

**To:** Jared B. McPherson, Dominion Power  
**From:** Bill Kaufell, Skelly and Loy, Inc.  
**Date:** 6/10/2022  
**Re:** Hollymead Substation, Albemarle County, Va. – Sound Survey Summary  
Project #JN227120

Dear Mr. McPherson:

Skelly and Loy, A Terracon Company (Terracon) is pleased to summarize the results of the sound monitoring and modeling completed for Dominion's proposed expansion of the Hollymead substation, Albemarle County, Virginia. Based on the ambient monitoring data and the noise modeling performed for the substation expansion, the noise associated with the substation will be below ambient levels.

## **A. PROJECT INFORMATION**

The project area is in Charlottesville, Virginia, approximately 1 mile east of Charlottesville-Albemarle Airport. The property is located ¼ mile east of the intersection of Route 29 and Timberwood Boulevard. The project consists of the expansion of an electrical substation. The analysis involved obtaining noise measurements around the perimeter of the property at 100' increments to document the existing ambient sound levels. In addition, noise modeling was completed to assess the future sound levels with the expansion of the substation.

## **B. AMBIENT SOUND MEASUREMENTS**

Ambient sound measurements around the perimeter of the property were taken on May 11, 2022. Thirty-one locations were measured for a short-term duration during daytime hours and two locations were analyzed for a 24-hour duration to determine the daily fluctuation in sound and nighttime conditions.

The locations of sound measurement sites around the perimeter of the property are illustrated on Figure 1. The short-term measured sound levels are outlined below in Table 1 and range from 43-60 dBA. The ambient sound level is elevated when the locations are near local roadways such as State Route 1722 (i.e., Stakes 1 and 31).

The results of the two 24-hour duration sound measurements are presented in graphical format below. Background levels at the long-term monitors fluctuated between 45-55 dBA during the day and were generally 45 dBA during the nighttime hours. The measurement locations were influenced by a mix of noise sources including wildlife (birds), human activity from homes along Decatur Drive, and audible construction noise from development along Landon Lane. The construction noise emissions on the second day (May 12) of measurements were elevated beginning approximately at 6AM when site work commenced.

**Sound Assessment**

Dominion Hollymead Substation ■ Charlottesville, Va

June 10, 2022 ■ Terracon Project No JN227120

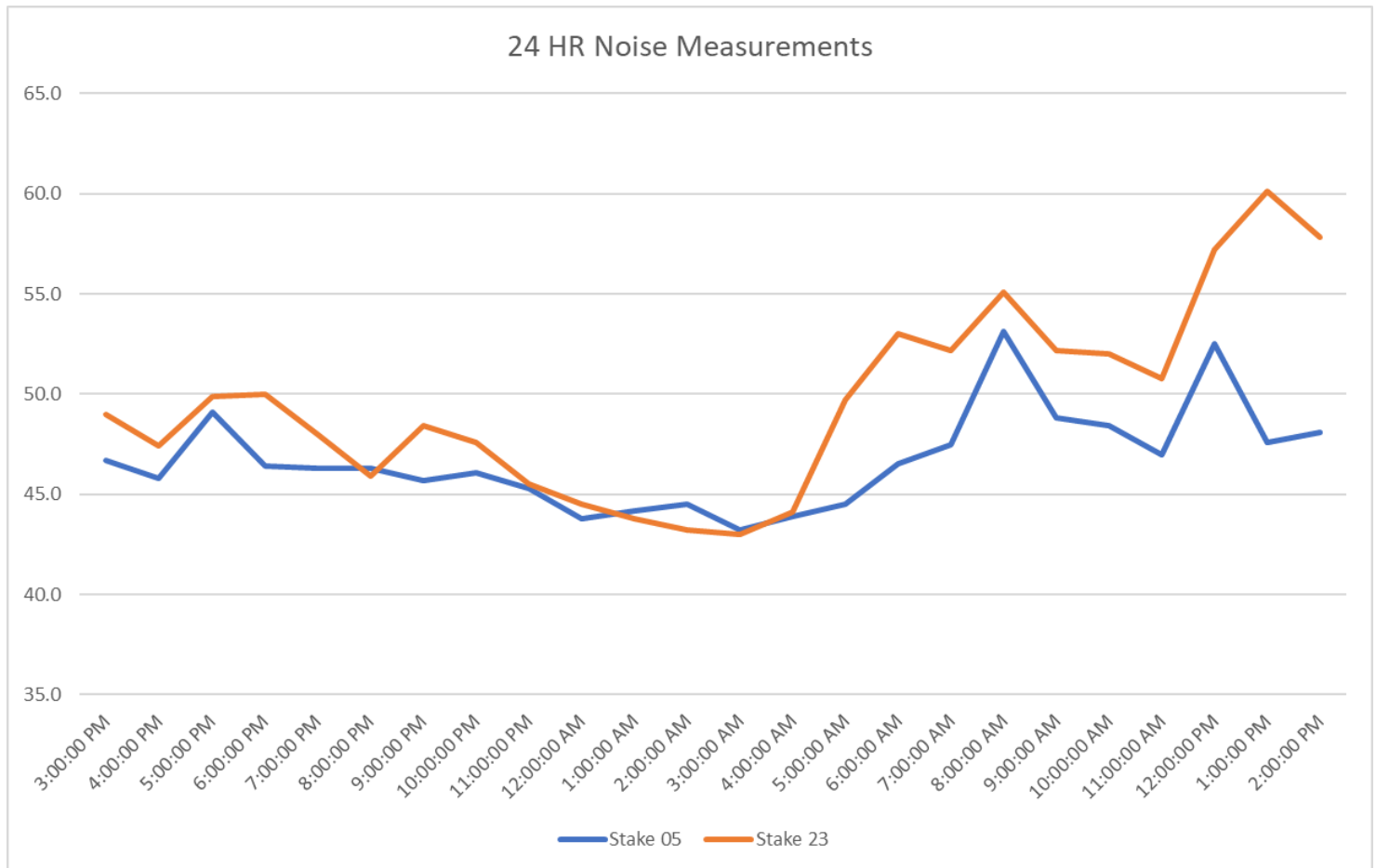
**Table 1 – Perimeter Sound Monitoring Data**

<b>Hollymead</b>			
<b>Location</b>	<b>Sound Level Lav in dBA</b>	<b>Location</b>	<b>Sound Level Lav in dBA</b>
1	57	17	46
2	53	18	46
3	51	19	51
4	53	20	45
5	48	21	50
6	46	22	47
7	48	23	48
8	48	24	51
9	47	25	55
10	43	26	56
11	47	27	56
12	46	28	56
13	48	29	55
14	46	30	49
15	47	31	60
16	46		

## Sound Assessment

Dominion Hollymead Substation ■ Charlottesville, Va

June 10, 2022 ■ Terracon Project No JN227120



## C. SOUND MODELING RESULTS

The future acoustical environment for the proposed sources was simulated using the SoundPLAN v.4.1 software. SoundPLAN implements ISO-9613-2 1996, the international standard method for calculating sound during propagation outdoors in order to predict the levels of environmental noise at a distance from a variety of sources. A three-dimensional topographical model was created to assess the sound propagation of the proposed facility. A digital terrain model was created using existing ground elevations and contours obtained from topographic mapping derived from USGS mapping at 1-meter intervals. Ground zones were established for soft and hard terrain, as well as tree zones. The substation sound source data was obtained from sound data provided for the transformers (Attachment 1).

SoundPLAN is capable of either predicting A-weighted sound levels at discrete receptors (single locations) or calculating sound contours given the three-dimensional terrain. Sound level projections were calculated for all sensitive receptor locations (20 receptors) within close proximity to the project. In addition, sound contour modeling was used for the proposed site to graphically display the future acoustical environment and illustrate the influence of the facility on adjoining properties.

## Sound Assessment

Dominion Hollymead Substation ■ Charlottesville, Va  
June 10, 2022 ■ Terracon Project No JN227120

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The sensitive sound modeling locations, source locations and calculation area are located on Figure 2. The sound level projections for each of the sensitive receptors outlined on Figure 2 are found in Table 2. The visual results of the SoundPLAN sound dispersion model are depicted on Figure 3. Sound level contributions associated with the project at the sensitive receptor locations ranged from 34 to 47 dBA.

Based on the ambient monitoring data and the noise modeling performed for the substation expansion, the noise associated with the substation will be below ambient levels for most of the sites analyzed. Noise modeling has indicated the levels at the residences located to the north of the expansion are within 1 dBA of the ambient values measured.

Sincerely,

**Terracon Consultants, Inc.**

Bill Kaufell  
Skelly and Loy, Inc., A Terracon Company  
Director of Environmental Acoustics

Paul DeAngelo  
Skelly and Loy, Inc., A Terracon Company  
Senior Principal / Department Manager

Enclosures: Table 2: Sensitive Receptor Modeling Results  
Figure 1: Ambient Sound Monitoring Locations  
Figure 2: Sensitive Receptor Modeling Locations  
Figure 3: Sound Contour Modeling  
Attachment 1: Substation Sound Data

## **ENCLOSURES**

**Table 2: Sensitive Receptor Modeling Results**

**Figure 1: Ambient Sound Monitoring Locations**

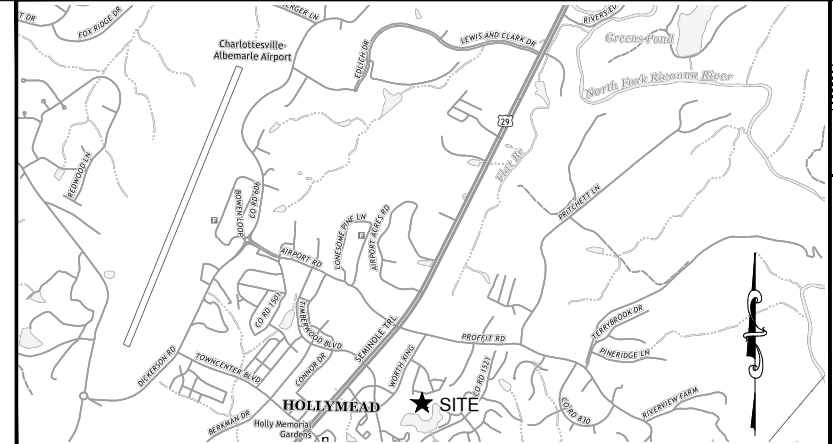
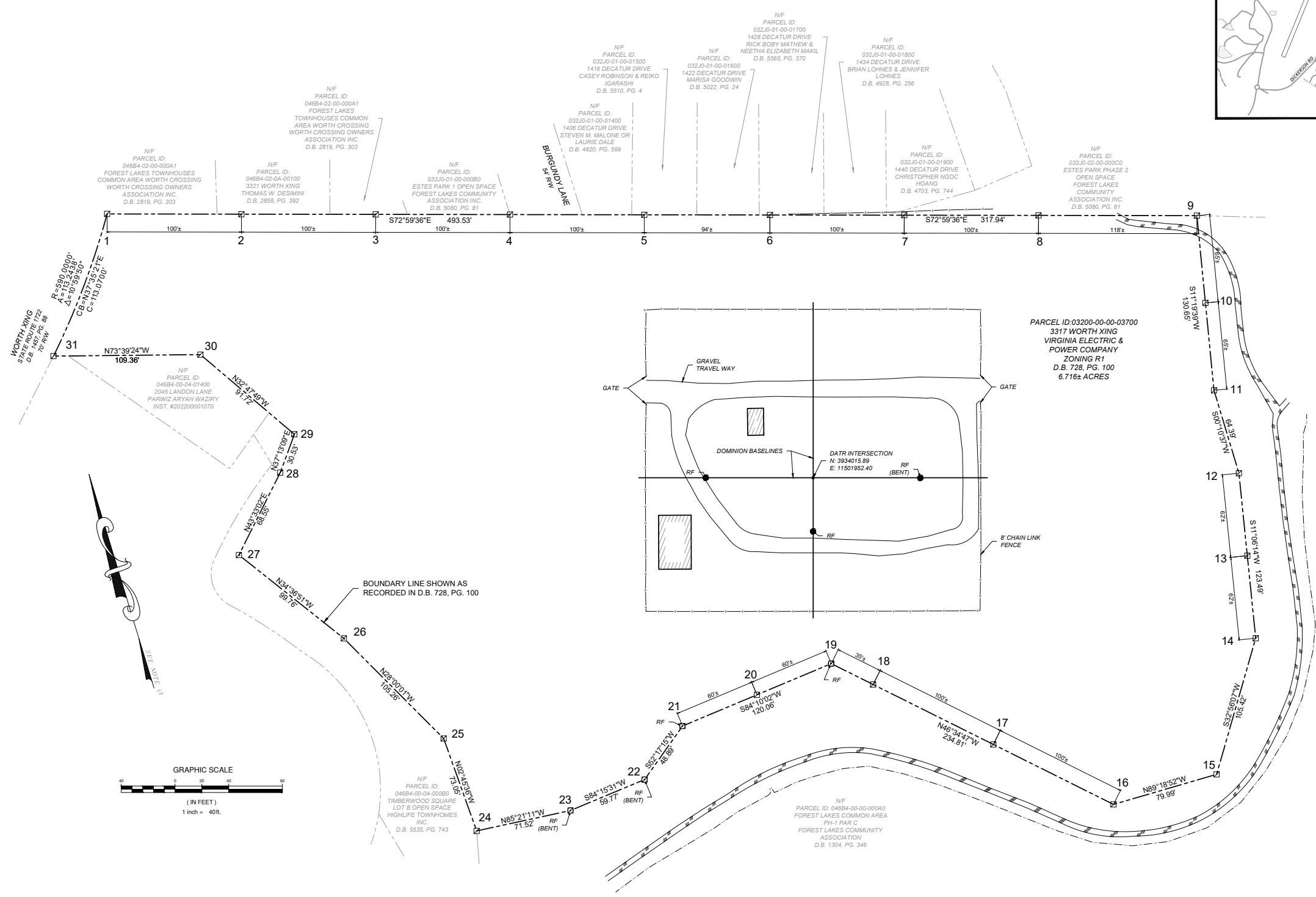
**Figure 2: Sensitive Receptor Modeling Locations**

**Figure 3: Sound Contour Modeling**

**Table 2 Sensitive Receptor Modeling Locations**

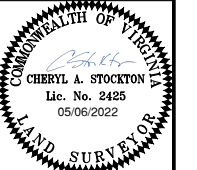
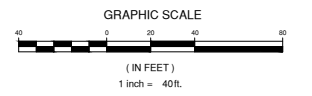
Receiver ID	Receiver Location				Sound Level dB(A)
	X (m)	Y (m)	Floor	Elevation (m)	
1	3505750	1199175	GF	158	41.6
2	3505786	1199161	GF	158	44.9
3	3505815	1199152	GF	157	46.7
4	3505858	1199140	GF	154	42.2
5	3505898	1199149	GF	149	34.2
6	3505940	1199094	GF	148	40.4
7	3505945	1199059	GF	148	41.9
8	3505958	1199038	GF	148	40.3
9	3505939	1198983	GF	148	38.2
10	3505980	1199008	GF	149	40.0
11	3505775	1198917	GF	150	38.4

Figure 1 - Ambient Sound Monitoring Locations



- NOTES:**
- 1.) SOURCE OF MERIDIAN: NAD83 BASED UPON A TOPOGRAPHIC SURVEY OF HOLLYMEADE SUBSTATION BY RICHARD L. FRALIN, L.S. DATED 04/17/2013 PROVIDED BY DOMINION ENERGY.
  - 2.) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE COMMITMENT OR TITLE REPORT AND ALL EASEMENTS AND ENCUMBRANCES THAT MIGHT BE DISCLOSED IN A TITLE SEARCH MAY NOT BE SHOWN.
  - 3.) THIS SURVEY WAS PREPARED FOR DOMINION ENERGY. DRAPER ADEN ASSOCIATES ASSUMES NO LIABILITY FOR REUSE OR MODIFICATION OF THIS DOCUMENT.
  - 4.) PROPERTY LINES SHOWN HEREON ARE COMPILED FROM RECORD INFORMATION AND A CURRENT FIELD BOUNDARY SURVEY WAS NOT PERFORMED NOR REQUESTED.
  - 5.) THE PROPERTY SHOWN HEREON IS LOCATED IN FLOOD ZONE X BASED ON A SCALED LOCATION ON FIRM PANEL #51003C0145D EFFECTIVE DATE 02/04/2005. THIS FLOOD DETERMINATION IS NOT A RECOMMENDATION BY DRAPER ADEN ASSOCIATES TO NOT PURCHASE OR PURCHASE FLOOD INSURANCE COVERAGE AND DOES NOT IMPLY THAT THE REFERENCED PROPERTY WILL OR WILL NOT BE FREE FROM FLOOD DAMAGE.
  - 6.) MATTERS PERTAINING TO ARCHEOLOGICAL OR HISTORIC FEATURES, WETLANDS OR FLOOD CONDITIONS, IF ANY, HAVE NOT BEEN ADDRESSED AS PART OF THIS SURVEY.
  - 7.) THIS SURVEY DOES NOT SHOW ALL SITE IMPROVEMENTS. FENCE AND BUILDINGS SHOWN FOR GRAPHIC REFERENCE ONLY.
  - 8.) SOUNDING STATIONS WERE STAKED MAY 5-6, 2022.

- LEGEND**
- PROPERTY LINE
  - - - ADJACENT PROPERTY LINE
  - ==== ASPHALT
  - ▨ BUILDING
  - FENCE (AS NOTED)
  - EDGE OF WATER
  - BASELINE ROD FOUND
  - ROD FOUND
  - SOUND MONITORING STATION LOCATION  
4' STAKE WITH BLUE FLAGGING



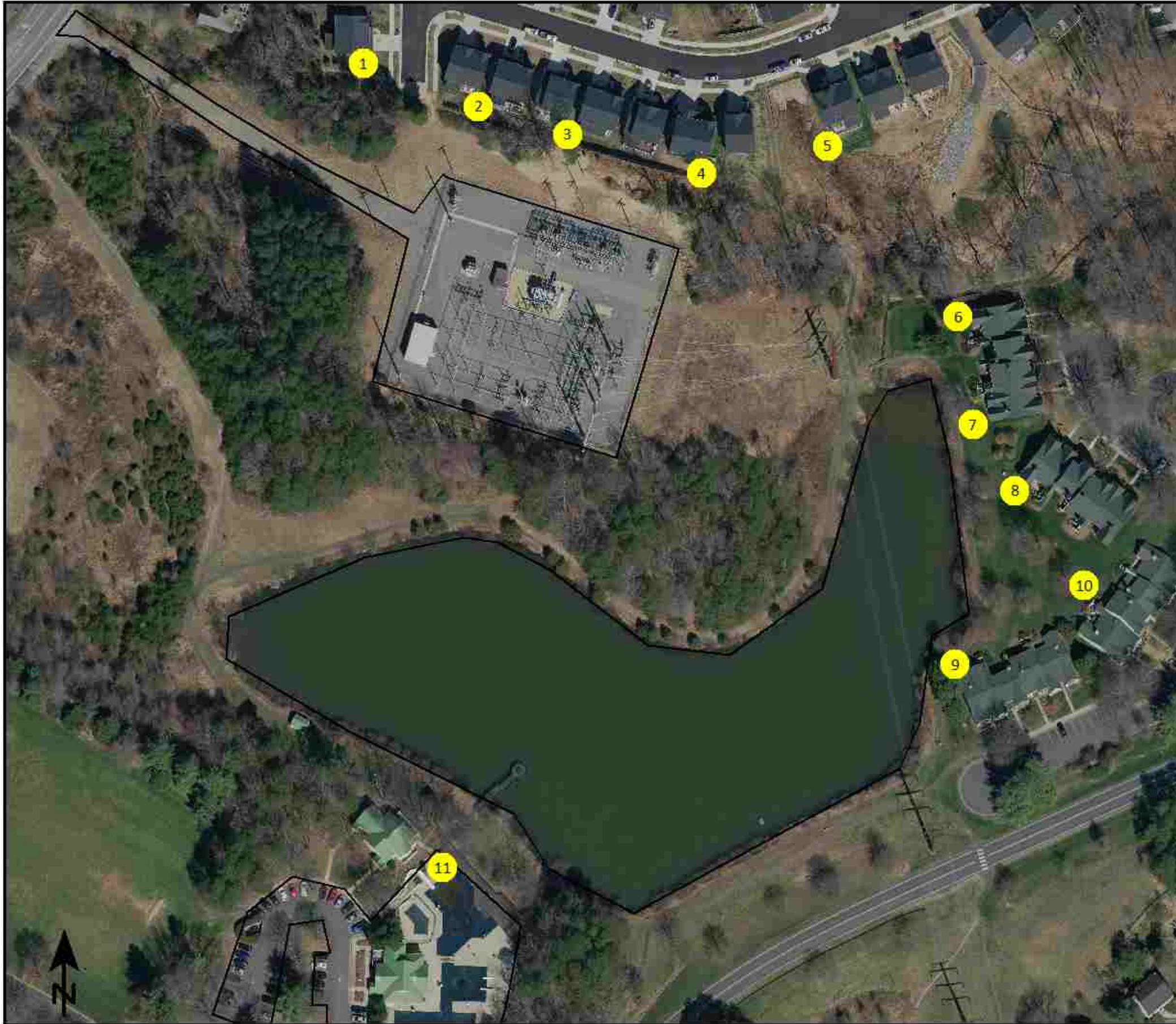
**Draper Aden Associates**  
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- Virginia Beach, VA
- Richmond, VA
- Blacksburg, VA
- Hampton Roads, VA

STUDY MAP - SOUND STAKE LOCATION  
**HOLLYMEADE SUBSTATION**  
COUNTY OF ALBEMARLE, VIRGINIA

REVISIONS	
DESIGNED BY:	N/A
DRAWN BY:	VDV
CHECKED BY:	CAS
SCALE:	1" = 30'
DATE:	05/04/2022
PROJECT NUMBER:	2200533
<b>1 OF 1</b>	



# Dominion Power Hollymead Substation

Figure 2  
Sound Modeling Locations

### Signs and symbols

 Receiver

1 : 1820



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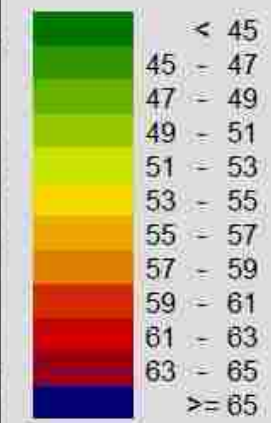


# Dominion Power Hollymead Substation

Figure 3  
Sound Dispersion Contouring

Signs and symbols

Levels in dB(A)



1 : 1820



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# **ATTACHMENT 1**

**Substation Sound Data**

# Test Report

## of transformer

Type: DO 125000/220E

Ser.No.: N008002101



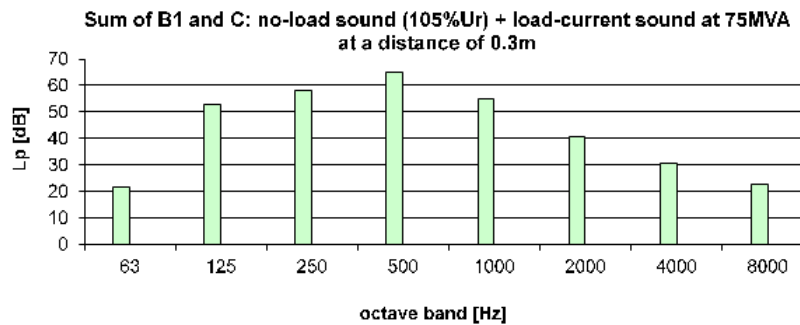
<b>Purchaser</b>	<b>Dominion Resources Inc.</b>
<b>Order no.:</b>	<b>N008002</b>
<b>Purchase Order:</b>	<b>4500177574</b>
<b>Dominion Ref:</b>	<b>T5096</b>

ISO 9001 CERTIFIED	Siemens Aktiengesellschaft Österreich / Siemensstraße 90, A-1210 Wien Transformers Linz Kraußstraße 7 A-4020 Linz, Austria Tel. +43 (0) 51707 - 0 Fax +43 (0) 51707 - 55455	Firmenbuchnummer / Registered: FN 60562m Handelsgericht / Commercial Court Wien, Austria DVR 0001708 UID - ATU14715405
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<b>Sound measurement – evaluation total sound</b> Transformer Type: DO 125000/220E      Ser. no.: N008002101	Test department Linz EQP-PB
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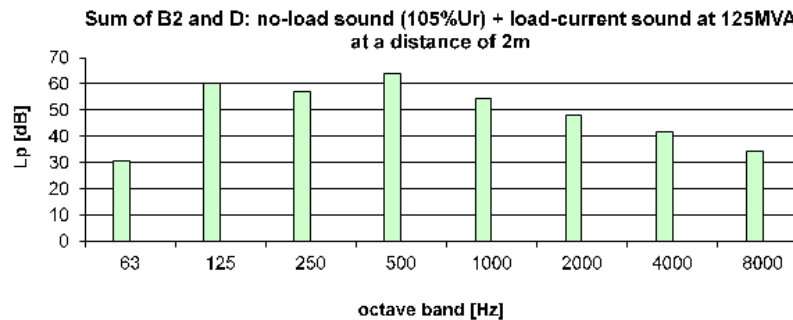
Total sound 75MVA at 105%Ur

Frequency (octave band)	no-load sound (105% Ur) + load-current sound at 75MVA		
[Hz]	[dB]		
63	21,6		
125	52,9		
250	58,4		
500	65,2		
1000	54,9		
2000	40,7		
4000	30,4		
8000	22,7		
Sound pressure level LpA		67dB	guaranteed: 68dB



Total sound 125MVA at 105%Ur

Frequency (octave band)	no-load sound (105% Ur) + load-current sound at 125MVA		
[Hz]	[dB]		
63	30,6		
125	60,1		
250	57,3		
500	64,1		
1000	54,4		
2000	48,0		
4000	41,7		
8000	34,2		
Sound pressure level LpA		66dB	guaranteed: 70dB



Date: 2015-07-13	Test eng.: Röbl	Release: W. Schirl 2015-07-23
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