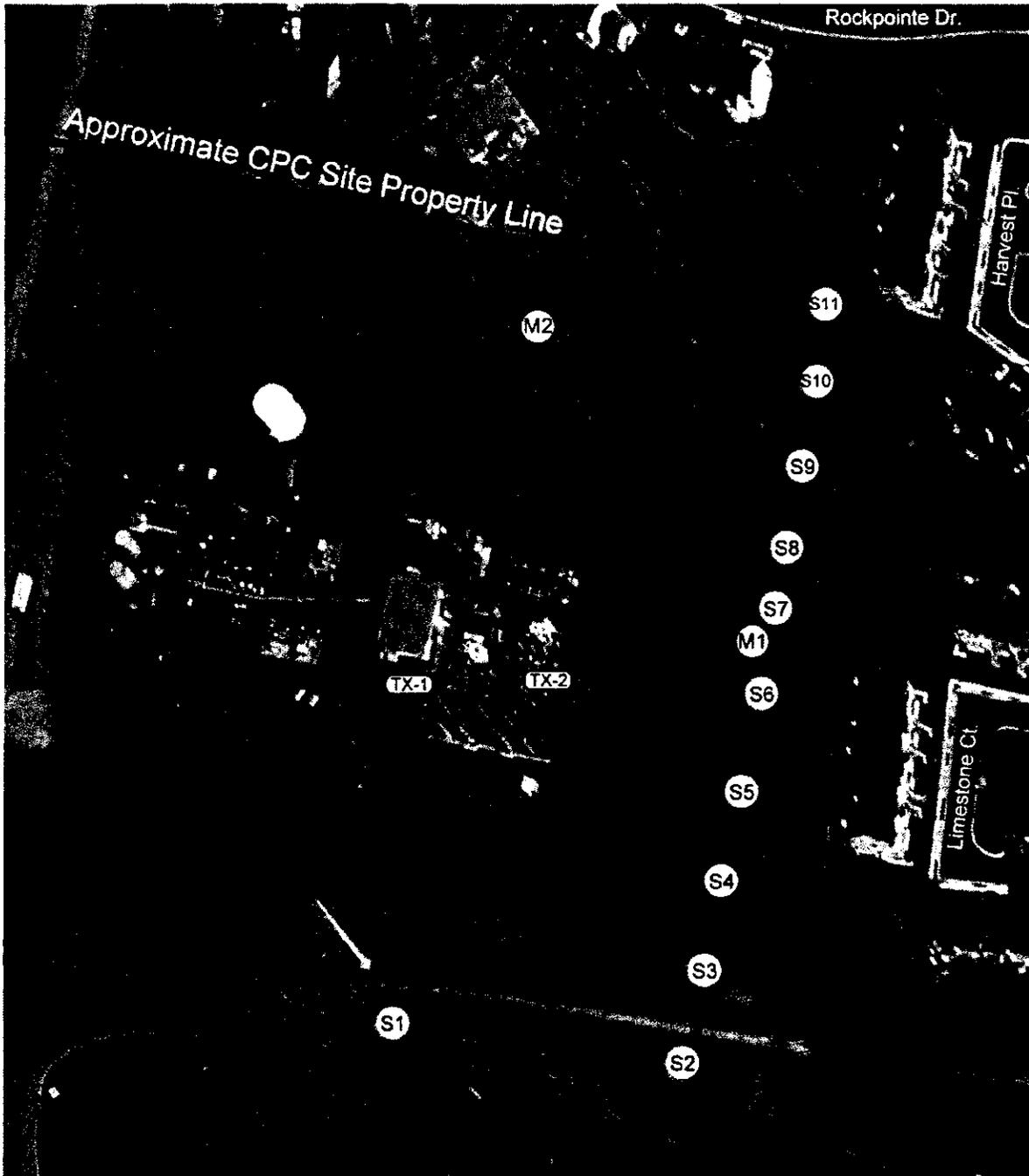


Figure 2  
Orientation of the Centreville Substation Equipment  
To the Property Noise Measurement Receptors, Residences and other Site Equipment

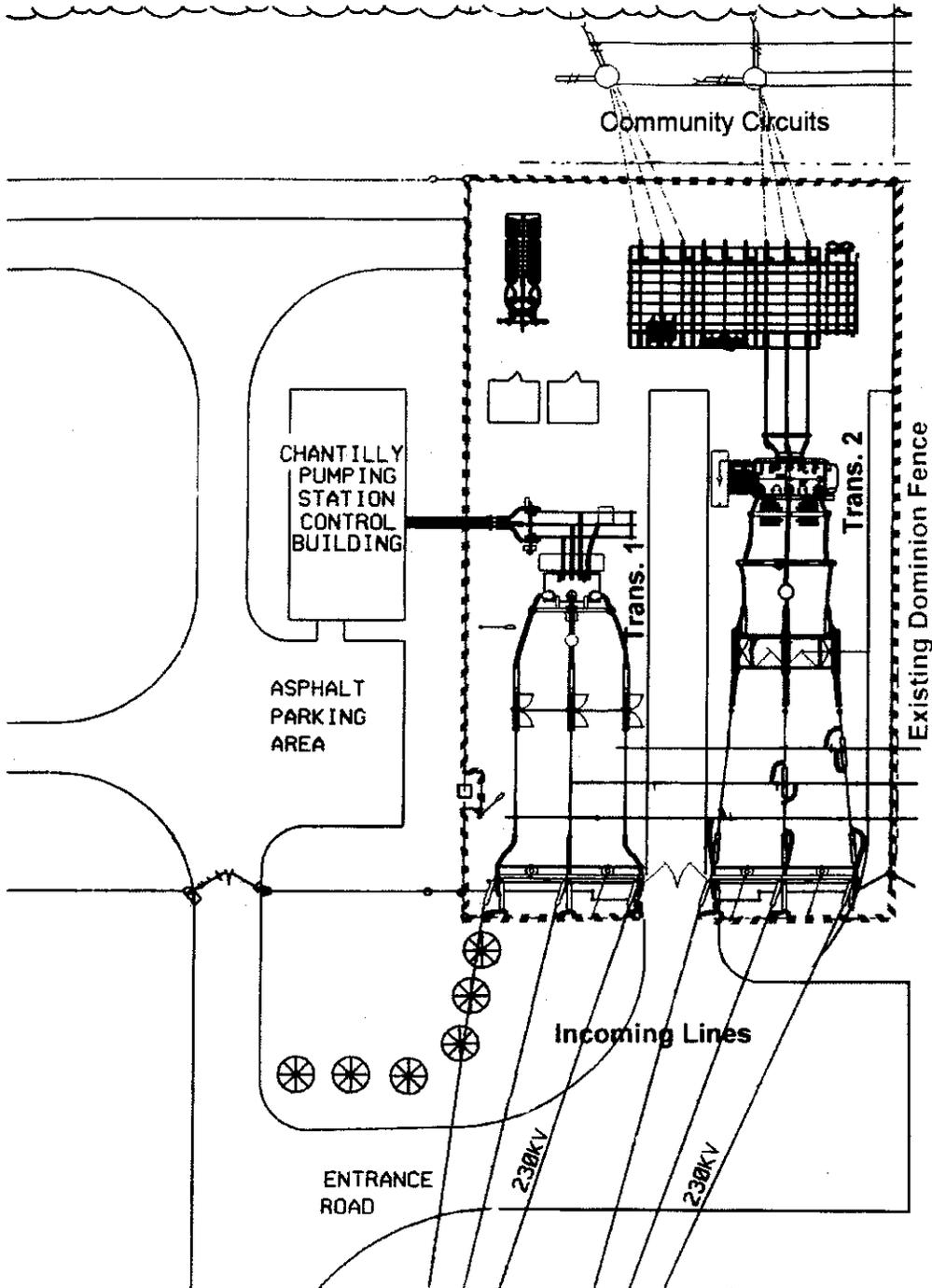


Figure 3  
The layout of the Existing Site Equipment

## 1.2 Facility Equipment

There are two primary sound sources at the station. Transformer 1 services the industrial activities at the Colonial site. Transformer 2 steps down the line voltage to supply power to the community. It is located to the east of Transformer 1. The proposed transformer 3 will be beyond transformer 2 to the east. This will require the right-of-way to be widened and the fence to be moved out to approximately the edge of the existing forest.

Both existing transformers and the proposed transformer are fitted with cooling fins and cooling fan clusters. The cooling fins provide passive cooling under typical conditions. The fans activate automatically when the internal oil exceeds a specified temperature. It is our understanding that the industrial transformer almost never requires fan support. The larger commercial transformer, however, occasionally requires the fan support. However, since the fan operates in response to high heat load, it primarily operates during the daytime because it has the higher ambient heat load and also the higher operating load. Only under exceptional conditions will the fan be used during nighttime hours, so for the purposes of the modeling and mitigation the fans will be considered a daytime source.

## 1.3 Fairfax County Noise Code

The noise code in Fairfax County uses both total A-weighted sound pressure level and Octave Band specific level limits. To comply with County Ordinances, both limits must be satisfied. Section 108-4-4 of the Fairfax County noise code titled, "Maximum permissible sound pressure levels," states that, "*When a noise source can be identified and its noise measured in more than one zoning district classification, the limits of the most restrictive classification shall apply.*" Thus, the noise code is applicable at the property boundary of the noise source - and if it abuts another zoning district, the limit of the more restrictive classification applies. Figure 5 shows the zoning map of the area surrounding the Dominion Transformer Station. Since there are residential land uses east of the site boundaries, the more restrictive residential zoning district noise limits apply to the Dominion site at the residential boundaries of the host site. Table 1 summarizes the residential district noise limits from the Fairfax County Code.

**Table 1**  
 Maximum sound pressure levels at a property boundary in a Fairfax County Residential District

Maximum A-weighted Level, dBA	Octave Band Center Frequency, Hz	Maximum Level, dB
55	31.5	70
	63	69
	125	64
	250	59
	500	53
	1000	47
	2000	42
	4000	38
	8000	35

An aural survey of the nearby host property boundary was conducted for the purpose of distinguishing between locations dominated by Colonial sources and those dominated by Dominion sources. As shown in Figure 2, the fence line measurement locations were in areas that are nearest to the Dominion sources and more distant from the pumping station equipment.

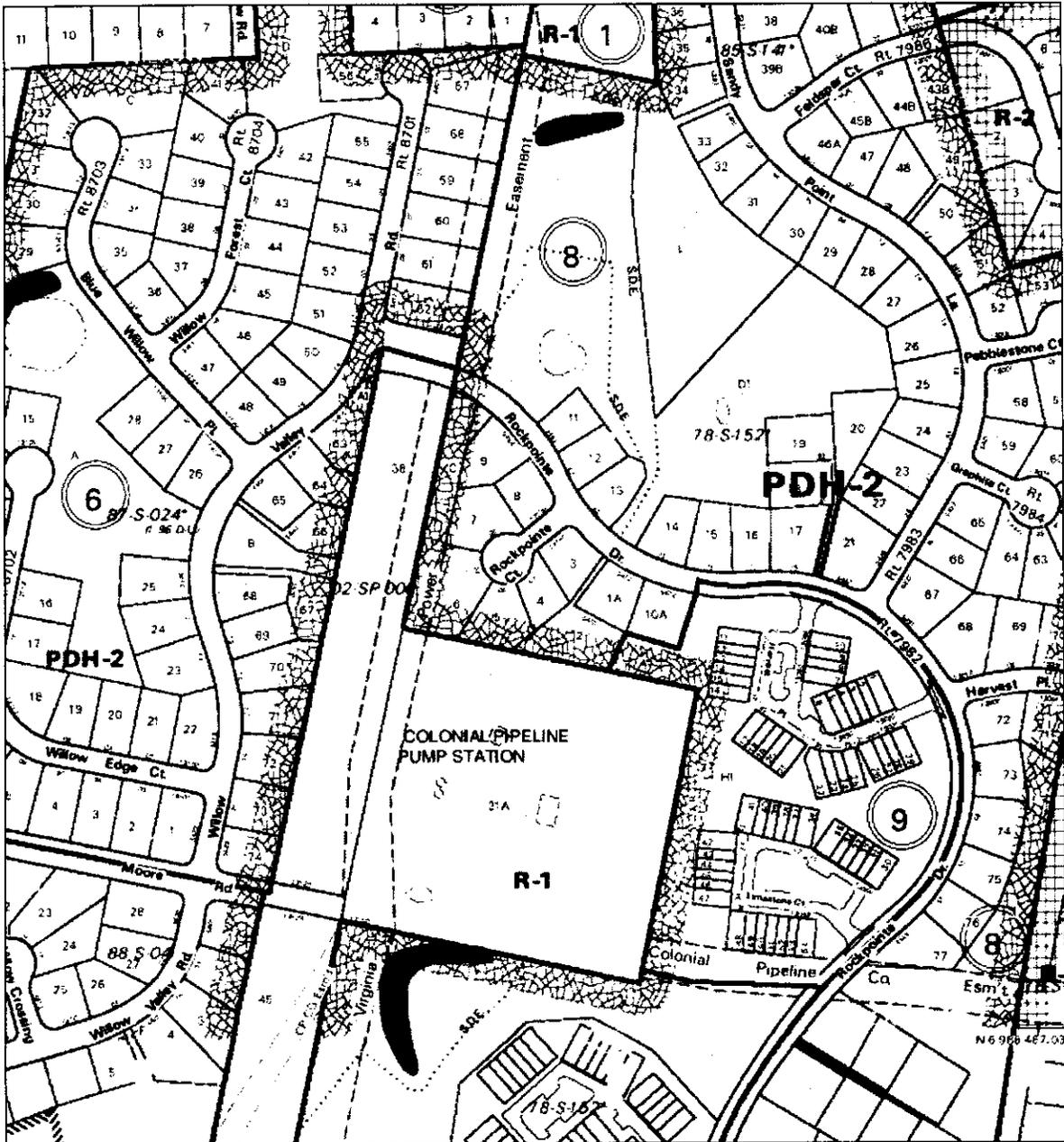


Figure 4  
Zoning Map of the Area Showing the Host (CPC) Site

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## **2.0 EXISTING CONDITIONS MEASUREMENT PROCEDURE**

### **2.1 Methodology**

Several types of sound level measurements were made during the survey. Ultimately, the survey was designed to evaluate facility compliance at the receptor locations based on the Fairfax Code. Direct measurements at the receptor locations were made to determine facility compliance. Since non-Dominion sources of sound were sometimes dominating at the fence line receptors, some of the compliance measurements were made using the Sound Recording feature. This will allow the sound field to be reviewed if necessary. The property line measurements were made under several representative community conditions. They were made under daytime, evening, nighttime and again in the daytime conditions. The survey revealed that the nighttime measurements had the greatest level of ambient noise. It was a result of the much vegetated measurement area. The noise-making insects (crickets and cicadas) were often the dominant source of environmental sound.

Other measurements were made to characterize the sound emissions from the operating equipment. The sound emissions of Transformers 1 and 2 were very similar in character. Three sets of measurements were made at each transformer. One was under typical condition at a distance of 3 feet from the radiating surface. The second was at a distance of 10 feet from the radiating surface. The third was related to the cooling fan operation. The local technicians activated the cooling fans so they could be characterized as a separate source.

Finally, two sound level monitors were set up to measure intervals at locations that were representative of the property lines. A long series of 1 minute samples were obtained to illustrate the fluctuating sound field through the day and night.

### **2.2 Instrumentation and Setup**

The equipment sound level measurements were made utilizing a Bruel & Kjaer 2250 sound level meter. Two additional monitoring locations were documented using Rion NL-31 sound level meters. All are precision sound level meters and meet the ANSI S1.4, Type 1 Specification. The sound level meters were field calibrated using a Bruel & Kjaer Type 4231 calibrator before and after each measurement survey. The sound level meters have been factory certified within 12 months of the study. A windscreen was placed on the microphone of each sound level meter to reduce the effects of wind-induced noise. The frequency range of the instrumentation was set between 12.5 and 20,000 Hz, well outside the range required to evaluate compliance with the Fairfax Code. All spot measurements were made in third octave band resolution even though the Fairfax Code is specified in full octave bands. The higher resolution results will support the engineering of mitigation measures, if necessary. The third octave results have been post processed so all results can be reported in full octave bands. Figure 5 shows a field image of the existing Industrial Transformer (Trans. 1). Figure 6 shows a field image of the Transformer that supports the community.

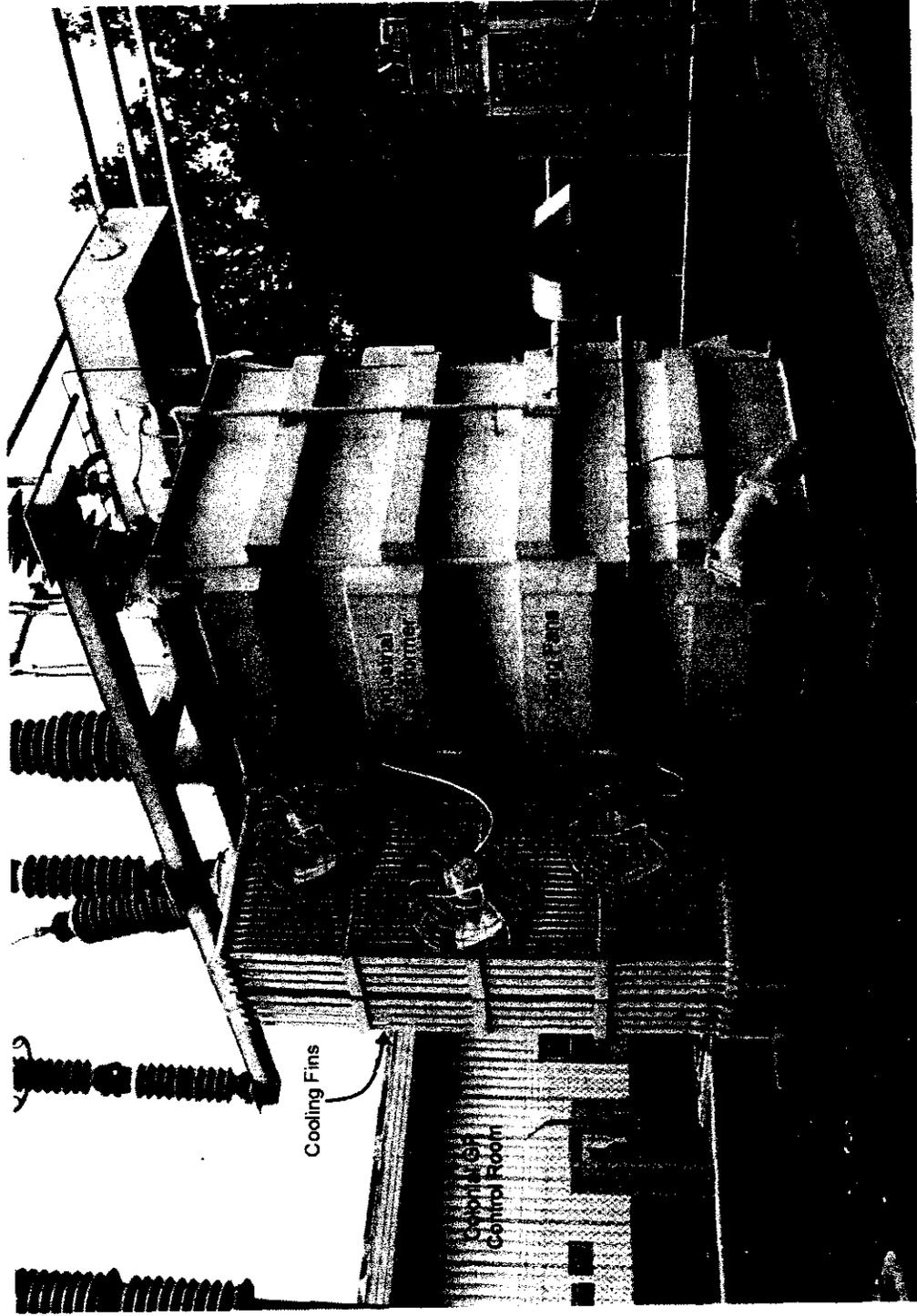


Figure 5  
A Field Image of the Industrial Transformer

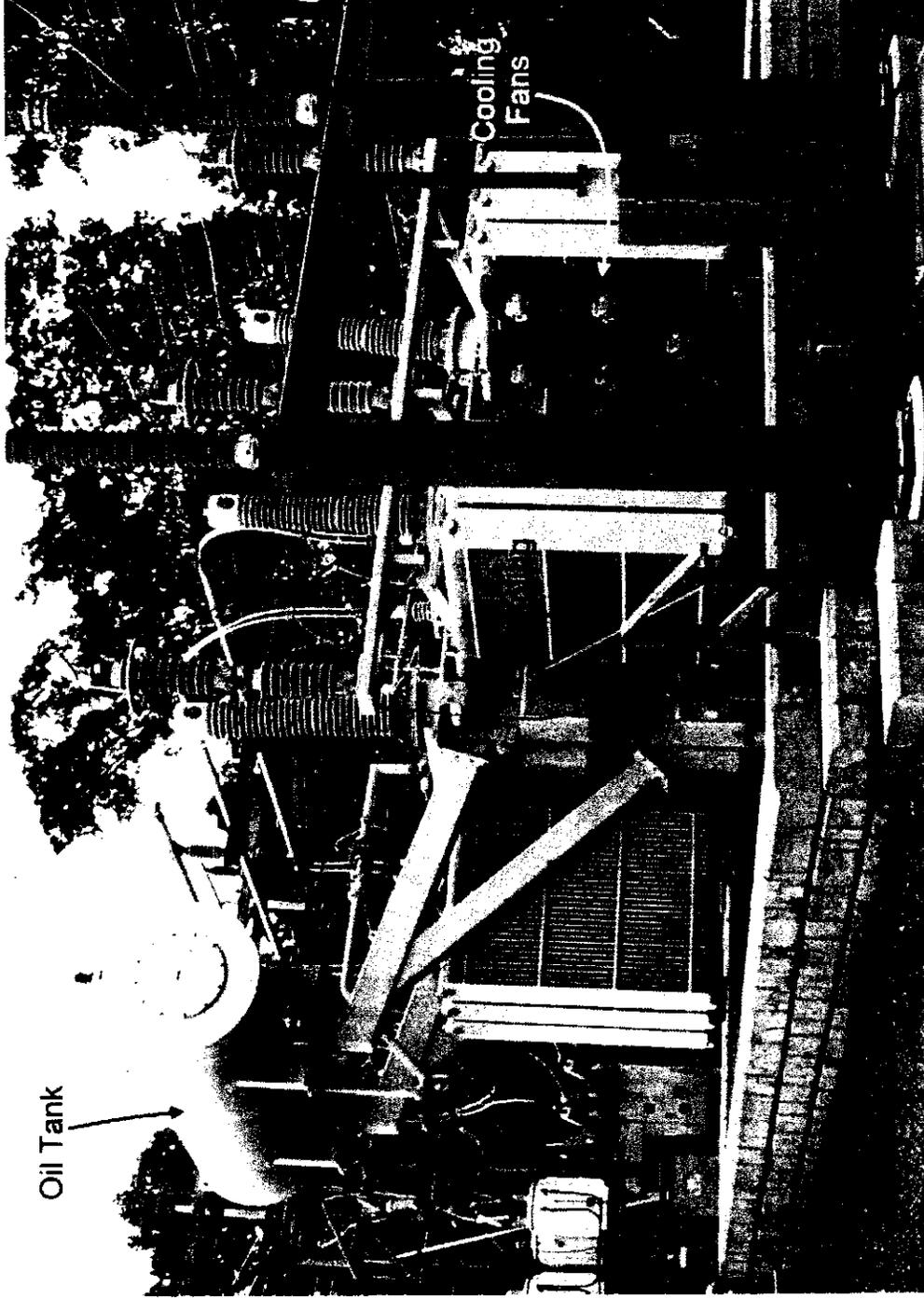


Figure 6  
Field Image of Transformer 2, which supports the Community

### **2.3 Meteorological Conditions**

The meteorological conditions during the survey were suitable for the evaluation of the site and community sound fields. The temperatures were upper 70's or low 80's F in the daytime and low 70's at night under mostly clear skies. There was no precipitation. The humidity became as high as 88% in the early morning, but daytime humidity was in generally in the 70's. The National Weather Service observations for the area, (IAD Dulles Airport) reported more than 10 mph winds at the airport. The wind at the site remained very light, based on the lack of leaf motion at the treetop level. The air at the ground was essentially calm throughout the study.

## **3.0 RESULTS**

It should be noted that the noise output from the transformers is expected to be very consistent under fully energized operation. Minor changes in temperature and output do not change the character or level of sound. A wide variety of community conditions were documented during the survey for the purpose of quantifying ambient sound fluctuations. However, sound levels different from those measured may take place under conditions that were not observed in this survey.

### **3.1 Summary of Measured Sound Levels**

Detailed measurements were made in the near-field of the transformers and also at the property line locations shown in Figure 2. The property line levels were measured under community conditions during the August 2007 survey. The transformer sound can be heard at most property line locations, but both aural observations and third octave analyses confirm that offsite sources of sounds contribute to the ambient levels, and often dominate the measured sound levels.

### **3.2 Transformer Sound Measurements and Power Calculations**

Transformers emit sound energy that is generated by the building and collapsing of the electric field in the unit coils. Therefore, most of the sound energy is emitted horizontally from the walls at a height about 1/3 of the height of the transformer casing. Measurements were taken at many positions around each of the existing transformers to quantify the sound energy emitted from each unit. The measurements were made at two distances from the casing. The first was at an approximate distance of 3 feet from the casing. At this distance, the obstructions such as the cooling fins were avoided by placing the microphone where it was exposed to the casing. The approximate measurement locations are shown in Figure 7. The measurements were in 1/3 octave bands and in several common metrics. The data tables are huge and cumbersome. They are available on request, but are not attached to this report. Instead, the measured levels are summarized so they can be visually compared.

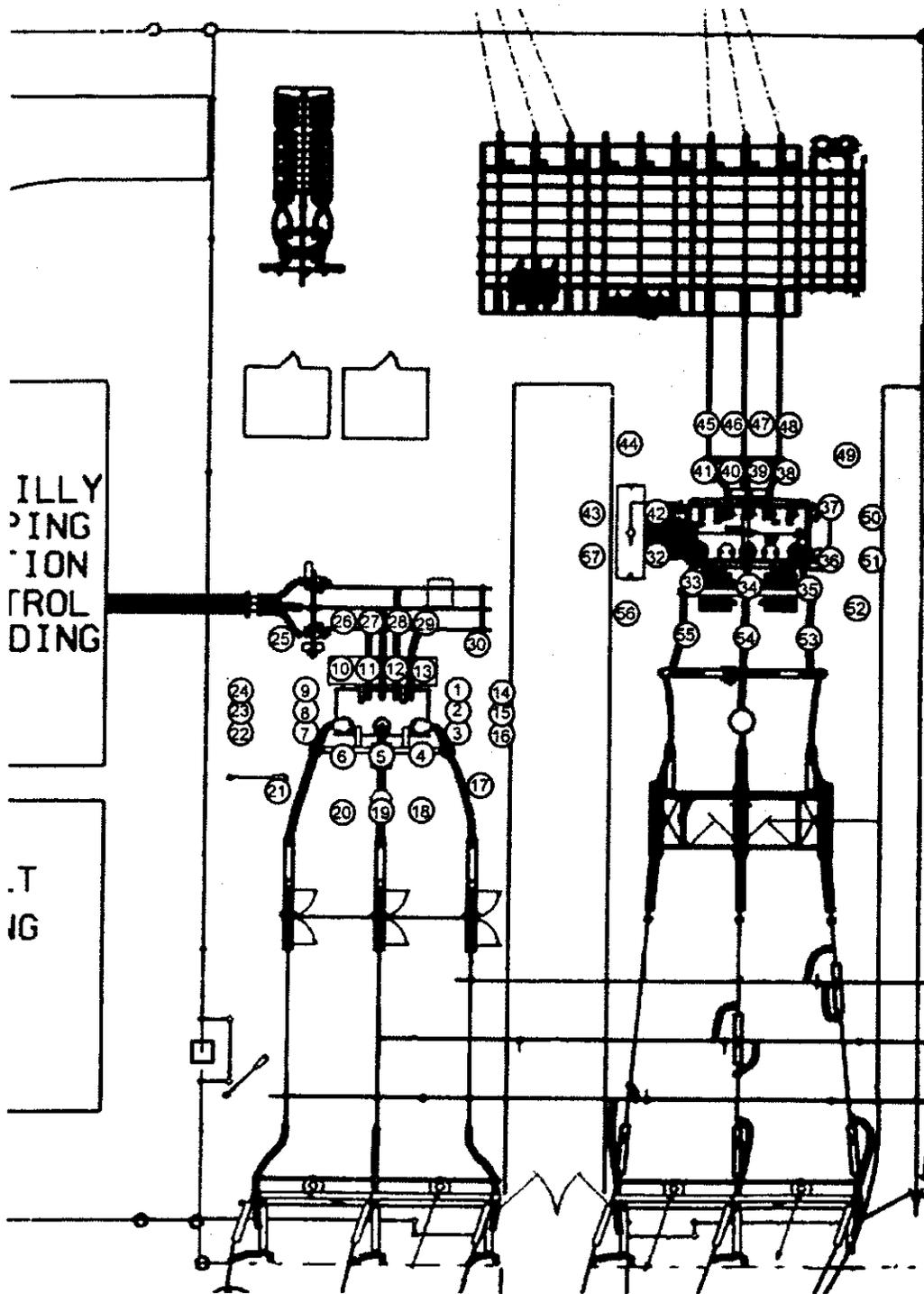


Figure 7  
Equipment Measurement Locations numbered by Memory Location

### 3.3 Summary of Transformer Measurements

The results of the measurements near the transformers are summarized in Figures 8 and 9. The figures represents the curve created by the 1/3 octave band measured levels at locations in the inner circle of transformer measurements.

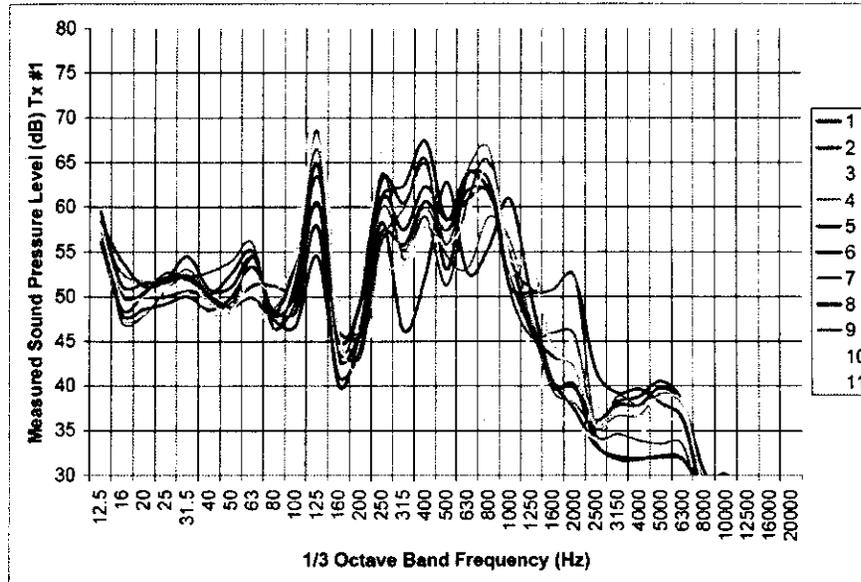


Figure 7: Measured Transformer #1 Sound Levels numbered by Memory Location

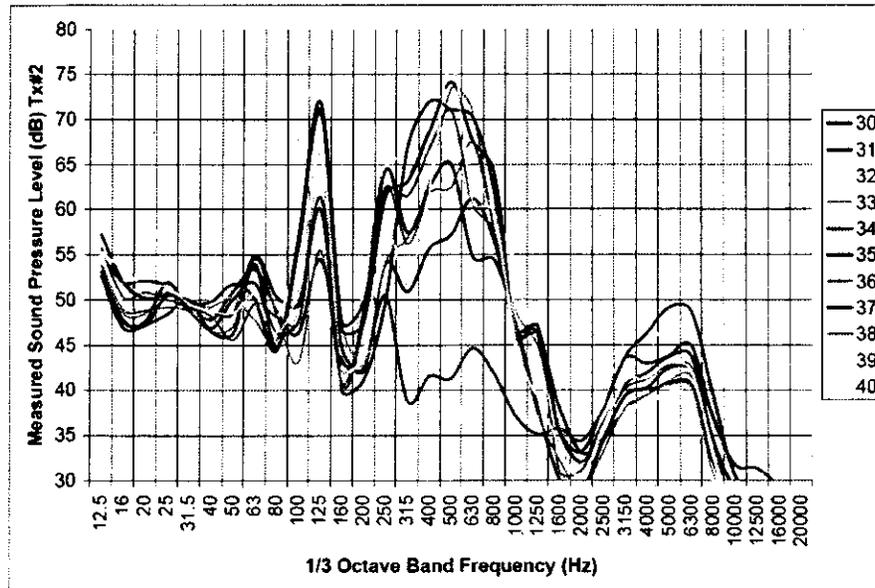


Figure 8: Measured Transformer #2 Sound Levels numbered by Memory Location

A comparison of Figures 7 and 8 shows a very similar frequency content between the two transformers. The signal has a very clear and strong peak in the 125 Hz band. This energy is from the transformer core. Secondary peaks can be seen in various other octave bands. But the signature of the transformer emissions is clear.

### 3.4 Continuous Site Measurements

Continuous measurements were made at two locations on the site. They were intended to represent the far-field equipment sound levels near the property line. However, the northern property line was close enough to the neighboring residences to be disruptive to the neighbors. Therefore, the measurement was made at a distance that was clearly far-field but did not cause the neighbor's dog to bark. The results of the measurements are summarized in Figures 9 and 10.

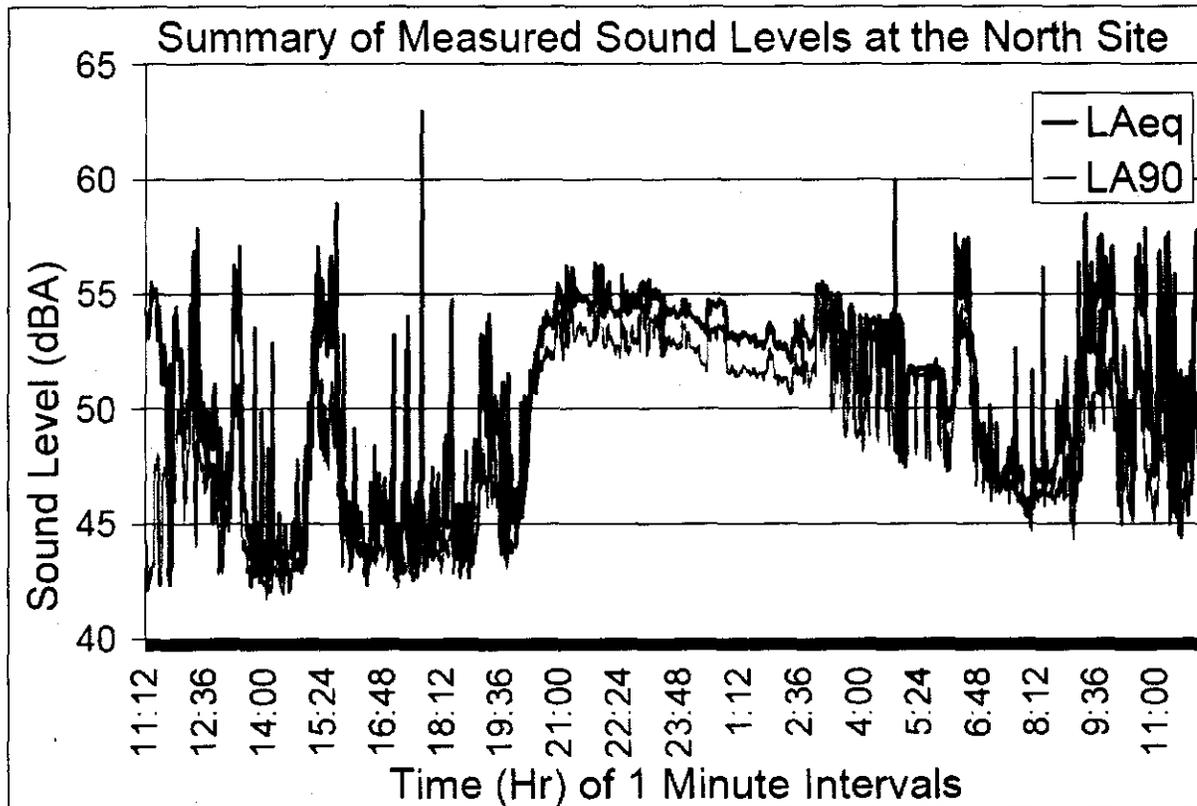


Figure 9: Summary of Continuous measurements at the North of the Site

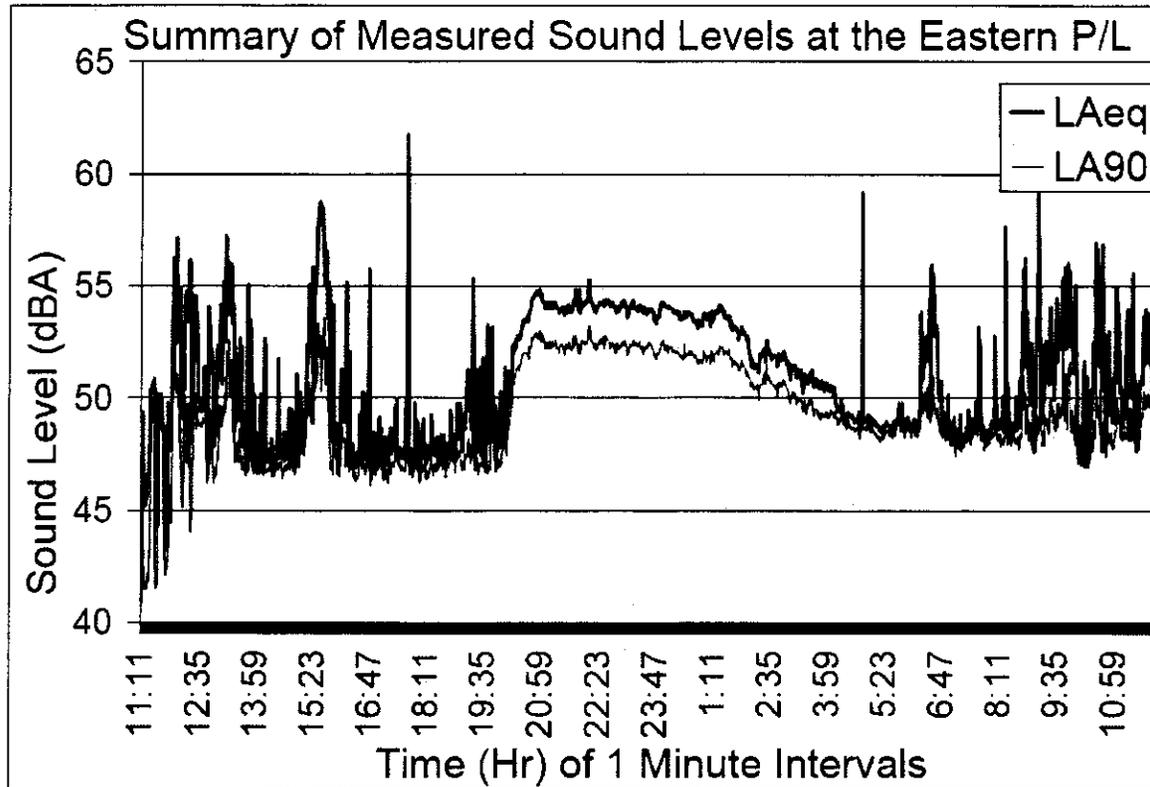


Figure 10: Summary of Continuous measurements at the Eastern Property Line

The continuous measurements documented a peculiar phenomenon. During the late hours of the night, the sound levels in the area smoothed out, with very few strong intrusions. It is about this time that the aircraft traffic from Dulles Airport decreases. However, the nighttime background level increased dramatically - about 10 dBA. In the early morning, the background levels returned to the previous levels and also became influenced by the daytime intrusions. The evening and nighttime survey encountered the same phenomenon as is recorded in the continuous data. The elevated nighttime sound levels were caused by a much increased level of insect sound. There was insect sound noted in all property line samples, but the nighttime sounds were completely dominated by the insect sound. For that reason, the data collected during the evening and nighttime are not meaningful to this study. Therefore, they are not included.

### 3.5 Property Line Measurements

As already noted, the property line measurements included both sound from the transformers and also sound from other sources. Very often there was sound from neighborhood activity, distant aircraft, traffic and birds. There was always a contribution of sound from insect activity. The third octave spectrum illustrates the two clear sources included in a sample that was taken at the nearest property line to the transformers.

Peaks are found in the 60 and 125 Hz 1/3 Octave Bands, and are due to the transformer sound. The middle frequency sounds from the transformers could also be noted in the curve. Another peak is located at approximately 4000 Hz and is due to the sound from insects. Because the 8000 Hz band is so close to the 1000 Hz center frequency of the A-weighted curve, the insect sound dominates the A-weighted sound levels measured at the property line.

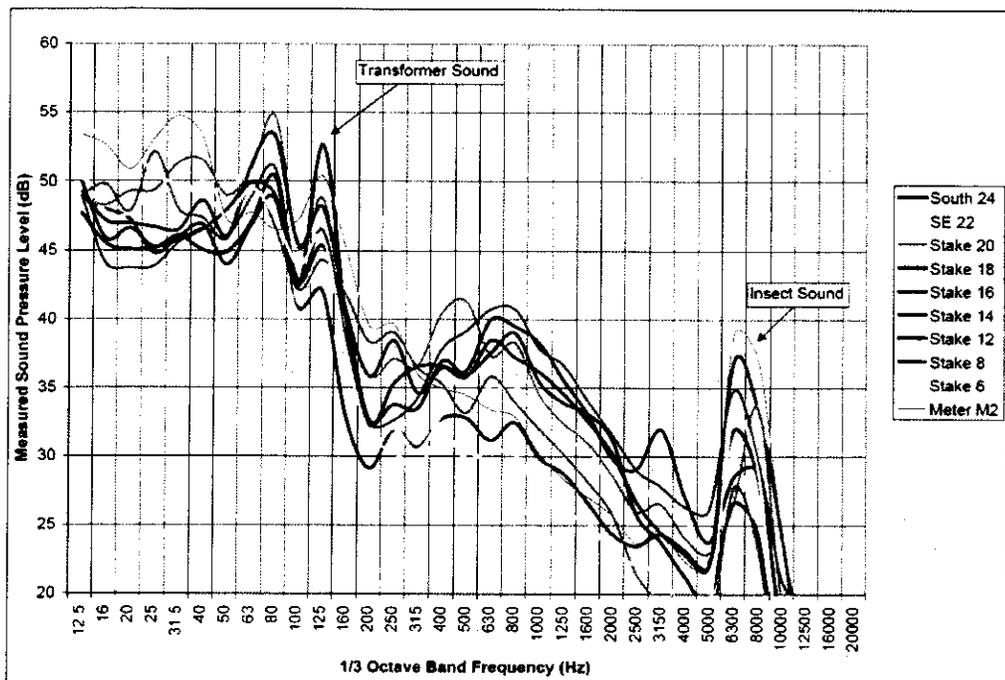


Figure 11: Measured 1/3 Octave Sound Levels Measured at the Property Line.

### 3.6 Compliance of the Existing Facility with the Fairfax Standards

In a sound field that is dominated by multiple sources, it is difficult to evaluate the clear compliance of either source. However, because the spectral characteristics are so different, the sound from the transformers and the sound from the insects can be distinguished.

The Fairfax County Code specifies the noise limits in A-weighted total sound levels and also in octave band levels. Based on the third octave analysis of the specific sources, the energy in and around the 8000 Hz band will be attributed to insect sound. The energy in the rest of the

spectrum will be attributed to the transformer station and other broadband sources. In this conservative analysis, it is not necessary to distinguish between the transformers and the other sources because the combined levels meet the standards. The property line sound level at the location nearest the transformers was selected for analysis since it had the highest contribution of transformer sound. Figure 12 is the same data set that is shown in Figure 11, except the third octave levels have been summed into full octave bands. The resulting spectrum is compared to the Fairfax County Standard.

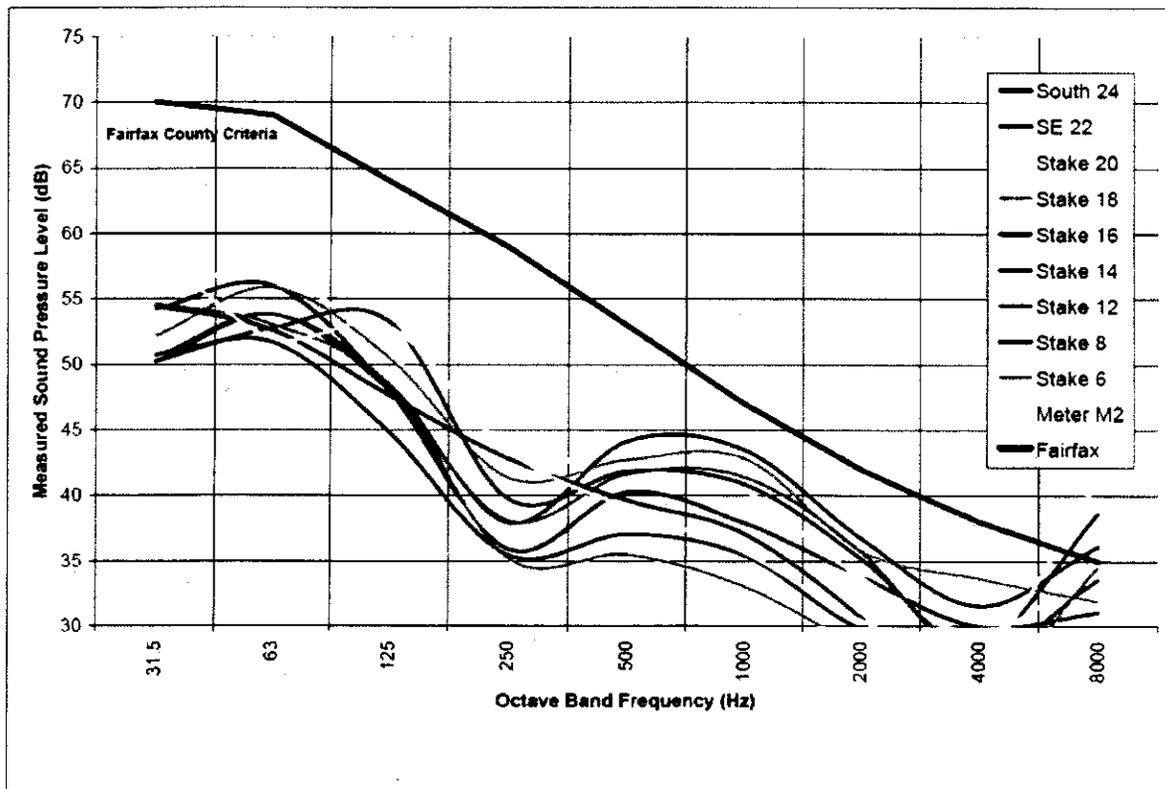


Figure 11: Measured Sound Levels at the Property Line Compared to the Standard

The graphed results of the property line measurements indicate that the existing equipment is operating within the applicable criteria. Since all other sources are within the measured spectra, there is a substantial margin in the values. As noted earlier, only the 8000 Hz band exceeds the standard and the energy within that band is almost exclusively from the seasonal insects.

## 4.0 NOISE MODELING

### 4.1 Noise Modeling Procedures

The acoustical modeling for this project was conducted with the Cadna/A computer software program from DataKustik GmbH. The outdoor noise propagation model is based on ISO 9613,

*Part 1: Calculation of the absorption of sound by the atmosphere, (1993) and Part 2: General method of calculation, (1996).*

Each noise radiating element was modeled based on its noise emission pattern. Concentrated sources such as cooling fans were modeled as point sources, which radiate sound spherically. Transformer surfaces are modeled as area sources, which radiate sound in a hemispherical pattern. Point and area sources are expressed in sound power level ( $L_w$ ).

Temperature and humidity affects the atmospheric absorption of sound at all frequencies. The ISO 9613-2 method assumes a light downwind condition or moderate ground based temperature inversion, which is conducive to noise propagation towards each receptor.

The number of reflections for the model was set to two. This means that two reflections from obstacles were allowed for individual acoustic rays during propagation calculations. Specifying this number of reflections ensures that the contributions at receptors are not understated.

#### **4.2 Modeling Parameters**

Noise prediction modeling was performed under slight downwind weather conditions as assumed in the standard ISO 9613-2. An atmospheric inversion condition was also modeled, and results are presented in Appendix A. Table shows the modeling input parameters.

**Table 2 Modeling Input Parameters**

<b>Item</b>	<b>Modeling Input and Description</b>
Terrain	Flat
Temperature	50°F
Relative Humidity	70%
Weather Condition	Slight downwind*
Ground Attenuation	0.5, rural area
Number of Sound Reflections	2
Receptor Height	5 feet above ground level

*\* Propagation calculations under the ISO 9613 standard incorporate the adverse effects of certain atmospheric and meteorological conditions on sound propagation, such as gentle breeze of 1 to 5 m/s (ISO 1996-2: 1987 and ISO 9613-2:1996, measured between 3 m and 11 m above ground) from source to receiver.*

### 4.3 Calibration of the Noise Model

The first step in assembling a numerical model for the Centreville Station was to model the existing sources. The sound power of the existing transformers was calculated from the detailed field measurements that were conducted on the equipment. The results of the initial model were compared to the observed property line levels. Since the property line levels were “contaminated” by insect sounds that dominated the upper frequencies of the spectrum, the A-weighted values could not be used for the comparison. However, most of the energy within the 125 Hz band was specifically from the transformer. For this reason, the model was calibrated based on the 125 Hz sound level. The model was then used to project future conditions with the new transformer in place. It was also used to estimate the existing sound at the nearest 2<sup>nd</sup> floor residence. The model indicates that the existing sound from the transformers is approximately 44 dBA. This could not be measured in the field survey for several reasons, including property access, insect sound and the dominating sound from the residential HVAC units (under decks).

A noise contour map of the station area as modeled under current conditions is presented in Figure 12, and illustrates the overall predicted sound levels around the site. It is important to also understand the source-by-source contribution from the transformer equipment. Table 3 presents the predicted sound pressure levels received at the east property boundary in the calibrated model.

**Table 3**  
**Ranking of Noise Sources at the East Property Line from the Transformers**

Rank	Nearest P/L Receptor	
	Noise Source	Predicted Sound Level, dBA
1	Transformer #2, South Side	42
2	Transformer #2, North Side	37
3	Transformer #2, East Side	35
4	Transformer #1 North Side	34
5	Transformer #1 East Side	32

### 4.4 Results of the Noise Modeling

Once calibrated, the noise model was used to estimate a number of potential future scenarios. In each case, the results of the model were used to summarize the results at the significant project receptors. The scenarios included the worst case modeling scenarios of the fan operation and the introduction of a new transformer to support the community. The proposed transformer is bigger than either of the existing transformers. For this reason, it can also be expected to emit more sound energy. A design drawing for the transformer is provided in Figure 13. Dominion has ordered the unit with at least 10 dBA of internal sound dampening with the unit. However, it will remain a contributing source in an environment where residences have been developed near the site property line. For this reason, the sound walls are also proposed for the site. One sound barrier wall will serve the dual purpose of a visual barrier on the east side of the proposed transformer layout. The noise model was used to estimate the performance of many wall configurations at the transformer station.

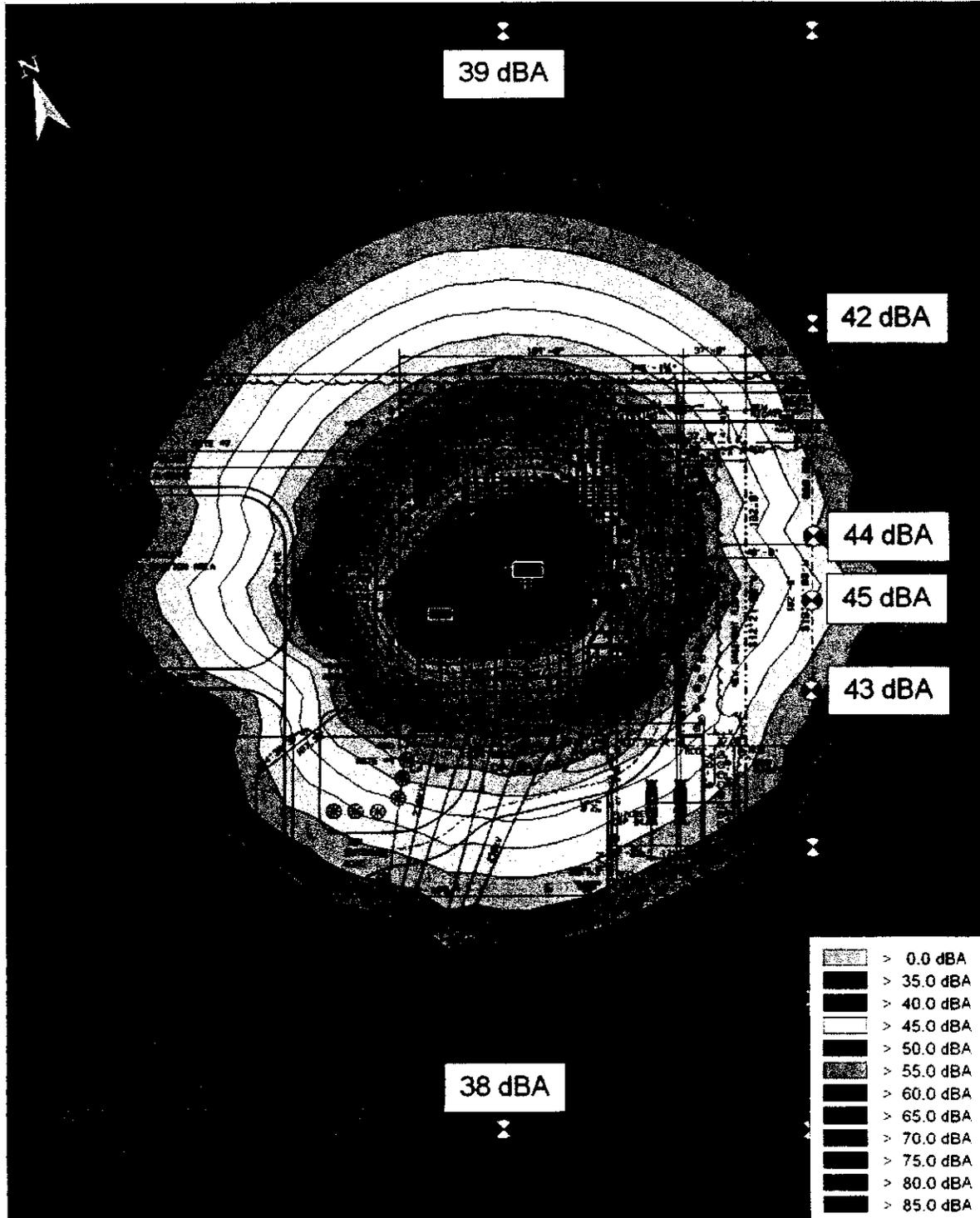


Figure 12: Predicted Levels from the Calibrated Model Representing Existing Conditions



The walls need to be relatively close to the transformer to achieve the necessary level of noise reduction performance, but access to the equipment also needs to be maintained. With these and other factors in mind, various design considerations were evaluated by the model. After evaluating several scenarios from a minimal wall (small enough to be essentially ineffective) to an excessive wall (large enough to introduce limited maintenance access and a potential risk of arcing with the line conductors) the design boundaries were identified. It was determined that with adequate shielding along the eastern side of the Transformer 3, the sound level of the eastern property line can be the same as is currently in place. This is achieved by providing some shielding of Transformer 2 along with the proposed Transformer 3. The reduced sound from the existing transformers along with the mitigated sound from the proposed transformer will result in the current sound levels along the eastern property line. As other wall configurations were evaluated to maximize access and safety, they were optimized to achieve this "No Net Increase In Sound" project goal. Figure 14 shows a wall configuration that is optimized for these factors.

In order to achieve the sound reduction along the eastern property line, the wall is placed along the eastern side of the transformer. This configuration provides little shielding in other directions. Due to increased distance, however, the property line levels remain in conformance to the Fairfax Standards. Other wall scenarios were evaluated that would expand the noise reduction in the north and south directions. While these options required a major increase in wall surface area, complicating the access to the substation equipment, it was not possible to make the wall system high enough to provide significant benefit to the nearest residences to the east. For this reason, the optimized wall configuration is presented as solution for the substation.

The optimized wall system includes the original visual and acoustical barrier, 257 feet long and 8 feet tall along the eastern fence line. Because the source of sound from the transformer is higher than 8 feet, the 8 foot wall provides little direct benefit for noise. The proposed system also includes an inner wall along the inside of the access paved surface. On the north end of the wall, it will wrap to the west to provide shielding along the northeastern property line while maintaining maintenance access along the alley between the low voltage support structure and the low voltage buss. The proposed optimized wall configuration is shown in Figure 14 along with the resulting sound level contours. The inner wall provides a transmission loss at the fence line that is described in the following table.

Table 4: Insertion Loss of the Proposed Inner Wall at the Property Line

A wtd	Octave Band Center Frequency								
	31.5	63	125	250	500	1000	2000	4000	8000
-10.8	-7	-8.3	-7.3	-7.5	-9.8	-13.1	-15.9	-18.6	-20.9

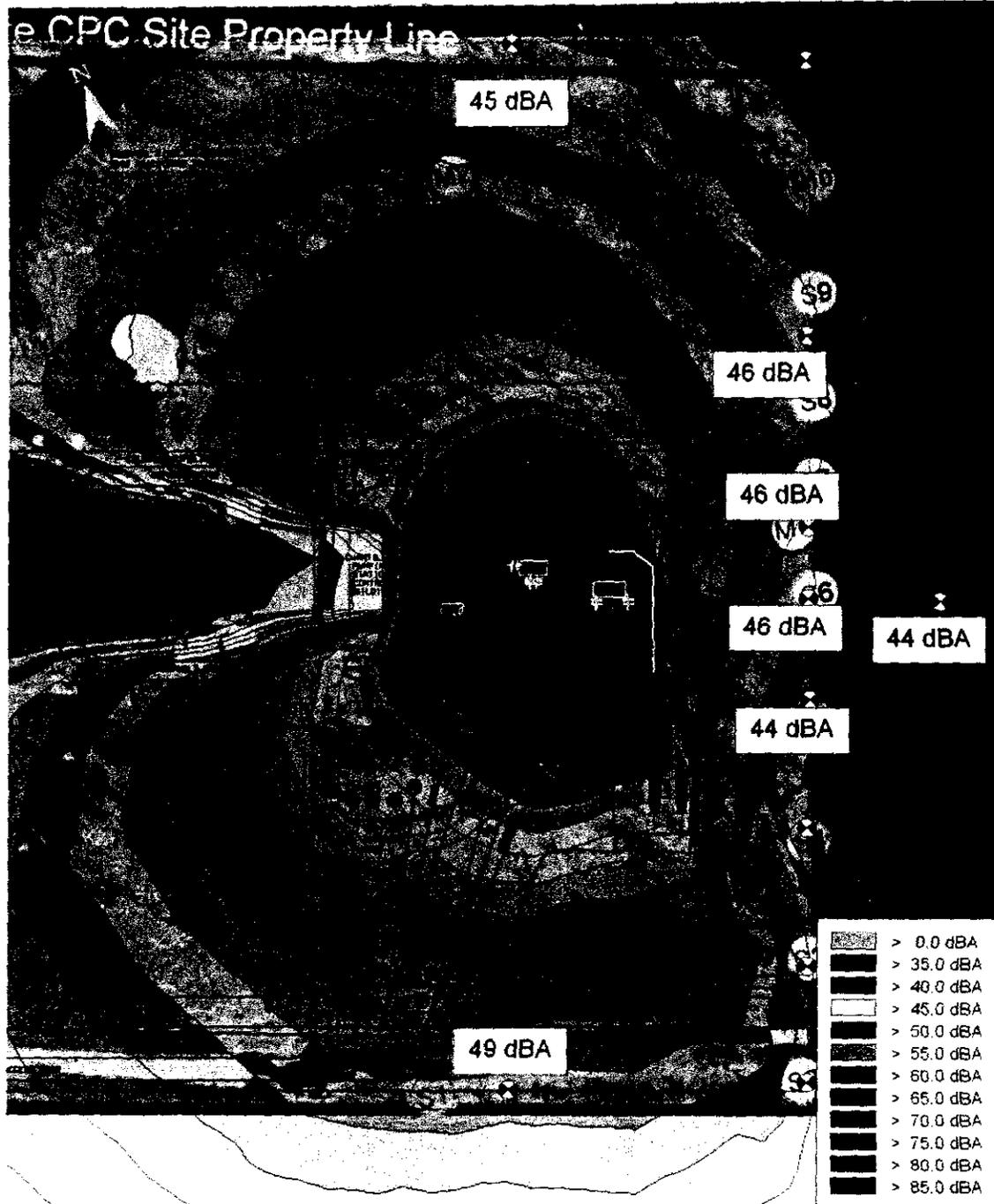


Figure 14: Optimized Wall System Layout with Corresponding Sound Level Contours

## 5.0 RECOMMENDATIONS

The results of the measurement and the modeling study show that the existing transformer station meets the sound requirements of the Fairfax County Code Criteria. It also demonstrates that other environmental sources contribute to the sound levels at the nearest property lines. Nevertheless, the combined sound level of all measured sound sources except that of seasonal insects was demonstrated to meet the standard.

ATCO has evaluated the results of Dominion's plans to increase the capacity of the station to support the electrical needs of the community. This will require installing additional transformer capacity at the existing station. The transformer would be installed immediately to the east of the existing transformers. Because the new equipment will also emit sound and the equipment will be nearer to the property line, additional mitigation of the transformer noise is needed. Dominion has specified a 10 dBA reduction in the sound level for the proposed transformer to contribute to the need. ATCO sound level modeling and mitigation has shown that it is feasible to install the increased transformer capacity without increasing the resulting sound along the eastern property line.

In order to achieve this level of mitigation there are several barrier wall elements proposed at the site. An eight foot wall will be installed along the eastern fence line to support the dual purpose of noise barrier wall and visual barrier. An additional wall section is planned for the area to the immediate east of the proposed transformer 3. Together, these three mitigation features will meet the Dominion goal of expanding the transformer capacity without increasing the sound levels along the eastern property boundary.

Other wall systems were evaluated that might further mitigate the proposed sound levels in directions other than the East. They provided benefit along the north and south property lines where the existing and proposed transformer sounds are in compliance with the Fairfax requirements. These options involved much larger wall surface areas and introduced access limitations and safety concerns. However, they did not provide significant additional reduction (~1 dB) at the sensitive residences for which these mitigation measures are intended to offer protection. For these reasons, the proposed wall system is considered to be optimized for the reduction of sound at this substation.

## 6.0 DISCLAIMERS

Our review is based on an examination of representative portions of the ambient/background noise conditions, which occurred at the time of the survey. We cannot and do not warrant any different conditions that may exist but which were not represented at the time of the survey. It must be further acknowledged that our survey is based on the present condition only, and that we cannot predict whether or not future conditions will occur that would alter the results of this survey.

### Third Party:

This "survey", which is reported in the preceding pages, has been prepared in response to a specific request for service from the Client to whom it is addressed. The information contained in this "survey" is not intended for the use of, nor is it intended to be relied upon, by any person, firm, or corporation other than the Client to whom it is addressed. We deny any liability whatsoever to other parties who may obtain access to the information contained in this "survey" for any damages or injury suffered by such third parties arising from the use of this "survey" by them without the express prior written permission from ATCO and its Client who has commissioned this "survey".

## ATCO NOISE MANAGEMENT

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Dominion, Centreville  
Project 695600  
December 3, 2007

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*Appendix A*  
*Guide and Abbreviations Used*

## **APPENDIX A: Guide and Abbreviations Used**

**Frequency** - the number of cycles per unit interval of time. *Units Hz (Hertz).*

**Bel (B)** - a unit of measure for LEVEL or LEVEL DIFFERENCE (A.G. Bell 1847-1922). If a quantity is increased by a factor  $10^n$ , its level goes up by  $n$  bels.

**Decibel (dB)** - the standard unit of measure, in acoustics, for level or level difference. The decibel scale is based on the ratio  $10^{1/10}$ ; multiplying a power-like quantity (such as sound power or mean square) by this factor increases its level by 1 decibel. If a power-like quantity is increased by a factor  $10^{n/10}$ , its level goes up by  $n$  decibels. *Unit symbol for dB.*

**Sound Pressure (Pa)** - the difference between the instantaneous pressure at a fixed point in a sound field, and the pressure at the same point with the sound absent. *Units Pa (Pascal).*

**Sound Pressure Level (SPL,  $L_p$ )** - or sound pressure-squared level, at a given point the quantity  $L_p$  defined by  $L_p = 10 \text{ Log}_{10}(P_{\text{rms}}/P_{\text{ref}})^2 = 20 \text{ Log}_{10}(P_{\text{rms}}/P_{\text{ref}})$ . Here  $P_{\text{rms}}$  is the ROOT MEAN SQUARE sound pressure, and  $P_{\text{ref}}$  is the reference rms sound pressure. *Units dB re  $(20\mu\text{Pa})^2$ .*

**A-weighted Sound Pressure Level (SPL,  $L_{pA}$ , LA)** - the LEVEL of sound pressure signal to which A-WEIGHTING has been applied. *Units dB re  $(20\mu\text{Pa})^2$ .*

**Sound Power** - the rate of acoustic energy flow across a specified surface, or emitted by a specified sound source. *Units W (Watt).*

**Sound Power Level (PWL,  $L_w$ )** - the level of SOUND POWER expressed in decibels relative to a stated reference value. The quantity  $L_w$  is defined by  $L_w = 10 \text{ Log}_{10}(W/W_{\text{ref}})$ . Here  $W_{\text{ref}}$  is the reference sound power. *Units dB re  $1\mu\text{W}$ .*

**A-weighted Sound Power Level (PWL,  $L_{wA}$ )** - the level of sound power to which A-WEIGHTING has been applied. *Units dB re  $(20\mu\text{Pa})^2$ .*

**A-weighting** - a frequency-weighting procedure, in which the power or energy spectrum of a signal is progressively attenuated towards the high and low ends of the human audible range. Frequency components around 1 kHz - 5 kHz are hardly affected, but the attenuation is large at low frequencies (i.e., 70 dB at 10 Hz).

*Reference: Dictionary of Acoustics, Christopher L Morfey, Institute of Sound and Vibration Research, University of Southampton, Southampton, UK -Academic Press, 2001.*

### **Other Environmental Noise and Vibration Definitions**

**Statistical (Exceedance or Percentile) Sound Levels,  $L_N$**  - since the noise levels in a community vary with time in a more or less random manner, the descriptors of these time varying noise levels may be defined in statistical terms. The statistical descriptors are referred to as the percentile sound levels,  $L_N$ ; with  $L_N$  defined as the level exceeded N% of the time. The descriptors often used are:

**$L_0$ , Highest Level** - this is the highest noise level, also known as  $L_{max}$ .

**$L_1$ , Level of Highly Intrusive Sounds** - the level exceeded 1% of the time, is a measure of the highly intrusive sounds.

**$L_{10}$ , Level of Intrusive Sounds** - The level exceeded 10% of the time, and is used to indicate the average level of the intrusive sounds.

**$L_{50}$ , Median Level** - The level exceeded 50% of the time or the median level. A useful measure of the average noise conditions on a site.

**$L_{90}$ , Background Level** - The level exceeded 90% of the time. It provides a good indication of the steady background noise level on a site.

**Equivalent Sound Level ( $L_{eq}$ )** - the prime descriptor used in assessing most types of sounds heard in a community. The  $L_{eq}$  is an average of sounds measured over time. It is strongly influenced by occasional loud, intrusive noises. Because it is able to account for such noises, for example, the  $L_{eq}$  is the best descriptor for the intermittent sound levels from construction activities.

**Day and Night Equivalent Sound Level ( $L_{dn}$ )** - derived by applying a 10 dBA "penalty to noise level that occurs at night, (i.e., between 10 PM and 7 AM), to account for increased sensitivity to noise during the nighttime hours.

**Ambient sound level** - means background sound level. It is the sound level that is present in the acoustic environment of a defined area. Aircraft flyover and rail noise may be excluded in some jurisdictions.

**Vibration Acceleration Level ( $L_a$ )** - the vibration acceleration level expressed in acceleration relative to a stated reference value. The quantity  $L_a$  is defined by  $L_a = 20 \log_{10}(a/a_{ref})$ . Here  $a_{ref}$  is the reference acceleration, where  $a_{ref} = 10^{-5} \text{ m/sec}^2$  or  $39.4 * 10^{-5} \text{ in/sec}^2$ . Vibration acceleration level presented in *Units dBg re 1g; ( $g = 9.8 \text{ m/sec}^2$ )*.

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Dominion, Centreville  
Project 695600  
December 3, 2007

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*Appendix B*  
*Field Measurement Data*

Existing Equipment Sound Levels - Dominion Fairfax

Project	Date	Time	Leq	L90	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Unit 1 Basic													
Project 001	8/23	10:48	67.51	67.04	54	56	58	65	69	62	43	37	35
Project 002	8/23	10:49	65.46	64.92	55	55	65	63	66	62	43	37	34
Project 003	8/23	10:49	64.55	64.27	56	54	68	65	63	62	41	40	36
Project 004	8/23	10:50	63.25	62.68	57	56	69	61	62	61	43	42	39
Project 005	8/23	10:50	64.63	64.4	57	57	69	59	64	62	44	44	39
Project 006	8/23	10:51	65.28	64.97	56	54	55	60	65	63	46	43	39
Project 007	8/23	10:51	66.44	65.91	57	58	64	64	63	65	49	39	34
Project 008	8/23	10:52	67.37	67.11	56	58	61	65	68	63	55	44	37
Project 009	8/23	10:52	68.8	68.64	56	56	67	61	68	67	55	43	38
Project 010	8/23	10:53	66.08	65.93	55	55	69	56	63	65	47	43	39
Project 011	8/23	10:54	65.51	65.18	54	53	73	67	62	63	48	42	37
Project 012	8/23	10:55	66.2	65.62	55	58	64	65	66	64	47	42	39
Project 013	8/23	10:55	67.68	67.41	55	55	67	62	68	65	42	44	41
Project 014	8/23	10:56	66.03	64.99	57	54	62	59	63	65	39	47	44
Project 015	8/23	10:57	63.02	62.71	55	55	58	61	64	57	39	43	40
Project 016	8/23	10:58	62.49	62.07	55	54	63	63	62	58	39	49	45
Project 017	8/23	10:58	61.44	61.06	56	55	51	59	63	57	39	45	42
Project 018	8/23	10:59	56.99	56.31	53	53	57	52	58	50	38	47	44
Project 019	8/23	10:59	61.27	60.94	53	55	57	60	63	56	39	45	42
Project 020	8/23	11:00	62.67	62.43	54	54	62	54	64	58	39	43	40
Project 021	8/23	11:01	59.74	59.34	56	54	55	55	58	58	39	44	41
Project 022	8/23	11:02	63.84	62.83	54	56	65	59	60	63	39	45	41
Project 023	8/23	11:03	60.24	59.57	54	58	62	56	59	58	39	39	35
Project 024	8/23	11:04	60.82	60.63	55	57	63	56	58	59	39	40	37
Project 025	8/23	11:05	62.2	61.73	55	56	65	58	56	62	39	39	35
Project 026	8/23	11:05	63.17	62.62	55	54	66	60	58	62	41	39	35
Project 027	8/23	11:06	63.96	63.74	55	56	65	63	66	56	40	42	39
Project 028	8/23	11:07	65.42	65.2	54	57	64	65	68	58	38	44	40
Project 029	8/23	11:07	64.64	64.41	53	54	68	64	66	60	38	43	40
Unit 2 Basic													
Project 030	8/23	11:09	62.44	61.94	55	57	62	56	63	57	41	44	41
Project 031	8/23	11:10	53.22	52.03	55	56	55	51	48	44	41	48	46
Project 032	8/23	11:11	66.34	63.27	55	54	70	65	67	61	39	44	40
Project 033	8/23	11:12	72.62	72.43	55	53	71	59	76	58	39	45	41
Project 034	8/23	11:12	73.12	72.83	55	54	71	65	76	64	40	47	44
Project 035	8/23	11:14	72.97	72.5	53	55	60	67	76	62	41	52	49
Project 036	8/23	11:15	69.39	69.05	54	53	62	65	73	58	38	46	43

Existing Equipment Sound Levels - Dominion Fairfax (Continued)

Project	Date	Time	Leq	L90	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Project 037	8/23	11:16	65.18	64.89	54	55	72	65	67	55	37	46	43
Project 038	8/23	11:16	67.3	66.85	53	56	56	64	69	58	37	44	42
Project 039	8/23	11:17	73.21	72.9	55	54	66	59	77	60	39	47	43
Project 040	8/23	11:17	69.09	68.67	54	54	64	68	72	61	40	51	48
Project 041	8/23	11:18	72.08	71.83	53	52	69	61	74	65	42	49	45
Project 042	8/23	11:18	67.86	67.69	54	53	81	66	67	55	38	46	42
Project 043	8/23	11:21	62.25	61.66	54	54	73	57	63	53	37	43	40
Project 044	8/23	11:21	65.89	65.41	56	54	70	62	67	59	37	44	40
Project 045	8/23	11:22	65.05	64.73	53	53	73	62	67	52	35	41	38
Project 046	8/23	11:22	67.06	66.44	52	53	66	61	70	52	37	45	43
Project 047	8/23	11:23	64.32	64	52	53	50	59	67	55	38	49	48
Project 048	8/23	11:24	63.68	63.44	57	53	62	58	67	52	38	47	43
Project 049	8/23	11:24	60.36	60.12	55	54	64	54	62	54	38	45	42
Project 050	8/23	11:25	63.56	63.25	54	56	73	63	65	52	41	45	41
Project 051	8/23	11:25	60.81	60.52	57	56	62	63	61	51	41	46	43
Project 052	8/23	11:26	65.35	65.09	55	54	64	63	68	57	40	42	39
Project 053	8/23	11:26	62.28	61.56	55	55	70	66	62	55	39	42	40
Project 054	8/23	11:27	68.51	68.21	54	55	68	60	72	56	37	38	36
Project 055	8/23	11:28	62.99	62.41	57	57	66	63	64	55	37	37	36
Project 056	8/23	11:29	64.77	63.26	53	56	65	61	68	56	37	37	36
Project 057	8/23	11:29	64.47	64.23	55	55	68	62	65	60	38	37	35
Unit 1 w/Fans													
Project 058	8/23	11:40	72.99	72.56	59	72	70	72	73	68	63	58	49
Project 059	8/23	11:41	67.3	66.94	57	65	65	66	67	62	56	51	43
Project 060	8/23	11:41	68.25	67.81	58	68	70	71	67	63	57	50	43
Unit 2 w/Fans													
Project 061	8/23	11:44	73.7	73.25	69	69	79	71	73	69	63	55	48
Project 062	8/23	11:45	68.38	67.9	60	63	65	65	69	64	56	48	42
Project 063	8/23	11:46	71.08	70.6	65	62	69	68	73	65	58	50	43
Project 064	8/23	11:47	73.71	73.26	67	68	71	73	73	69	62	54	48
Project 065	8/23	11:48	75.06	74.64	70	68	73	73	75	70	63	56	50

Daytime First Day - Dominion Fairfax														
Location	Memory	Date	Time	Leq	L90	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
South 24	Project 066	8/23	13:00	41.95	40.61	51	52	45	35	37	35	30	28	39
SE 22	Project 067	8/23	13:03	42.96	41.61	54	56	48	36	40	38	34	30	31
Stake 20	Project 068	8/23	13:06	45.57	44.49	56	57	51	41	45	41	34	30	35
Stake 18	Project 069	8/23	13:11	46.28	45.63	52	56	50	41	43	43	36	34	32
Stake 16	Project 070	8/23	13:14	45.23	44.86	50	53	53	40	42	41	35	28	34
Stake 14	Project 071	8/23	13:15	46.9	46.19	50	54	48	38	44	44	37	32	36
Stake 12	Project 072	8/23	13:17	44.61	44.23	51	54	48	38	42	41	36	27	29
Stake 8	Project 073	8/23	13:19	42.12	41.35	54	53	48	43	40	37	31	22	29
Stake 6	Project 074	8/23	13:22	39.9	38.4	55	53	48	35	35	33	28	25	35
Meter M2	Project 075	8/23	13:25	44.59	43.8	59	52	53	43	39	36	30	28	41

Evening Survey - Dominion Fairfax

Location	Memory	Date	Time	Leq	L90	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
South 24	Project 001	8/23	19:32	50.16	49.51	56	54	51	41	36	38	41	46	45
SE 22	Project 002	8/23	19:33	51.54	50	52	54	52	38	36	35	44	48	43
Stake 20	Project 003	8/23	19:34	55.08	52.01	53	53	50	39	39	38	45	52	49
Stake 18	Project 004	8/23	19:35	50.92	49.86	53	54	50	38	41	42	45	45	39
Stake 16	Project 005	8/23	19:38	52.34	50.52	54	53	55	39	41	41	46	48	40
Stake 14	Project 006	8/23	19:39	52.72	51.09	52	53	50	41	43	41	47	49	41
Stake 12	Project 007	8/23	19:41	55.04	53.14	53	54	47	37	44	43	49	50	48
Stake 8	Project 008	8/23	19:42	54.59	52.52	53	56	50	39	44	41	47	51	45
Meter M2	Project 009	8/23	19:44	53.08	51.98	53	55	47	39	43	39	46	49	43

Nighttime Survey - Dominion Fairfax

Location	Memory	Date	Time	Leq	L90	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
South 24	Project 001	8/24	3:35	55.6	55.08	51	54	50	42	38	37	38	52	52
SE 22	Project 002	8/24	3:37	54.76	54.42	49	51	48	39	38	36	40	51	51
Stake 20	Project 003	8/24	3:38	50.44	49.91	50	51	48	38	39	38	40	46	46
Stake 18	Project 004	8/24	3:40	47.66	47.01	49	53	51	39	42	42	41	38	39
Stake 16	Project 005	8/24	3:42	48.98	48.61	49	52	50	41	45	44	39	38	42
Stake 14	Project 006	8/24	3:43	48	47.46	50	52	55	43	43	42	38	37	41
Stake 12	Project 007	8/24	3:44	47.64	47.12	50	51	48	40	44	42	38	40	41
Stake 8	Project 008	8/24	3:45	49.18	48.7	52	52	45	38	42	40	37	42	46
Stake 6	Project 009	8/24	3:47	49.35	47.66	53	51	47	41	42	40	41	44	43
Meter M2	Project 010	8/24	3:49	49.82	48.7	51	53	47	38	43	39	39	46	43

Day Two - Dominion Fairfax

Location	Memory	Date	Time	Leq	L90	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
South 24	Project 001	8/24	10:41	45.16	44.4	53	54	50	42	39	39	38	35	37
SE 22	Project 002	8/24	10:43	48.05	43.48	52	53	50	40	39	38	36	37	47
Stake 20	Project 003	8/24	10:44	48.4	45.13	53	54	50	41	41	38	33	43	45
Stake 18	Project 004	8/24	10:46	53.46	47.83	53	56	55	41	45	42	36	49	49
Stake 16	Project 005	8/24	10:47	50.39	47.3	53	55	49	41	45	43	36	45	44
Stake 14	Project 006	8/24	10:48	49.85	46.97	53	54	49	40	45	43	36	44	44
Stake 12	Project 007	8/24	10:49	48.89	47.03	55	55	52	45	46	42	35	42	41
Stake 10	Project 008	8/24	10:51	52.17	48.51	56	56	50	44	46	44	36	47	47
Stake 8	Project 009	8/24	10:52	52.38	47.76	53	55	50	41	47	41	37	48	47
Stake 6	Project 010	8/24	10:53	47.39	46.37	54	56	56	40	44	42	35	39	38
Meter M2	Project 011	8/24	10:56	48.35	44.64	54	55	52	44	42	43	38	42	40
Res HVAC	Project 012	8/24	11:01	53.18	50.32	53	56	52	40	43	38	38	50	49



January 18, 2008

Ms. Tracy Strunk, AICP  
Senior Staff Coordinator – Zoning Evaluation Division  
Department of Planning and Zoning  
12055 Government Center Parkway, Suite 801  
Fairfax, Virginia 22035

Subject: 2232-S07-10 VEPCO/Dominion Virginia Power Company  
Concurrent with SEA 81-S-053-1  
13100 Moore Road, Clifton  
Tax Map 55-3 ((1)) 31 A

Dear Ms. Strunk:

The enclosed documents are Dominion's response to the land use/environment portion of the "Outstanding Issues" document discussed in a January 9 meeting with you at the county's Jack Herrity Building. The items not addressed by this letter will be addressed either on the revised application drawings or in future meetings as we agreed. This letter is also intended to provide information to revise the 2232 application.

Please let me know if you have any further questions or concerns related to the document, or to Dominion's Centreville Substation expansion project. Thank you for your assistance in this application process.

Sincerely,

A handwritten signature in black ink that reads "D.E. Cowl".

David E. Cowl, P.E.  
Project Manager

Enclosure/Copies to:

Fairfax County:  
Ms. Anita Capps

Colonial Pipeline Company:  
Mr. Steve Barnes

Dominion:  
Mr. Phil Sparks  
Mr. Robbie Bridges  
Mr. Dean Obaugh  
Ms. Diana Faison  
Ms. Kathy McDaniel  
Mr. Alan Ott

Greenhorne & O'Mara:  
Mr. John Gattuso  
Mr. Bob Fox

**Dominion Response to Outstanding Issues (Revised 1/9/2008)**  
**2232-S07-10 VEPCO/Dominion Virginia Power Company**  
**Concurrent with SEA 81-S-053-1**  
**Centreville Substation Expansion Project**

**Hayden Village Landscaping Plan needs clarification. The drawing should indicate the property boundary, existing trees, and number/type of species Dominion has agreed to plant.**

Dominion will revise the drawing as requested, and has agreed with Hayden Village to plant the following amount of new landscaping on their property. Dominion reserves the right to modify these numbers to adequately fill the areas shown on the drawing.

(23) 8-ft Nellie Stevens Holly; (22) 8-ft Leland Cypress; (8) 6-ft Canada Hemlock;  
(9) 8-ft Virginia Cedar; (11) 6-ft Emerald Green Arborvitae

Hayden Village understands that Dominion will not provide ongoing maintenance (beyond a one-year limited replacement warranty), although Dominion has offered to assist in paying for the watering of these new plantings in the first year.

**Electromagnetic Fields (EMFs) Produced by the Substation Expansion**

EMFs produced by Centreville Substation, and its planned expansion, will continue to be very low at the perimeter fence/wall of the facility.

**Safety Measures Preventing Access to High Voltage Substation Expansion**

The expanded area of the station will be enclosed by a concrete decorative screen wall. The expansion will meet the requirements of the National Electric Safety Code (NESC), including "Danger – High Voltage" signs posted at regular intervals on the external face of the wall. The facility gates will be closed and locked to prevent unauthorized access to the station.

**Noise Level Study Needs to be Concisely and Clearly Explained**

Sound readings were taken by ATCO Noise Management at the property lines in August 2007. The readings served a dual purpose: 1) to verify that the present Dominion substation equipment arrangement meets the Fairfax County ordinance for permissible sound pressure levels, and 2) to allow ATCO to model predicted sound levels following the substation expansion with its additional equipment. The modeling predicted that a properly designed transformer sound wall would bring the proposed station expansion into compliance with the sound ordinance, and will be confirmed with a final set of sound readings upon completion of the project. [On a related subject, the landowner, Colonial Pipeline Company, is underway with independent sound mitigation efforts. Following their completion this winter, Dominion plans to take follow-up sound readings at the same property line locations. This will assure that the entire site is in compliance with the sound ordinance prior to substation expansion.]

**Sound and Screening Walls Details**

Sound Wall: Dimensions shown on revised application drawings. Wall will be earth-tone (beige or tan) color to complement screen wall (below), and is to be constructed of PVC blocks with synthetic wood filler and upright steel support beams.

Screen Wall: Dimensions shown on revised application drawings. "Pueblo" color (tan), "Ledgestone" texture, and 8-foot height selected by Hayden Village Community. Wall will be constructed of stamped concrete panels. A Superior Concrete brochure is enclosed to illustrate the actual wall to be installed.

# Screening Wall, Sound Barrier, and Rail Fence

## About SUPERIOR CONCRETE PRODUCTS

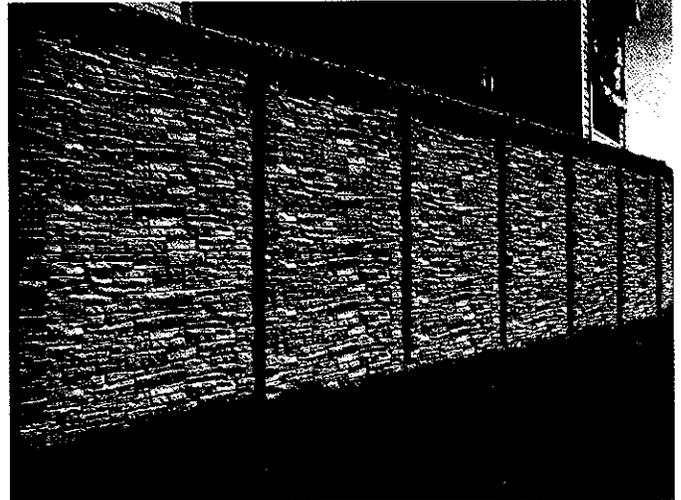
Since 1986, SUPERIOR CONCRETE PRODUCTS has maintained its leadership position as a service-oriented company that manufactures and installs high-quality decorative precast concrete screening walls, perimeter fencing, and sound barriers. The wall systems have the look of stone, brick, and wood. Superior's new line of wall systems is called SUPERIOR-COBBLESTONE, SUPERIOR-LEDGESTONE, SUPERIOR-STUCCO, SUPERIOR-BRICK, SUPERIOR-WOOD, and SUPERIOR-RAIL. The "new and improved" line is the result of several technical, process, and procedural changes that have resulted in products that are "higher quality, more reliable, and more durable." All products in the new line are made in the USA in Superior's NPCA (National Precast Concrete Association) certified manufacturing plant. Superior has a 17-year history of satisfied customers.

- **Quality:** Manufactured in Superior's NPCA certified plant. 6th year Certification.
- **Reliability:** 17-year history of trouble-free precast concrete fences.
- **Durability:** No maintenance and no replacement.
- **Versatility:** Wall heights up to 17'. Easily modified to meet a wide range of wind loads, soil conditions and seismic factors.
- **Affordability:** Cost effective alternative to stone, brick, or wood fences.

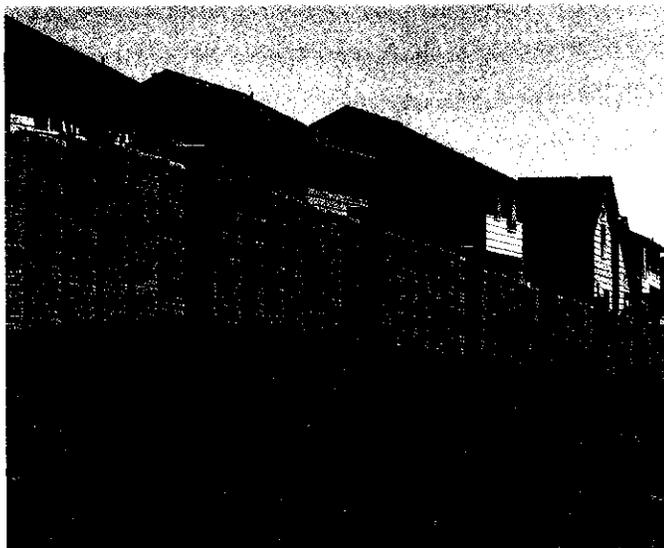
### SUPERIOR-COBBLESTONE



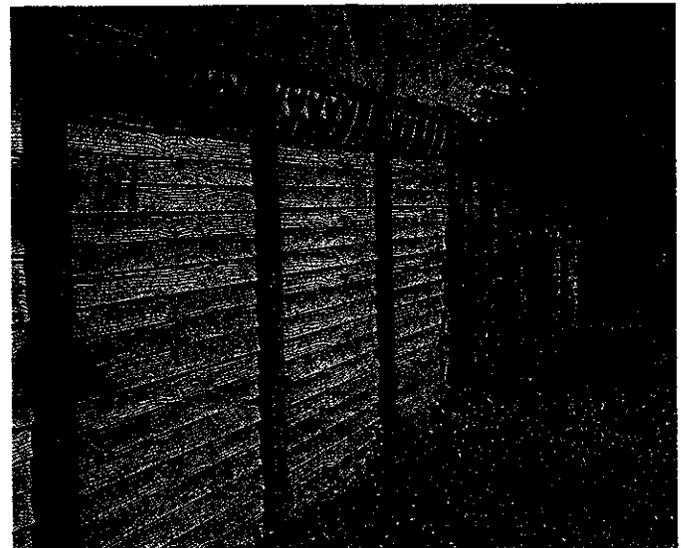
### SUPERIOR-LEDGESTONE



### SUPERIOR-BRICK



### SUPERIOR-WOOD





## County of Fairfax, Virginia

**MEMORANDUM**

DATE: December 18, 2007

**TO:** Regina Coyle, Director  
Zoning Evaluation Division, DPZ

**FROM:** Pamela G. Nee, Chief *P. G. N. for MGN*  
Environment and Development Review Branch, DPZ

**SUBJECT:** Environmental Assessment: *SEA 81-S-053*  
*Virginia Power*

This memorandum, prepared by Dawn Dhavale, includes citations from the Comprehensive Plan that list and explain environmental policies for this property. Plan citations are followed by a discussion of concerns including a description of potential impacts that may result from the proposed development as depicted on the revised special exception plat dated August 2007 as revised through November 29, 2007. Possible solutions to remedy identified environmental impacts are suggested. Other solutions may be acceptable, provided that they achieve the desired degree of mitigation and are also compatible with Plan policies.

**COMPREHENSIVE PLAN CITATIONS**

The Comprehensive Plan is the basis for the evaluation of this application. The assessment of the proposal for conformity with the environmental recommendations of the Comprehensive Plan is guided by the following citations from the Plan:

Fairfax County Comprehensive Plan, 2007 Edition, Policy Plan, Environment, as amended through November 15, 2004, on pages 5-14, the Plan states:

**“Objective 2: Prevent and reduce pollution of surface and groundwater resources. Protect and restore the ecological integrity of streams in Fairfax County.**

Policy a. Maintain a best management practices (BMP) program for Fairfax County and ensure that new development and redevelopment complies with the County’s best management practice (BMP) requirements.

Department of Planning and Zoning  
Planning Division  
12055 Government Center Parkway, Suite 730  
Fairfax, Virginia 22035-5509  
Phone 703-324-1380  
Fax 703-324-3056  
[www.fairfaxcounty.gov/dpz/](http://www.fairfaxcounty.gov/dpz/)

Policy b. Update BMP requirements as newer, more effective strategies become available. . .

~~Development proposals should implement best management practices to reduce runoff pollution and other impacts . . .~~

Asbestos bearing soils may pose a health risk to construction workers requiring special precautions during excavation . . .

**Objective 10: Conserve and restore tree cover on developed and developing sites. Provide tree cover on sites where it is absent prior to development.**

Policy a: Protect or restore the maximum amount of tree cover on developed and developing sites consistent with planned land use and good silvicultural practices.”

#### **ENVIRONMENTAL ANALYSIS:**

This section characterizes the environmental concerns raised by an evaluation of this site and the proposed land use. Solutions are suggested to remedy the concerns that have been identified by staff. There may be other acceptable solutions. Particular emphasis is given to opportunities provided by this application to conserve the county’s remaining natural amenities.

#### **Asbestos Soils**

##### **Issue:**

Fairfax County Soils Maps note the presence of naturally occurring asbestos throughout the entire site.

##### **Resolution:**

Staff recommends following the standard precautions for asbestos safety and suppression measures. Staff also recommends that the applicant implement a set of safety procedures typically associated with development in areas containing naturally occurring asbestos. These measures should include the use of safety masks, clothing and eye protection for workers on-site during construction phases, as well as dust suppression during construction phases to ensure that any asbestos containing materials do not become airborne. Staff encourages coordination with the Fairfax County Health Department to ensure proper precautions are observed.

#### **Tree Cover**

**Issue:**

The vegetation plan indicated on the plat shows preservation of existing mature trees, and new supplemental plantings along the new fences. Staff has concerns that the existing vegetation is somewhat sparse and in a degraded condition.

**Resolution:**

Staff recommends supplemental plantings to screen the facility as well as bolster the tree cover on the site. The supplemental plantings should not just be limited to the areas along the fences, if possible. The supplemental plantings are encouraged to be evergreen, as the majority of trees on site are deciduous.

**Stormwater Management/Water Quality**

**Issue:**

The property is in the Occoquan Reservoir watershed, a recognized environmentally sensitive area. The Comprehensive Plan provides guidance on the protection of this resource through water quality best management practices and land use principles.

**Resolution:**

Staff feels that the applicants have provided additional information regarding the adequacy of the proposed facilities. However, any final determination regarding the proposed stormwater management (SWM) and best management practice (BMP) facilities and their ability to meet both the site and Occoquan watershed requirements for water quality and quantity controls will be made by staff in the Department of Public Works and Environmental Services (DPWES).

**COUNTYWIDE TRAILS PLAN**

There are no trails depicted on the Countywide Trails Plan map adjacent to the subject property.

PGN: DMD



# County of Fairfax, Virginia

## MEMORANDUM

DEC 28 2007

**DATE:**

**TO:** Regina Coyle, Director  
Zoning Evaluation Division  
Department of Planning and Zoning

**FROM:** Qayyum Khan, Chief Stormwater Engineer *QK*  
Environmental and Site Review Division West  
Department of Public Works and Environmental Services

**SUBJECT:** Special Exception Amendment Application, SEA 81-S-053, Virginia Electric & Power Company, Plan Dated September 13, 2007, LDS Project 9028-ZONA-001, Tax Map #055-3-01-0031A, Sully District, Little Rocky Run Watershed

We have reviewed the subject submission and offer the following comments related to Stormwater Management (SWM):

Chesapeake Bay Preservation Ordinance

There is no Resource Protection Area on the site; it is located within the Water Supply Protection Overlay District.

Floodplain

There is no floodplain on the site.

Downstream Drainage Complaints

There is no complaint on file.

SWM

The applicant proposes to meet the requirements by using an onsite wet pond.

If further assistance is desired, please contact me at 703-324-1720.

QK/dah

cc: Steve Aitcheson, Director, Stormwater Planning Division, DPWES  
Zoning Application File



FAIRFAX COUNTY, VIRGINIA

MEMORANDUM

**TO:** Regina Coyle, Director  
Zoning Evaluation Division, DPZ

---

**FROM:** Sheng-Jieh Leu   
Facilities Planning Branch, DPZ

**FILE:** 07.50 (ZTRAILS)

**SUBJECT:** Trail Requirements\*

**REFERENCE:** SEA 81-S-053  
Tax Map: 55-3-001-31A

**DATE:** October 19, 2007

In accordance with the Countywide Trails Plan, no trails are required. Other County agencies may have additional trail comments or requirements.

**SJL**

**cc:** Pam Nee, Environment and Development Review Branch, PD, DPZ

- \* Other County agencies may have additional requirements or comments. These Trail Plan requirements in no way limit or exclude this plat from the requirements of the County Sidewalk Policy and the School Sidewalk Program, which should be fully implemented as it applies to this subdivision in locations not already accounted for by Trails Plan requirements.

# Fairfax Water

FAIRFAX COUNTY WATER AUTHORITY  
8560 Arlington Boulevard, Fairfax, Virginia 22031  
www.fairfaxwater.org

**PLANNING AND ENGINEERING  
DIVISION**

JAMIE BAIN HEDGES, P.E.  
DIRECTOR  
(703) 289-6325  
Fax (703) 289-6398

October 2, 2007

Mr. David B. Marshall, Chief  
Fairfax County Department of Planning & Zoning  
12055 Government Center Parkway, Suite 730  
Fairfax, Virginia 22035

Re: Application No. 2232-S07-10

Dear Mr. Marshall:

The following information is submitted in response to your request for a water service analysis for the above application:

1. Fairfax Water has reviewed the above referenced application and has no comments.

If you have any questions regarding this information please contact Samantha Kearney at (703) 289-6313.

Sincerely,



Traci K. Goldberg, P.E.  
Manager, Planning

Enclosure



# County of Fairfax, Virginia *Subject To Change*

## MEMORANDUM

DATE: November 6, 2007

**TO:** Barbara A. Byron, Director  
Zoning Evaluation Division  
Department of Planning and Zoning

**FROM:** Angela Kadar Rodeheaver, Chief *AKR*  
Site Analysis Section  
Department of Transportation

**FILE:** 3-5 (SE 81-S-053)

**SUBJECT:** Transportation Impact

**REFERENCE:** SEA 81-S-053; Dominion Virginia Power  
Traffic Zone: 1660  
Land Identification Map: 55-3 ((1)) 31A.

Transmitted herewith are the comments from the Department of Transportation with respect to the referenced application. These comments are based on plats made available to this office dated July 11, 2006, and revised through September 13, 2007. The applicant is seeking to collocate and install one new electric transformer within its portion of the existing substation as an extension of the existing on-site Dominion Virginia Power electric distribution facility serving this area of the County. The electric substation is an unmanned facility, having only weekly to monthly inspections.

This department has no transportation issues with this application.

AKR/LAH/lah

cc: Michelle Brickner, Director, Office of Site Development Services, DPW&ES



# COMMONWEALTH of VIRGINIA

DAVID S. EKERN, P.E.  
COMMISSIONER

## DEPARTMENT OF TRANSPORTATION

14685 Avion Parkway  
Chantilly, VA 20151  
(703) 383-VDOT (8368)

November 15, 2007

Ms. Regina Coyle  
Director of Zoning Evaluation  
Department of Planning and Zoning  
12055 Government Center Parkway, Suite 801  
Fairfax, Virginia 22035-5511

Re: Virginia Electric and Power Company  
13100 Moore Road, Clifton SEA 81-S-053  
Tax Map: 55-3 ((1))31A

Dear Ms. Coyle:

We have reviewed the referenced plan as requested and offer the following comment:

- The applicant should provide a turnaround at the end of Moore Road.

If you have any questions, please call me at (703) 383-2059.

Sincerely,

A handwritten signature in black ink, appearing to read "Peter K. Gerner".

Peter K. Gerner, P.E.  
Transportation Engineer

cc: Ms. Angela Rodeheaver



# County of Fairfax, Virginia

## MEMORANDUM

**DATE:** 20 November 2007

**TO:** Anita Capps, Senior Planner  
Tracy Struck, Senior ZED Coordinator

**FROM:** Linda Cornish Blank  
Historic Preservation Planner

**SUBJECT:** Virginia Electric and Power Company; 2232-S07-10  
Concurrent with SEA 81-S-033-1  
Tax Map 55-3 ((1)) 31A

This parcel is not included within the boundaries of a Fairfax County Historic Overlay District, is not listed on the Fairfax County Inventory of Historic Sites or documented in the Historic Resources Standing Sites Survey. No heritage resources have been identified or documented as being located on or adjacent to this parcel so as to be negatively impacted by the proposed installation of an additional electrical transformer.

The Fairfax County Comprehensive Plan, Area III, Bull Run Planning District, BR-7 Braddock Community Planning Sector, 2007 Edition, Heritage Resources, page 89 states:

“Heritage Resources

The open spaces and residential areas of this sector are particularly likely to yield heritage resources, especially from the period of the Civil War. Heritage resource survey work should precede development or redevelopment for the purpose of preservation or recovery of significant heritage resources.”

Recommendation: The Cultural Resource and Protection Section of the Fairfax County Park Authority should provide comment on this application to comply with the Comprehensive Plan language cited above.

**Department of Planning and Zoning**

Planning Division

12055 Government Center Parkway, Suite 730

Fairfax, Virginia 22035-5509

Phone 703-324-1380

Fax 703-324-3056

[www.fairfaxcounty.gov/dpz/](http://www.fairfaxcounty.gov/dpz/)



**FAIRFAX COUNTY PARK AUTHORITY**  
.....  
**M E M O R A N D U M**



**TO:** Regina M. Coyle, Director  
Zoning Evaluation Division  
Department of Planning and Zoning

**FROM:** Sandy Stallman, Branch Manager. *SS*  
Planning and Development Division

**DATE:** November 5, 2007

**SUBJECT:** SEA 81-S-053, Dominion Virginia Power  
55-3((1)) 31A

The Park Authority staff has reviewed the above referenced plan. Based on that review, staff has determined that this application bears no adverse impact on land or resources of the Park Authority.

FCPA Reviewer: S. Moulton  
DPZ Coordinator: T. Strunk

cc: Cindy Walsh, Acting Director, Resource Management Division  
Chron Binder  
File Copy



## Colonial Pipeline Company

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Steven Barnes  
Operations Manager

Phone: 410-970-2150  
Fax: 410-549-6410

January 28, 2008

Ms. Tracy Strunk  
Senior Staff Coordinator  
County of Fairfax, Virginia  
Department of Planning and Zoning  
12055 Government Center Pkwy Suite 801  
Fairfax, Virginia 22035

Tracy,

Colonial Pipeline Company owns and operates a petroleum pipeline booster station located at 13100 Moore Road in Clifton Virginia. In response to a local neighbors concern with noise levels, Colonial conducted a noise survey of the facility to identify and address any potential issues.

The most significant item identified was the # 3 pump unit which produced excessive noise during operation. The pump was removed from service and rebuilt. Subsequent testing found the rebuilt pump to be satisfactory; however the 6,000 hp electric motor coupled to the pump, exceeded noise threshold limits. The pump / motor were taken out of service to address the issue until long term solutions were implemented.

Colonial is preparing to take the next steps toward a permanent solution, which will involve relocating the # 3 pump to the # 2 motor. This new configuration should meet everyone's requirements to safely operate the system within noise level parameters. The target schedule is the first quarter of this year, followed by subsequent testing of the entire facility to ensure compliance.

Our office will contact Bruce Miller when final testing is conducted.

Sincerely,

Steve Barnes  
Operations Manager

CC: Todd McClellan – Colonial Pipeline Co.  
Bruce Miller – Fairfax County

**9-006 General Standards**

In addition to the specific standards set forth hereinafter with regard to particular special exception uses, all such uses shall satisfy the following general standards:

1. The proposed use at the specified location shall be in harmony with the adopted comprehensive plan.
2. The proposed use shall be in harmony with the general purpose and intent of the applicable zoning district regulations.
3. The proposed use shall be such that it will be harmonious with and will not adversely affect the use or development of neighboring properties in accordance with the applicable zoning district regulations and the adopted comprehensive plan. The location, size and height of buildings, structures, walls and fences, and the nature and extent of screening, buffering and landscaping shall be such that the use will not hinder or discourage the appropriate development and use of adjacent or nearby land and/or buildings or impair the value thereof.
4. The proposed use shall be such that pedestrian and vehicular traffic associated with such use will not be hazardous or conflict with the existing and anticipated traffic in the neighborhood.
5. In addition to the standards which may be set forth in this Article for a particular category or use, the Board shall require landscaping and screening in accordance with the provisions of Article 13.
6. Open space shall be provided in an amount equivalent to that specified for the zoning district in which the proposed use is located.
7. Adequate utility, drainage, parking, loading and other necessary facilities to serve the proposed use shall be provided. Parking and loading requirements shall be in accordance with the provisions of Article 11.
8. Signs shall be regulated by the provisions of Article 12; however, the Board may impose more strict requirements for a given use than those set forth in this Ordinance.

**9-104 Standards for all Category 1 Uses**

In addition to the general standards set forth in Sect. 006 above, all Category 1 special exception uses shall satisfy the following standards:

1. Category 1 special exception uses shall not have to comply with the lot size requirements or the bulk regulations set forth for the zoning district in which located.
2. No land or building in any district other than the I-5 and I-6 District shall be used for the storage of materials or equipment, or for the repair or servicing of vehicles or equipment, or for the parking of vehicles except those needed by employees connected with the operation of the immediate facility.
3. If the proposed location of a Category 1 use is in an R district, there shall be a finding that there is no alternative site available for such use in a C or I district within 500 feet of the proposed location; except that in the case of electric transformer stations and telecommunication central offices, there shall be a finding that there is no alternative site available in a C or I district within a distance of one (1) mile, unless there is a substantial showing that it is impossible for satisfactory service to be rendered from an available location in such C or I district.
4. Before establishment, all uses, including modifications or alterations to existing uses, shall be subject to the provisions of Article 17, Site Plans.



## GLOSSARY

This Glossary is provided to assist the public in understanding the staff evaluation and analysis of development proposals. It should not be construed as representing legal definitions. Refer to the Fairfax County Zoning Ordinance, Comprehensive Plan or Public Facilities Manual for additional information.

**ABANDONMENT:** Refers to road or street abandonment, an action taken by the Board of Supervisors, usually through the public hearing process, to abolish the public's right-of-passage over a road or road right-of way. Upon abandonment, the right-of-way automatically reverts to the underlying fee owners. If the fee to the owner is unknown, Virginia law presumes that fee to the roadbed rests with the adjacent property owners if there is no evidence to the contrary.

**ACCESSORY DWELLING UNIT (OR APARTMENT):** A secondary dwelling unit established in conjunction with and clearly subordinate to a single family detached dwelling unit. An accessory dwelling unit may be allowed if a special permit is granted by the Board of Zoning Appeals (BZA). Refer to Sect. 8-918 of the Zoning Ordinance.

**AFFORDABLE DWELLING UNIT (ADU) DEVELOPMENT:** Residential development to assist in the provision of affordable housing for persons of low and moderate income in accordance with the affordable dwelling unit program and in accordance with Zoning Ordinance regulations. Residential development which provides affordable dwelling units may result in a density bonus (see below) permitting the construction of additional housing units. See Part 8 of Article 2 of the Zoning Ordinance.

**AGRICULTURAL AND FORESTAL DISTRICTS:** A land use classification created under Chapter 114 or 115 of the Fairfax County Code for the purpose of qualifying landowners who wish to retain their property for agricultural or forestal use for use/value taxation pursuant to Chapter 58 of the Fairfax County Code.

**BARRIER:** A wall, fence, earthen berm, or plant materials which may be used to provide a physical separation between land uses. Refer to Article 13 of the Zoning Ordinance for specific barrier requirements.

**BEST MANAGEMENT PRACTICES (BMPs):** Stormwater management techniques or land use practices that are determined to be the most effective, practicable means of preventing and/or reducing the amount of pollution generated by nonpoint sources in order to improve water quality.

**BUFFER:** Graduated mix of land uses, building heights or intensities designed to mitigate potential conflicts between different types or intensities of land uses; may also provide for a transition between uses. A landscaped buffer may be an area of open, undeveloped land and may include a combination of fences, walls, berms, open space and/or landscape plantings. A buffer is not necessarily coincident with transitional screening.

**CHESAPEAKE BAY PRESERVATION ORDINANCE:** Regulations which the State has mandated must be adopted to protect the Chesapeake Bay and its tributaries. These regulations must be incorporated into the comprehensive plans, zoning ordinances and subdivision ordinances of the affected localities. Refer to Chesapeake Bay Preservation Act, Va. Code Section 10.1-2100 et seq and VR 173-02-01, Chesapeake Bay Preservation Area Designation and Management Regulations.

**CLUSTER DEVELOPMENT:** Residential development in which the lots are clustered on a portion of a site so that significant environmental/historical/cultural resources may be preserved or recreational amenities provided. While smaller lot sizes are permitted in a cluster subdivision to preserve open space, the overall density cannot exceed that permitted by the applicable zoning district. See Sect. 2-421 and Sect. 9-615 of the Zoning Ordinance.

**COUNTY 2232 REVIEW PROCESS:** A public hearing process pursuant to Sect. 15.2-2232 (Formerly Sect. 15.1-456) of the Virginia Code which is used to determine if a proposed public facility not shown on the adopted Comprehensive Plan is in substantial accord with the plan. Specifically, this process is used to determine if the general or approximate location, character and extent of a proposed facility is in substantial accord with the Plan.

**dBA:** The momentary magnitude of sound weighted to approximate the sensitivity of the human ear to certain frequencies; the dBA value describes a sound at a given instant, a maximum sound level or a steady state value. See also Ldn.

**DENSITY:** Number of dwelling units (du) divided by the gross acreage (ac) of a site being developed in residential use; or, the number of dwelling units per acre (du/ac) except in the PRC District when density refers to the number of persons per acre.

**DENSITY BONUS:** An increase in the density otherwise allowed in a given zoning district which may be granted under specific provisions of the Zoning Ordinance when a developer provides excess open space, recreation facilities, or affordable dwelling units (ADUs), etc.

**DEVELOPMENT CONDITIONS:** Terms or conditions imposed on a development by the Board of Supervisors (BOS) or the Board of Zoning Appeals (BZA) in connection with approval of a special exception, special permit or variance application or rezoning application in a "P" district. Conditions may be imposed to mitigate adverse impacts associated with a development as well as secure compliance with the Zoning Ordinance and/or conformance with the Comprehensive Plan. For example, development conditions may regulate hours of operation, number of employees, height of buildings, and intensity of development.

**DEVELOPMENT PLAN:** A graphic representation which depicts the nature and character of the development proposed for a specific land area: information such as topography, location and size of proposed structures, location of streets trails, utilities, and storm drainage are generally included on a development plan. A development plan is a submission requirement for rezoning to the PRC District. A **GENERALIZED DEVELOPMENT PLAN (GDP)** is a submission requirement for a rezoning application for all conventional zoning districts other than a P District. A development plan submitted in connection with a special exception (SE) or special permit (SP) is generally referred to as an SE or SP plat. A **CONCEPTUAL DEVELOPMENT PLAN (CDP)** is a submission requirement when filing a rezoning application for a P District other than the PRC District; a CDP characterizes in a general way the planned development of the site. A **FINAL DEVELOPMENT PLAN (FDP)** is a submission requirement following the approval of a conceptual development plan and rezoning application for a P District other than the PRC District; an FDP further details the planned development of the site. See Article 16 of the Zoning Ordinance.

**EASEMENT:** A right to or interest in property owned by another for a specific and limited purpose. Examples: access easement, utility easement, construction easement, etc. Easements may be for public or private purposes.

**ENVIRONMENTAL QUALITY CORRIDORS (EQCs):** An open space system designed to link and preserve natural resource areas, provide passive recreation and protect wildlife habitat. The system includes stream valleys, steep slopes and wetlands. For a complete definition of EQCs, refer to the Environmental section of the Policy Plan for Fairfax County contained in Vol. 1 of the Comprehensive Plan.

**ERODIBLE SOILS:** Soils that wash away easily, especially under conditions where stormwater runoff is inadequately controlled. Silt and sediment are washed into nearby streams, thereby degrading water quality.

**FLOODPLAIN:** Those land areas in and adjacent to streams and watercourses subject to periodic flooding; usually associated with environmental quality corridors. The 100 year floodplain drains 70 acres or more of land and has a one percent chance of flood occurrence in any given year.

**FLOOR AREA RATIO (FAR):** An expression of the amount of development intensity (typically, non-residential uses) on a specific parcel of land. FAR is determined by dividing the total square footage of gross floor area of buildings on a site by the total square footage of the site itself.

**FUNCTIONAL CLASSIFICATION:** A system for classifying roads in terms of the character of service that individual facilities are providing or are intended to provide, ranging from travel mobility to land access. Roadway system functional classification elements include Freeways or Expressways which are limited access highways, Other Principal (or Major) Arterials, Minor Arterials, Collector Streets, and Local Streets. Principal arterials are designed to accommodate travel; access to adjacent properties is discouraged. Minor arterials are designed to serve both through traffic and local trips. Collector roads and streets link local streets and properties with the arterial network. Local streets provide access to adjacent properties.

**GEOTECHNICAL REVIEW:** An engineering study of the geology and soils of a site which is submitted to determine the suitability of a site for development and recommends construction techniques designed to overcome development on problem soils, e.g., marine clay soils.

**HYDROCARBON RUNOFF:** Petroleum products, such as motor oil, gasoline or transmission fluid deposited by motor vehicles which are carried into the local storm sewer system with the stormwater runoff, and ultimately, into receiving streams; a major source of non-point source pollution. An oil-grit separator is a common hydrocarbon runoff reduction method.

**IMPERVIOUS SURFACE:** Any land area covered by buildings or paved with a hard surface such that water cannot seep through the surface into the ground.

**INFILL:** Development on vacant or underutilized sites within an area which is already mostly developed in an established development pattern or neighborhood.

**INTENSITY:** The magnitude of development usually measured in such terms as density, floor area ratio, building height, percentage of impervious surface, traffic generation, etc. Intensity is also based on a comparison of the development proposal against environmental constraints or other conditions which determine the carrying capacity of a specific land area to accommodate development without adverse impacts.

**Ldn:** Day night average sound level. It is the twenty-four hour average sound level expressed in A-weighted decibels; the measurement assigns a "penalty" to night time noise to account for night time sensitivity. Ldn represents the total noise environment which varies over time and correlates with the effects of noise on the public health, safety and welfare.

**LEVEL OF SERVICE (LOS):** An estimate of the effectiveness of a roadway to carry traffic, usually under anticipated peak traffic conditions. Level of Service efficiency is generally characterized by the letters A through F, with LOS-A describing free flow traffic conditions and LOS-F describing jammed or grid-lock conditions.

**MARINE CLAY SOILS:** Soils that occur in widespread areas of the County generally east of Interstate 95. Because of the abundance of shrink-swell clays in these soils, they tend to be highly unstable. Many areas of slope failure are evident on natural slopes. Construction on these soils may initiate or accelerate slope movement or slope failure. The shrink-swell soils can cause movement in structures, even in areas of flat topography, from dry to wet seasons resulting in cracked foundations, etc. Also known as slippage soils.

**OPEN SPACE:** That portion of a site which generally is not covered by buildings, streets, or parking areas. Open space is intended to provide light and air; open space may function as a buffer between land uses or for scenic, environmental, or recreational purposes.

**OPEN SPACE EASEMENT:** An easement usually granted to the Board of Supervisors which preserves a tract of land in open space for some public benefit in perpetuity or for a specified period of time. Open space easements may be accepted by the Board of Supervisors, upon request of the land owner, after evaluation under criteria established by the Board. See Open Space Land Act, Code of Virginia, Sections 10.1-1700, et seq.

**P DISTRICT:** A "P" district refers to land that is planned and/or developed as a Planned Development Housing (PDH) District, a Planned Development Commercial (PDC) District or a Planned Residential Community (PRC) District. The PDH, PDC and PRC Zoning Districts are established to encourage innovative and creative design for land development; to provide ample and efficient use of open space; to promote a balance in the mix of land uses, housing types, and intensity of development; and to allow maximum flexibility in order to achieve excellence in physical, social and economic planning and development of a site. Refer to Articles 6 and 16 of the Zoning Ordinance.

**PROFFER:** A written condition, which, when offered voluntarily by a property owner and accepted by the Board of Supervisors in a rezoning action, becomes a legally binding condition which is in addition to the zoning district regulations applicable to a specific property. Proffers are submitted and signed by an owner prior to the Board of Supervisors public hearing on a rezoning application and run with the land. Once accepted by the Board, proffers may be modified only by a proffered condition amendment (PCA) application or other zoning action of the Board and the hearing process required for a rezoning application applies. See Sect. 15.2-2303 (formerly 15.1-491) of the Code of Virginia.

**PUBLIC FACILITIES MANUAL (PFM):** A technical text approved by the Board of Supervisors containing guidelines and standards which govern the design and construction of site improvements incorporating applicable Federal, State and County Codes, specific standards of the Virginia Department of Transportation and the County's Department of Public Works and Environmental Services.

**RESOURCE MANAGEMENT AREA (RMA):** That component of the Chesapeake Bay Preservation Area comprised of lands that, if improperly used or developed, have a potential for causing significant water quality degradation or for diminishing the functional value of the Resource Protection Area. See Fairfax County Code, Ch. 118, Chesapeake Bay Preservation Ordinance.

**RESOURCE PROTECTION AREA (RPA):** That component of the Chesapeake Bay Preservation Area comprised of lands at or near the shoreline or water's edge that have an intrinsic water quality value due to the ecological and biological processes they perform or are sensitive to impacts which may result in significant degradation of the quality of state waters. In their natural condition, these lands provide for the removal, reduction or assimilation of sediments from runoff entering the Bay and its tributaries, and minimize the adverse effects of human activities on state waters and aquatic resources. New development is generally discouraged in an RPA. See Fairfax County Code, Ch. 118, Chesapeake Bay Preservation Ordinance.

**SITE PLAN:** A detailed engineering plan, to scale, depicting the development of a parcel of land and containing all information required by Article 17 of the Zoning Ordinance. Generally, submission of a site plan to DPWES for review and approval is required for all residential, commercial and industrial development except for development of single family detached dwellings. The site plan is required to assure that development complies with the Zoning Ordinance.

**SPECIAL EXCEPTION (SE) / SPECIAL PERMIT (SP):** Uses, which by their nature, can have an undue impact upon or can be incompatible with other land uses and therefore need a site specific review. After review, such uses may be allowed to locate within given designated zoning districts if appropriate and only under special controls, limitations, and regulations. A special exception is subject to public hearings by the Planning Commission and Board of Supervisors with approval by the Board of Supervisors; a special permit requires a public hearing and approval by the Board of Zoning Appeals. Unlike proffers which are voluntary, the Board of Supervisors or BZA may impose reasonable conditions to assure, for example, compatibility and safety. See Article 8, Special Permits and Article 9, Special Exceptions, of the Zoning Ordinance.

**STORMWATER MANAGEMENT:** Engineering practices that are incorporated into the design of a development in order to mitigate or abate adverse water quantity and water quality impacts resulting from development. Stormwater management systems are designed to slow down or retain runoff to re-create, as nearly as possible, the pre-development flow conditions.

**SUBDIVISION PLAT:** The engineering plan for a subdivision of land submitted to DPWES for review and approved pursuant to Chapter 101 of the County Code.

**TRANSPORTATION DEMAND MANAGEMENT (TDM):** Actions taken to reduce single occupant vehicle automobile trips or actions taken to manage or reduce overall transportation demand in a particular area.

**TRANSPORTATION SYSTEM MANAGEMENT (TSM) PROGRAMS:** This term is used to describe a full spectrum of actions that may be applied to improve the overall efficiency of the transportation network. TSM programs usually consist of low-cost alternatives to major capital expenditures, and may include parking management measures, ridesharing programs, flexible or staggered work hours, transit promotion or operational improvements to the existing roadway system. TSM includes Transportation Demand Management (TDM) measures as well as H.O.V. use and other strategies associated with the operation of the street and transit systems.

**URBAN DESIGN:** An aspect of urban or suburban planning that focuses on creating a desirable environment in which to live, work and play. A well-designed urban or suburban environment demonstrates the four generally accepted principles of design: clearly identifiable function for the area; easily understood order; distinctive identity; and visual appeal.

**VACATION:** Refers to vacation of street or road as an action taken by the Board of Supervisors in order to abolish the public's right-of-passage over a road or road right-of-way dedicated by a plat of subdivision. Upon vacation, title to the road right-of-way transfers by operation of law to the owner(s) of the adjacent properties within the subdivision from whence the road/road right-of-way originated.

**VARIANCE:** An application to the Board of Zoning Appeals which seeks relief from a specific zoning regulation such as lot width, building height, or minimum yard requirements, among others. A variance may only be granted by the Board of Zoning Appeals through the public hearing process and upon a finding by the BZA that the variance application meets the required Standards for a Variance set forth in Sect. 18-404 of the Zoning Ordinance.

**WETLANDS:** Land characterized by wetness for a portion of the growing season. Wetlands are generally delineated on the basis of physical characteristics such as soil properties indicative of wetness, the presence of vegetation with an affinity for water, and the presence or evidence of surface wetness or soil saturation. Wetland environments provide water quality improvement benefits and are ecologically valuable. Development activity in wetlands is subject to permitting processes administered by the U.S. Army Corps of Engineers

**TIDAL WETLANDS:** Vegetated and nonvegetated wetlands as defined in Chapter 116 Wetlands Ordinance of the Fairfax County Code: includes tidal shores and tidally influenced embayments, creeks, and tributaries to the Occoquan and Potomac Rivers. Development activity in tidal wetlands may require approval from the Fairfax County Wetlands Board.

#### Abbreviations Commonly Used in Staff Reports

A&F	Agricultural & Forestal District	PDH	Planned Development Housing
ADU	Affordable Dwelling Unit	PFM	Public Facilities Manual
ARB	Architectural Review Board	PRC	Planned Residential Community
BMP	Best Management Practices	RC	Residential-Conservation
BOS	Board of Supervisors	RE	Residential Estate
BZA	Board of Zoning Appeals	RMA	Resource Management Area
COG	Council of Governments	RPA	Resource Protection Area
CBC	Community Business Center	RUP	Residential Use Permit
CDP	Conceptual Development Plan	RZ	Rezoning
CRD	Commercial Revitalization District	SE	Special Exception
DOT	Department of Transportation	SEA	Special Exception Amendment
DP	Development Plan	SP	Special Permit
DPWES	Department of Public Works and Environmental Services	TDM	Transportation Demand Management
DPZ	Department of Planning and Zoning	TMA	Transportation Management Association
DU/AC	Dwelling Units Per Acre	TSA	Transit Station Area
EQC	Environmental Quality Corridor	TSM	Transportation System Management
FAR	Floor Area Ratio	UP & DD	Utilities Planning and Design Division, DPWES
FDP	Final Development Plan	VC	Variance
GDP	Generalized Development Plan	VDOT	Virginia Dept. of Transportation
GFA	Gross Floor Area	VPD	Vehicles Per Day
HC	Highway Corridor Overlay District	VPH	Vehicles per Hour
HCD	Housing and Community Development	WMATA	Washington Metropolitan Area Transit Authority
LOS	Level of Service	WS	Water Supply Protection Overlay District
Non-RUP	Non-Residential Use Permit	ZAD	Zoning Administration Division, DPZ
OSDS	Office of Site Development Services, DPWES	ZED	Zoning Evaluation Division, DPZ
PCA	Proffered Condition Amendment	ZPRB	Zoning Permit Review Branch
PD	Planning Division		
PDC	Planned Development Commercial		