



MVP Southgate Amendment Project

Docket No. CP25-60-000

Attachment IP-7

Revised Nighttime Construction Noise Mitigation Plan

March 2026



MVP Southgate Amendment Project

Nighttime Construction Noise Management Plan

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1.0 INTRODUCTION

Mountain Valley Pipeline, LLC (“Mountain Valley”) is requesting that the Federal Energy Regulatory Commission (“FERC”) approve nighttime construction at the following locations during the construction of the MVP Southgate Amendment Project (“Amendment Project”):

- Horizontal Direction Drills (“HDDs”)
 - Sandy River (milepost [“MP”] 18.1)
 - Dan River HDD (MP 30.8)
- Railroad Bores
 - Railroad Crossing 1 (MP 5.6)
 - Railroad Crossing 2 (MP 25.7)

The above list is subject to change as Mountain Valley finalizes its crossing method determinations. The purpose of this *Nighttime Construction Noise Management Plan* (“Plan”) is to demonstrate noise levels will be reduced to below 48.6 decibels on the A-weighted scale (“dBA”) at night and 55 dBA day-night sound level (“L_{dn}”) overall at the nearest noise sensitive area (“NSA”), or not exceed 10 dBA over the ambient at the nearest NSA where ambient noise levels are already above 55 dBA. Additionally, this Plan describes site-specific mitigation measures and resulting noise impacts on NSAs for the above-listed locations.

2.0 PERSONNEL AND RESPONSIBILITIES

The actions in this Plan are to be implemented by the following personnel:

Chief Inspector: The Project will designate a Chief Inspector (“CI”) for the Amendment Project. The CI has overarching authority over all construction activities occurring throughout the Amendment Project.

HDD/Bore Superintendent: The HDD contractor’s senior representative on-site is the HDD Superintendent. It is the HDD Superintendent’s responsibility to implement this Plan on the contractor’s behalf. The HDD Superintendent must be familiar with all aspects of the drilling activities, the contents of this Plan, and the conditions of approval under which the activity is permitted. The HDD Superintendent will maintain a copy of this Plan on all drill sites and distribute, as appropriate, to construction personnel. The HDD Superintendent ensures that workers are properly trained and familiar with the mitigation measures herein.

HDD / Bore Operator: The HDD operator is employed by the HDD contractor to operate the drilling rig, driller, and fluid pumps. The HDD Operator is responsible for installing noise mitigation measures described in this plan and for monitoring nighttime noise. Should noise levels go above the FERC-regulated nighttime noise limits, the HDD Operator must communicate this information to the HDD Superintendent and HDD contractor field crews, as well as the on-site Amendment Project inspection staff. The HDD Operator is responsible for stopping the drilling program and implementing additional noise mitigation should noise levels go above the FERC sound level guidelines.

A copy of this Plan will be included in the bid package documents for the Amendment Project.

3.0 HORIZONTAL DIRECTIONAL DRILLING AND RAILROAD CROSSING SITES

The HDD method will be used to cross the Sandy River in Virginia and the Dan River in North Carolina. In addition, there will be two railroad crossings that will be performed using the conventional boring methods and will likely require nighttime construction work. A noise evaluation has been performed for each HDD site and railroad crossing. An ambient noise survey at the potential HDD and railroad crossing sites was conducted to quantify the current ambient sound levels around each site and to document/identify existing NSAs. All NSAs are residences. A noise evaluation has been performed for each HDD site and railroad crossing as part of the Amendment Application.

For those HDD or railroad crossing sites where the predicted HDD or boring activity sound levels at the NSAs are predicted to be greater than 55 dBA L_{dn} , noise mitigation for the equipment or compensation/relocation will likely be necessary to achieve the noise goals. For noise mitigation on HDD or conventional bore equipment, engine exhaust and barrier treatments are typically used to reduce the sound level contribution to less than 55 dBA L_{dn} . Typically, all engines on power units, gensets, etc., would be fitted with residential-grade exhaust mufflers, and temporary barriers may be installed between the HDD/conventional bore site and the nearest NSAs. Secondary noise control treatments may be required, depending on the actual equipment and site layout used.

As an alternative to these primary and/or secondary noise control treatments, Mountain Valley may consider offering the residents compensation or temporary relocation as a means of reducing the temporary construction noise impact. If all impacted residents choose to accept temporary relocation compensation, then temporary barriers or other treatments will not be necessary.

Railroad Crossings 1 and 2 are located in Pittsylvania County and, therefore, are subject to the county noise ordinance. Construction noise is exempt from the Pittsylvania County noise ordinance if it occurs between 7:00 a.m. and 10:00 p.m. However, if nighttime construction is necessary, the sound due to construction is expected to be less than 52 dBA at the nearest resident's property line for both locations.

The acoustical assessment indicates that the noise of HDD operations at the entry site for the planned HDD crossing at the Sandy River and Dan River could exceed 55 dBA L_{dn} at the closest NSAs.

HDD activities can occur over the course of several weeks, so compensation or relocation is typically not practical for HDD work areas.

Noise mitigation for the Sandy River and Dan River HDD sites will likely take the form of a noise barrier erected between the HDD site and the closest NSAs. Calculations indicate that an approximately 9–21 decibel reduction in the HDD site sound level contributions is possible through the implementation of a series of 20- to 24-foot-tall noise barriers located approximately 20 feet from the primary noise-generating equipment at the HDD site. Similar reductions would be expected for the conventional boring equipment at the railroad crossings. Table 1 shows the predicted sound levels with a noise barrier in place for the Sandy River and Dan River HDD sites.

Table 1					
Predicted Temporary Sound Levels Due to HDDs and Noise Mitigation					
HDD Crossing (Entry or Exit Site)	Distance and Direction of the Closest NSA to Site Center	Existing Ambient (L_{dn} dBA)	Calculated L_{dn} of the Operations (L_{dn} dBA)	Existing Ambient L_{dn} Plus L_{dn} of Operations (L_{dn} dBA)	Temporary Change in the Ambient Sound Level (L_{dn} dBA)
Sandy River	650 feet NNW	47.3	54.4	55.2	7.9
Dan River	740 feet SSW	49.5	54.6	55.8	6.3

4.0 CONVENTIONAL BORES

The conventional bore method will be used to conduct crossings at 18 locations. A noise evaluation has been performed at each of the 18 conventional bore locations and is included as Attachment B to this Plan. An ambient noise survey at the conventional bore sites was conducted to quantify the current ambient sound levels around each site and to document/identify existing NSAs. While Mountain Valley requested FERC approval to conduct 24-hour bores at these locations, Mountain Valley does not anticipate that the 18 conventional bore locations will require nighttime work absent a site-specific issue encountered during construction.

For those sites where the predicted boring activity sound levels at the NSAs are predicted to be greater than 48.6 dBA L_{eq} and where 24-hour work becomes necessary due to field conditions, Mountain Valley will offer the residents compensation or temporary relocation as a means of reducing the temporary construction noise impact. If all impacted residents choose to accept temporary relocation or compensation, then temporary barriers or other treatments will not be necessary. Otherwise, additional noise mitigation will be implemented.

For noise mitigation on conventional bore equipment, engine exhaust and barrier treatments are typically used to reduce the sound level contribution to less than 48.6 dBA L_{eq} . Typically, all engines on power units, gensets, etc., would be fitted with residential-grade exhaust mufflers, and temporary barriers may be installed between the conventional bore site and the nearest NSAs. Secondary noise control treatments may be required, depending on the actual equipment and site layout used.

Appendix A

Horizontal Directional Drilling Nighttime Construction Noise Evaluation



November 19, 2024

Attention: James Sabol
Mountain Valley
2200 Energy Drive
Canonsburg, PA 15317

SLR Project No.: 135.000031.00001

RE: Nighttime HDD Noise Assessment – HDD Crossings – Rev. A
MVP Southgate Amendment Project

1.0 Introduction

Mountain Valley Pipeline, LLC (Mountain Valley) has requested that SLR International Corporation (SLR) modify the noise model for the proposed Horizontal Directional Drilling (HDD) sites along the MVP Southgate Amendment Project (Project). Mountain Valley is proposing to perform nighttime construction activities at the crossing work areas. SLR has updated the noise model with the additional nighttime activities and this report presents the results and impact assessment. Baseline sound level measurements were conducted on August 14 to August 15, 2024, and nighttime boring sound level impacts were predicted for the nearest noise sensitive areas (NSAs). Noise mitigation has been developed to reduce the sound levels due to nighttime HDD activities to 48.6 L_{eq} or less at the closest NSAs.

2.0 Environmental Sound Level Criteria

The Federal Energy Regulatory Commission (FERC) limits for noise from nighttime construction work are typically based on a goal of 55 dBA L_{dn} . The L_{dn} is essentially the logarithmic average of the sound levels during a 24-hour period, with a 10 dBA penalty added to the sound levels occurring during the more noise sensitive nighttime period from 10:00 p.m. to 7:00 a.m. Because of the nighttime penalty, a constant sound level at 48.6 dBA for 24-hours will result in an L_{dn} of 55 dBA.

As per the latest FERC guidance (FERC 2017) for the preparation of Resource Report 9, “Construction activity that would or may occur during nighttime hours should be performed with the goal that the activity contributes noise levels below 55 dBA L_{dn} and 48.6 L_{eq} , or no more than 10 dBA over background if ambient noise levels are above 55 dBA L_{dn} .” If construction activities are limited to the daytime hours, with no significant noise production at night, then there is no specific sound level target for those activities.

These FERC noise limits apply at the nearest Noise Sensitive Areas (NSAs), which are typically residences, churches, schools, or hospitals. The FERC noise limits are not property-line limits – they apply at the NSA structure itself. As per the latest FERC guidance (FERC 2017) for the preparation of Resource Report 9, NSAs should be defined within 0.5 miles of the proposed HDD entry and exit sites.

Pittsylvania County, Virginia has a noise ordinance that applies at the property boundary of the noise source or at any point within any other affected property, rather than at the NSA structure,

so they cannot be directly compared to the FERC sound level requirements. The Pittsylvania County ordinance has an exemption for construction provided it takes place between 7:00 a.m. and 10:00 p.m. Pittsylvania County limits sound levels to 52 L_{eq} dBA at residential property boundaries during nighttime hours (10:00 p.m. to 7:00 a.m.). The Sandy River HDD site is located within Pittsylvania County and is subject to the nighttime limit of 52 L_{eq} dBA at the nearest property boundaries.

There are no other known state, county, or local regulations that would apply to these HDD sites.

3.0 Sound Level Survey

NSA(s) were identified by SLR using aerial imagery and field observations. Four NSAs were identified for the Sandy River HDD site and three NSAs for the Dan River HDD site. The NSAs consist of the closest residences. The NSAs are summarized in Table 3-1.

Table 3-1: Summary of Noise Sensitive Areas

HDD	Noise Sensitive Area	Description	Approximate Distance from Crossing, Feet	Direction to NSA from Crossing	NSA Coordinates	
					Lat	Long
Sandy River HDD	NSA 1	Residence	1,320	WSW	36.637136°	-79.543980°
	NSA 2	Residence	1,100	W	36.639264°	-79.540350°
	NSA 3	Residence	650	NNW	36.640120°	-79.538130°
	NSA 4	Residence	1,850	SW	36.635487°	-79.531551°
Dan River HDD	NSA 1	Residence	740	SSW	36.492462°	-79.679168°
	NSA 2	Residence	2,290	W	36.499735°	-79.682037°
	NSA 3	Residence	1,200	NNW	36.501900°	-79.676652°

3.1 Measurement Equipment

Sound level equipment used during the sound study included the following instruments:

- Larson Davis 831 SLM; Type 1; s/n 3220, 2443, 2572, 1708
- Larson Davis 831C SLM; Type 1; s/n 10403
- Larson Davis® CAL200 Calibrator; s/n 15533, 6266

A windscreen was used on the measurement microphones. The sound level meters were field-calibrated before and after the survey. All instruments have current laboratory certification that can be provided upon request. Measurements were conducted five feet above the ground.



3.2 Weather Conditions

Weather conditions were appropriate for a sound level study. A summary of the weather conditions is shown in Table 3-2.

Table 3-2: Summary of Weather Conditions

Date	August 14 – August 15, 2024
Temperature Range	61°F – 101.3°F
Relative Humidity Range	32% – 100 %
Wind Speed (Average)	0 mph – 6.2 mph
Wind From	NE
Sky Condition	Clear
Ground Condition	Dry

Complete weather data from the measurement survey were obtained from a Kestrel® weather station deployed while on site and are shown in Figure 3 and Figure 4.

3.3 Measurement Methodology

Sound levels were measured using the slow meter response and A-weighting. Data were collected in 1/3-octave bands and recorded using 10-second sampling period and 15-minute statistical intervals.

3.4 Environmental Sound Level Measurements

The sound study was performed on August 14 and 15, 2024 by Geoffrey Kulp and Rhianna Spong of SLR. Sound level measurements were conducted at three locations near Sandy River and two locations near Dan River selected to quantify ambient sound levels near the closest NSAs. Measurements were collected for one overnight period.

Figure 1 and Figure 2 show the measurement locations. Sound sources observed at the measurement locations are summarized in Table 3-3.



Table 3-3: Summary of Measurement Locations

HDD	NSA	Measurement Location (ML)	Measurement Start Time	Measurement Duration HH:MM:SS	Source Observations During Measurements
Sandy River HDD	NSA 1	ML 2	6:30 PM	15:20:59	Audible sounds included wildlife, insects, dog barks, local residence noise, and local traffic.
	NSA 2	ML 1	6:15 PM	15:26:08	Audible sounds included wildlife, insects, and local traffic.
	NSA 3				
	NSA 4	ML 3	6:00 PM	15:28:55	Audible sounds included insects, residence, foliage, bird caws, cows, wildlife
Dan River HDD	NSA 1	ML 2	9:30 AM	25:50:36	Audible sounds included wildlife, insects, foliage, small aircraft, nearby construction, and local traffic.
	NSA 2				
	NSA 3	ML 1	9:45 AM	25:10:03	Audible sounds included wildlife, leaves, insects, lawn equipment, and local traffic.

3.5 Measurement Results

The sound level measurement results are summarized in Table 3-4. The measured day, night, and day-night sound levels are shown. Due to significant insect activity during the survey, measurement results were filtered to remove noise from these environmental sources. This was completed by correcting all sound energy at and above the 1,600 Hz one-third (1/3) octave band in accordance with ANSI/ASA S3/SC1.100-2014¹. Data are presented with and without the filtering applied.

¹“Methods to Define and Measure the Residual Sound in Protected Natural and Quiet Residential Areas”, ANSI/ASA S3/SC1.100-2014.



Table 3-4: Summary of Sound Level Measurements

HDD	NSA	Meas. Location (ML)	Dist. from HDD to NSA	Direction from HDD to NSA	Measured Sound Level, Unfiltered			Measured Sound Level, Filtered to Remove Noise from Birds and Insects			Noise Limit Based on Ambient Measurements
					dBA			dBA ^a			dBA
			Feet		L _d	L _n	L _{dn}	L _d	L _n	L _{dn}	L _n
Sandy River HDD	NSA 1	ML 2	1,320	WSW	44.4	42.8	49.5	42.9	41.8	48.4	48.6
	NSA 2	ML 1	1,100	W	44.6	42.1	49.0	42.5	40.6	47.3	
	NSA 3		650	NNW	44.6	42.1	49.0	42.5	40.6	47.3	
	NSA 4	ML 3	1,850	SW	42.9	42.3	48.8	40.2	39.1	45.7	
Dan River HDD	NSA 1	ML2	1,850	SW	45.4	43.8	50.5	43.8	42.9	49.5	
	NSA 2		740	SSW	45.4	43.8	50.5	43.8	42.9	49.5	
	NSA 3	ML 1	2,290	W	43.0	41.7	48.3	40.4	39.2	45.8	

a. Post-processed to remove noise from birds, insects, and passing vehicles in accordance with ANSI ANSI/ASA S3/SC1.100-2014.

The results in Table 3-4 show that the unfiltered ambient nighttime sound levels range from 42.1 to 42.8 dBA L_n at the Sandy River NSAs and from 41.7 to 43.8 dBA L_n near the Dan River NSAs. The main noise source at these locations are environmental noise sources such as wildlife, leaves, and insects. The overall measured sound levels are inclusive of all environmental noise sources and include noise from birds and insects. The filtered nighttime sound levels near the Sandy River NSAs ranged from 39.1 to 41.8 dBA L_n and 39.2 to 42.9 dBA L_n near the Dan River NSAs.

4.0 Site Description

The Sandy River and Dan River HDD milepost along the pipeline and coordinates are given in Table 4-1. Assumptions for Boring activity durations for each site are listed in Table 4-2.

Table 4-1: Site Location, Milepost, and Coordinates

Location Name	Milepost	Coordinates
Sandy River HDD	18.1	36.635683, -79.538034
Dan River HDD	30.8	36.497657, -79.675395

Table 4-2: Duration of Bore Pit Excavation and Boring Operations

Location Name	Boring Operation Duration (hrs/day, # of days)
Sandy River HDD	12 hrs/day, Site Prep, 6 days 24 hrs/day Pilot Hole, Ream (24" followed by 36"), and Pullback, 26 days
Dan River HDD	12 hrs/day, Site Prep, 6 days 24 hrs/day Pilot Hole, Ream (24" followed by 36"), and Pullback, 31 days



5.0 Sound Level Prediction

5.1 HDD Equipment

An HDD noise model was developed for the Amendment Project using US Federal Highway Administration (FHWA 2008) Roadway Construction Noise Model (RCNM) noise data for the expected construction equipment that will be used during the HDD. The RCNM manual was used in combination with an equipment schedule provided by Mountain Valley (Table 5-1) to obtain sound power levels during construction for both the Sandy River and Dan River HDD sites. The noise model was used to predict the HDD sound level contribution at the NSAs.

Construction equipment does not operate continuously, and typically is operating at maximum sound levels for only a small percentage of the overall period. The percentage of the work period during which the equipment operates at the listed sound level is termed the usage factor. The usage factor for each piece of equipment was obtained from the RCNM. Typical sound power levels (L_w) for peak HDD operations based on RCNM are shown in Table 5-2, below.

Table 5-1: HDD Operation Equipment List

Equipment	Quantity
Entry Work Area	
HDD Pilot/Reaming/Pullback Rig	1
P-750 Mud Pump	1
MCD-1000 Cleaning System	1
6" Dri Prime Pump	4
Cat 336 Excavator	2
Cat CTL- 299D3	1
Miller 500-amp Welder	2
3" Trash Pump	4
2" Trash Pump	1
Light Plants*	6
Generator- CAT - 100KW XQ125 T4F	1
Hydrovac Truck Peterbilt 548 or equiv.	5
Exit Work Area	
CAT 349 Excavator	1
CAT 583- Pipelayer	5
Grove RT890E Rough Terrain Crane, or equiv.	2
Light Plants*	2
*Used during nighttime only	

Crew Trucks were considered transient noise and were not included in calculations.



Table 5-2: Equipment Sound Power Levels (L_w) of HDD Equipment

Noise Source	Sound Power Level at Octave Band Center Frequency, dB									Total dBA
	31.5	63	125	250	500	1000	2000	4000	8000	
HDD Entry Site	122	127	127	132	127	122	117	112	107	129
HDD Exit Site	108	113	113	118	113	108	103	98	93	115
Dan River HDD Entry Site Night L_w (with mitigation)	119	122	120	124	119	114	109	104	99	121
Sandy River HDD Entry Site Night L_w (with mitigation)	119	121	118	122	117	112	107	102	97	119

5.2 Prediction Methodology

A three-dimensional computer noise model was constructed to analyze the noise contributions expected from the proposed construction equipment. The model was developed using CadnaA, 2024, MR 1 version 205.5427, a commercial noise modeling package developed by DataKustik GmbH. The software takes into account spreading losses, ground and atmospheric effects, shielding from barriers and buildings, reflections from surfaces and other sound propagation properties. The software is based on published engineering standards.

The ISO 9613-2 standard was used to calculate all propagation effects, including air and ground absorption, and spreading losses. Weather conditions used in the calculation were ISO 9613-2 default conditions. The default ISO conditions are representative of a moderate downwind condition under typical inversion conditions and are considered conservative as they will tend to overpredict sound levels in most cases.

Ground absorption for the entire Amendment Project area was conservatively set as 0.5, representing a mix of reflective and absorptive ground. This is a conservative assumption, as the majority of the Amendment Project area is undeveloped forests or fields, which are ground types that would typically be assigned a higher ground absorption coefficient of 1.0 (Kephapoulos 2012).

To be conservative, foliage was not included in the model. The terrain was modeled based on USGS topographical data at a resolution of 10 by 10 meters. A temperature of 20 degrees Celsius and 70 percent relative humidity were used for the atmospheric absorption calculations. The ground was modeled as mixed, with a 0.5 absorption coefficient.

All construction equipment was arranged as an area source over the work area, six and a half feet above grade, as shown in Figure 3. This is appropriate because the site contains stationery and mobile equipment. The mobile equipment may move around the work area, as needed.



6.0 Sound Level Assessment

6.1 Base Model Results

Table 6-1 below shows results for the noise model calculations as the A-weighted equivalent unmitigated sound level, dBA L_{eq} , for the construction activity period. If HDD activities take place during nighttime hours, then FERC guidance gives a sound level limit of 48.6 dBA L_{eq} for those nighttime activities.

Table 6-1: Predicted Temporary Sound Levels Due to Construction, 24-Hour Construction Activities – Base Unmitigated

HDD	NSA	Existing Ambient Sound Levels, dBA ^a			Predicted Sound Level 24-Hour Construction, dBA		Construction Plus Ambient, dBA		Temporary Increase in Sound Level, dBA	
		Day	Night	L_{dn}	Night	L_{dn} ^b	Night	L_{dn}	Night	L_{dn}
Sandy River	1	42.9	41.8	48.4	58.2	64.6	58.3	64.7	16.5	16.3
	2	42.5	40.6	47.3	60.3	66.7	60.3	66.7	19.7	19.4
	3	42.5	40.6	47.3	68.7	75.1	68.7	75.1	28.1	27.8
	4	40.2	39.1	45.7	60.5	66.9	60.5	66.9	21.4	21.2
Dan River	1	43.8	42.9	49.5	69.7	76.1	69.7	76.1	26.8	26.6
	2	43.8	42.9	49.5	57.3	63.7	57.5	63.9	14.6	14.4
	3	40.4	39.2	45.8	56.4	62.8	56.5	62.9	17.3	17.1
a. Post-processed to remove noise from birds, insects, and passing vehicles in accordance with ANSI ANSI/ASA S3/SC1.100-2014. b. L_{dn} was obtained by adding 6.4 dB to the predicted sound levels due to nighttime construction.										

Without mitigation, sound level modeling shows the sound levels during nighttime construction activities at several NSAs surrounding both Sandy River and Dan River HDD sites will exceed 48.6 dBA L_{eq} . Noise mitigation will be required to limit the nighttime construction sound level to less than 48.6 dBA L_{eq} .

6.2 Mitigated Model Results

Noise mitigation for the equipment will likely be necessary to achieve the noise goals. For noise mitigation on HDD or conventional bore equipment, engine exhaust and barrier treatments are typically used to reduce the sound level contribution to less than 48.6 dBA L_{eq} . Typically, all engines on power units, gensets, etc. would be fitted with residential-grade exhaust mufflers, and temporary barriers may be installed between the HDD bore site and the nearest NSAs. Secondary noise control treatments as specified in Section 7 may be required, depending on the actual equipment and site layout used.



Table 6-2 below shows results for the noise model calculations as the A-weighted equivalent mitigated sound level for the construction activity period.

Table 6-2: Predicted Sound Levels During Boring Operations 24-Hour Construction Activities - Mitigated

HDD	NSA	Existing Ambient Sound Levels, dBA ^a			Predicted Sound Level 24-Hour Construction, dBA		Construction Plus Ambient, dBA		Temporary Increase in Sound Level, dBA	
		Day	Night	L _{dn}	Night	L _{dn} ^b	Night	L _{dn}	Night	L _{dn}
Sandy River	1	42.9	41.8	48.4	46.1	52.5	47.5	53.9	5.7	5.5
	2	42.5	40.6	47.3	46.4	52.8	47.4	53.9	6.8	6.6
	3	42.5	40.6	47.3	48.0	54.4	48.7	55.2	8.1	7.9
	4	40.2	39.1	45.7	48.0	54.4	48.5	54.9	9.4	9.2
Dan River	1	43.8	42.9	49.5	48.1	54.5	49.2	55.7	6.3	6.2
	2	43.8	42.9	49.5	48.2	54.6	49.3	55.8	6.4	6.3
	3	40.4	39.2	45.8	48.4	54.8	48.9	55.3	9.7	9.5
a. Post-processed to remove noise from birds, insects, and passing vehicles in accordance with ANSI ANSI/ASA S3/SC1.100-2014. b. L _{dn} was obtained by adding 6.4 dB to the predicted sound levels due to nighttime construction.										

Property line sound levels were assessed at the Sandy River HDD location to compare to the Pittsylvania County, Virginia noise limit of 52 dBA L_{eq}. Mitigated model results indicate compliance with this limit, as sound levels range from 49.8 to 51.8 dBA L_{eq} during nighttime HDD activities.

7.0 Noise Control Treatments

The following noise control treatments have been evaluated in the noise model. With these noise control treatments, the noise models predict HDD sound levels lower than 48.6 dBA at all NSAs during nighttime HDD activities.

This is one potential set of noise control treatments. There are various combinations of noise control treatments that can effectively reduce the HDD activity sound levels. After an HDD contractor is selected the noise control treatments should be reevaluated and a site-specific noise control plan developed for each site.



7.1 Site Specific Noise Control Treatments

7.1.1 Sandy River Noise Control Treatments

- Entry Work Area:
 - Reduce vacuum truck activity at night from five to one
 - Install small enclosures constructed of mass-loaded vinyl or plywood over the drill rig engine(s), mud and trash pumps, generator, and the mud processing system during nighttime operations
 - A temporary barrier wall on the north (approximately 40 feet tall, 560 feet long) and south sides (approximately 30 feet tall, 340 feet long) of the entry work area
- Exit Work Area:
 - A temporary barrier wall on the north side of the exit pit (approximately 20 feet tall, 440 feet long)

Figure 11 and Figure 12 show examples of possible enclosure layouts and Figure 7 shows a close-up view of the HDD entry and exit barriers.

7.1.2 Dan River Noise Control Treatments

- Entry Work Area:
 - Reduce vacuum truck activity at night from five to one
 - Install small enclosures constructed of mass-loaded vinyl or plywood over the generator, drill rig engine(s), mud and trash pumps, and the mud processing system during nighttime operations
 - A temporary barrier wall on the north (approximately 16 feet tall, 210 feet long), west (20 feet tall, 215 feet long), and south sides (approximately 40 feet tall, 655 feet long) of the entry work area.
- Exit Work Area:
 - A temporary barrier wall on the north side of the exit pit (approximately 24 feet tall, 250 feet long)

Figure 11 and Figure 12 show examples of possible enclosure layouts Figure 10 shows a close up view of the HDD entry and exit barriers.

7.2 Barriers and Enclosures in General

For barriers and enclosures there are many suitable material choices. Typically, for short duration projects such as boring work, the best choices are either plywood or acoustical blankets.

For plywood enclosures or barriers, the plywood should be $\frac{3}{4}$ " thick at a minimum and the side facing the noise source should be faced with a layer of acoustically absorptive material. A widely available option would be 2 inches of medium-weight fiberglass board insulation such as Owens Corning 703 or Knauf Insulation Board (3 lb/cu.ft. density). Lightweight fiberglass batt insulation can also be used for short term uses. Batt insulation can be purchased with a thin plastic or paper facing that will offer some weather protection and will make installation easier.



Acoustical blankets should have a surface weight of greater than 1.5 pounds per square foot. The side facing the noise sources should be acoustically absorptive. Typically, this is accomplished with a quilted absorber material. Blankets should be installed with as few cracks and gaps as possible. Blankets can be applied directly to equipment skid supports, if desired, as long as there are no significant cracks or gaps between the blankets, and that there is no gap between the bottom of the blankets and the ground.

8.0 Conclusion

SLR has updated the noise models for the Sandy River HDD and Dan River HDD sites, a part of the Amendment Project, using an updated HDD equipment list provided by Mountain Valley. With the noise mitigation recommended in this report, the noise model predicts that sound levels will remain below the FERC criterion of 48.6 dBA, L_{eq} at all occupied NSAs at night during HDD activities, as shown in the rightmost column of Table 6-2. Property line sound levels were assessed at the Sandy River HDD location to compare to the Pittsylvania County, Virginia noise limit of 52 dBA L_{eq} . Mitigated model results indicate compliance with this limit, as sound levels range from 49.8 to 51.8 dBA L_{eq} during nighttime HDD activities. Due to the preliminary nature of the information presented in this report, results may change as the construction plan is finalized.

This concludes our Technical Report for the Mountain Valley Amendment HDD crossings. Please contact us if you have any questions.

Regards,

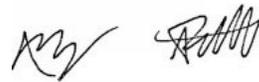
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9.0 References

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FHWA (2008) Roadway Construction Noise Model, Federal Highway Administration, US Department of Transportation. Version 1.1, December 8, 2008.

Kephalopoulos, Stylianos et al. (2012). Common Noise Assessment Methods in Europe (CNOSSUS-EU) European Commission Joint Research Centre, Institute for Health and Consumer Protection, TP 281 21027 – Ispra (VA), Italy.

ISO 9613-2 (1996) Acoustics - Attenuation of Sound During Propagation Outdoors - Part 2: General method of calculation



Figure 1: Sandy River NSAs and Measurement Locations



Figure 2: Dan River NSAs and Measurement Locations



Figure 3: Weather Data (Temperature and Relative Humidity) – August 14 to August 15, 2024

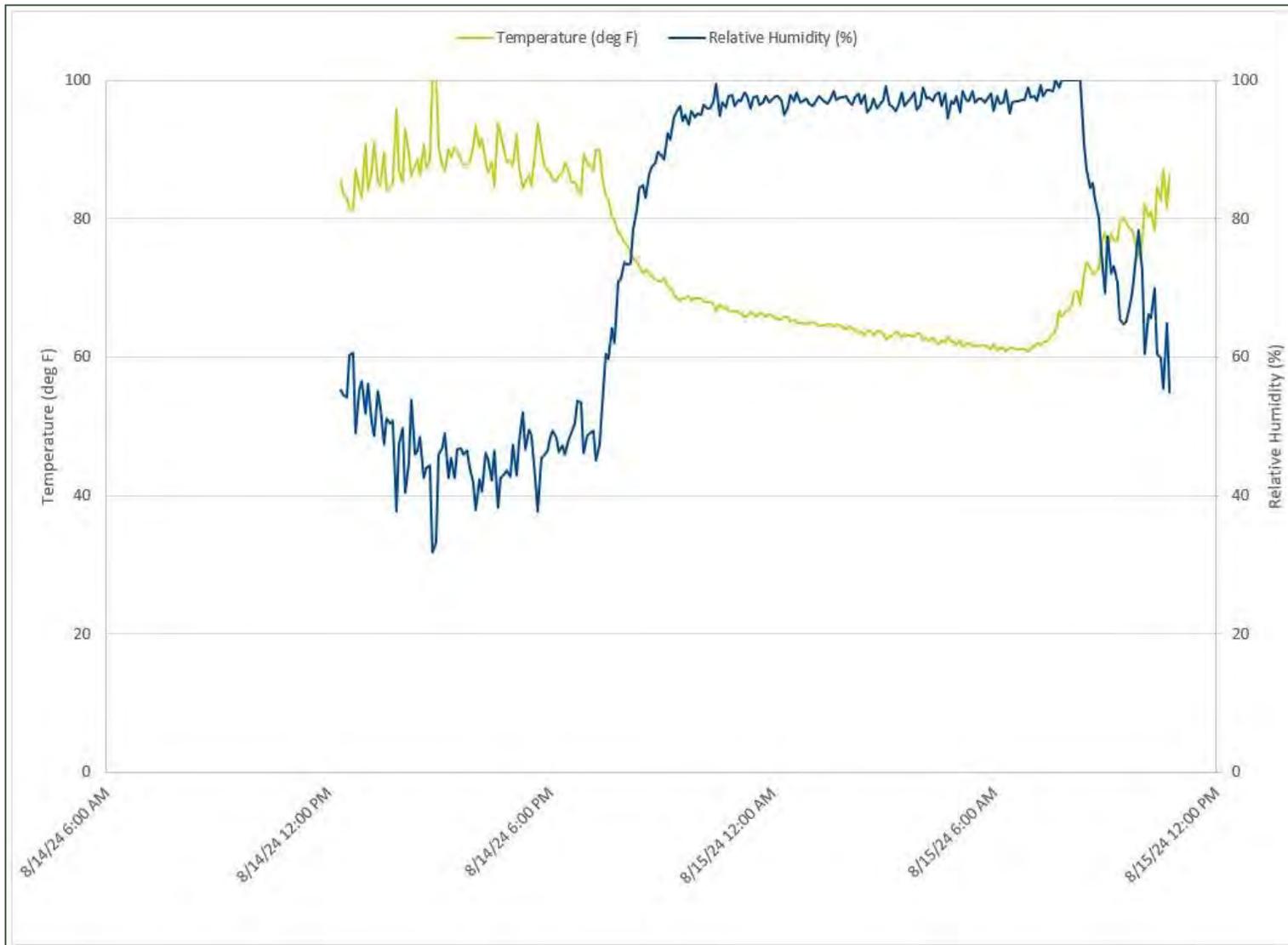


Figure 4: Weather Data (Wind Speed and Direction) – August 14 to August 15, 2024

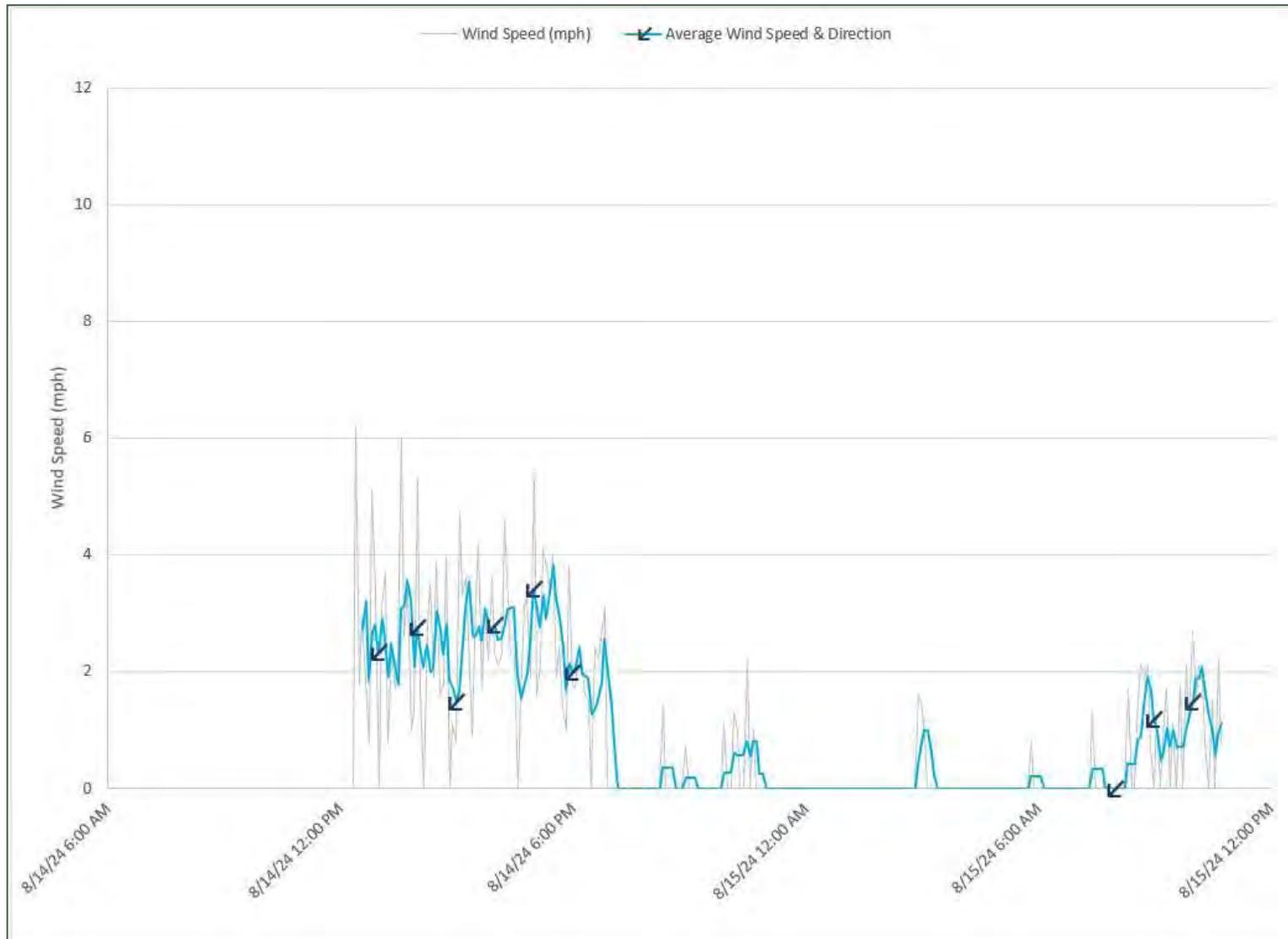


Figure 5: Predicted Unmitigated 48.6 dBA L_n Contour for Sandy River HDD

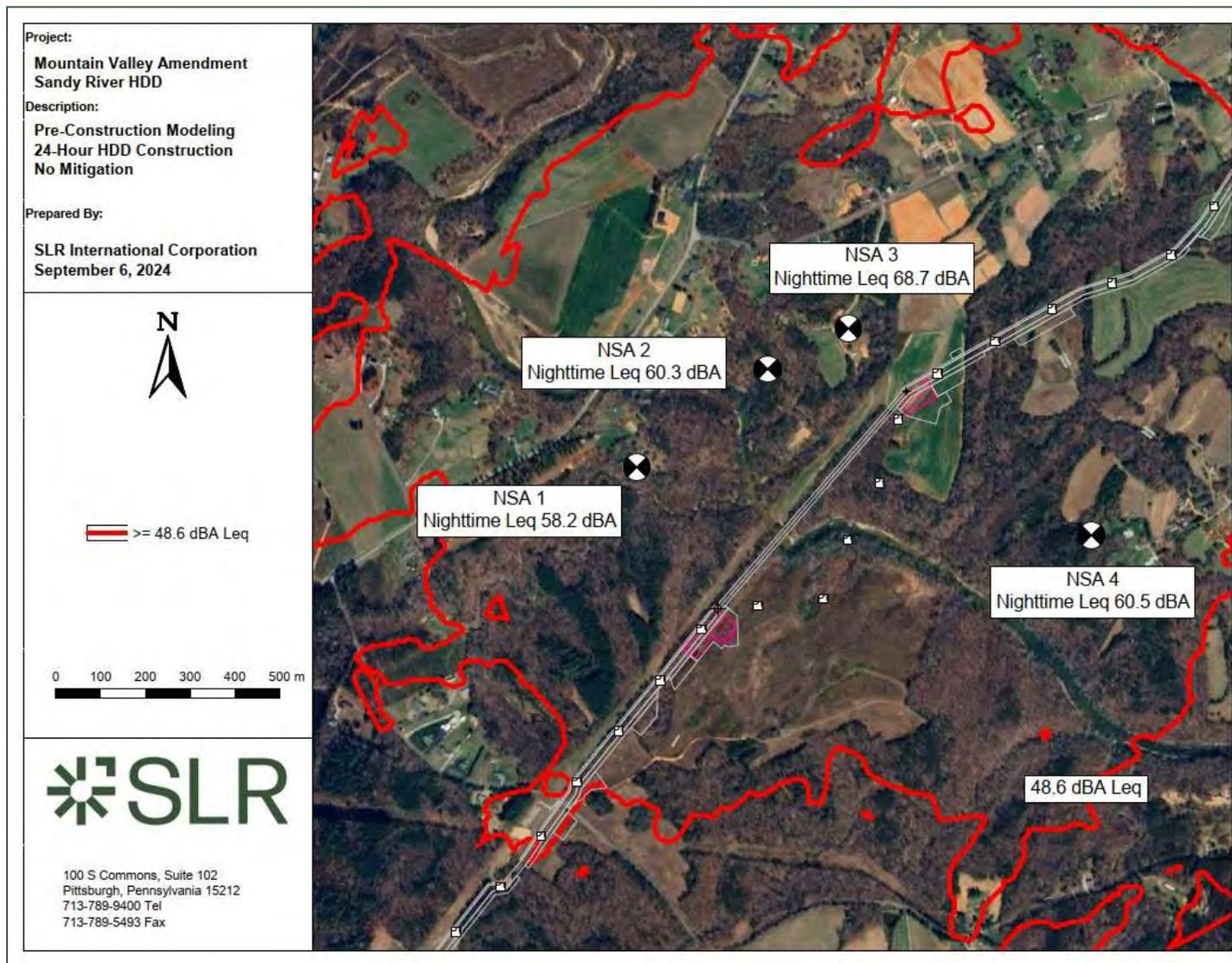


Figure 6: Predicted Mitigated 48.6 dBA L_n Contour for Sandy River HDD

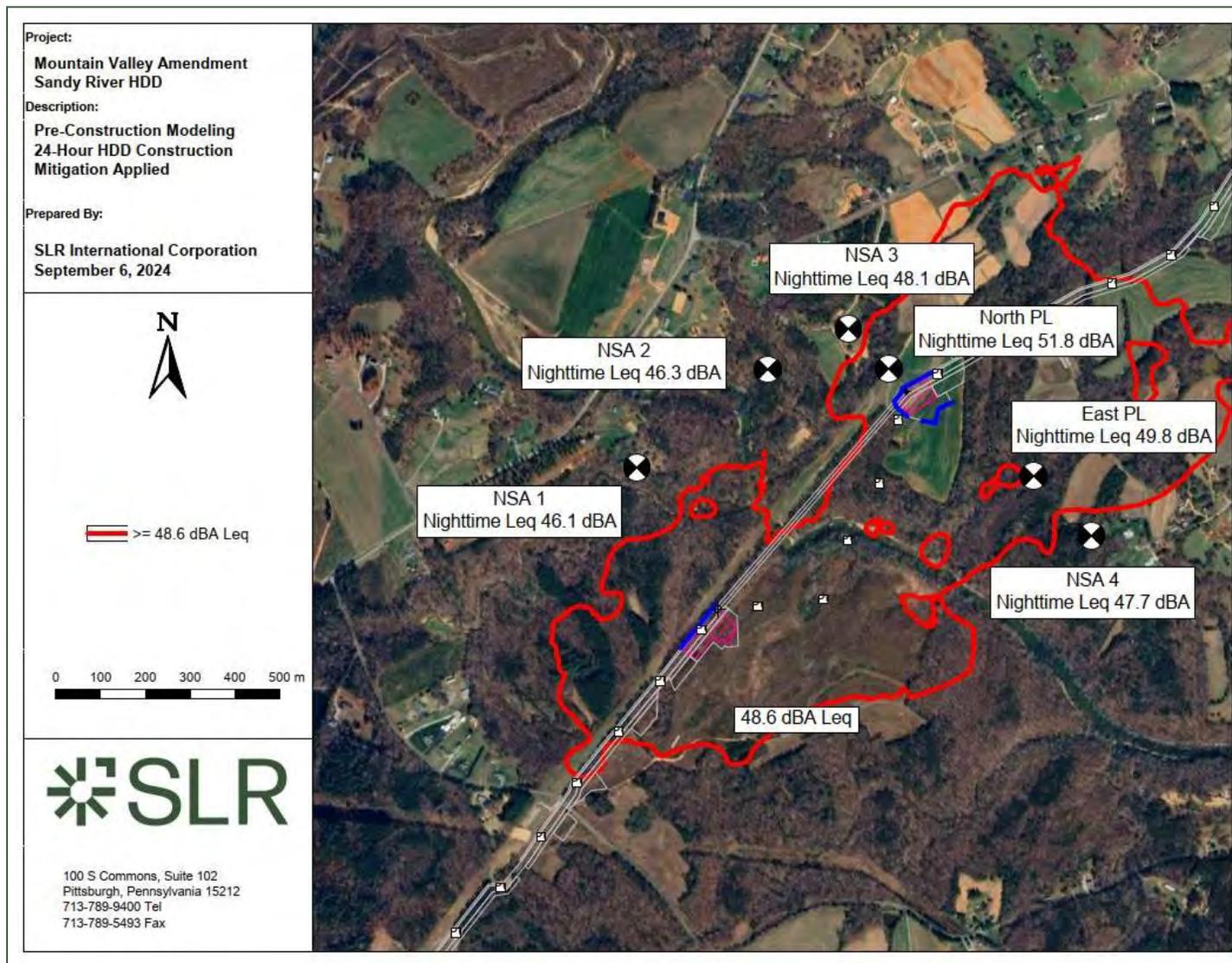


Figure 7: Sandy River HDD Barriers

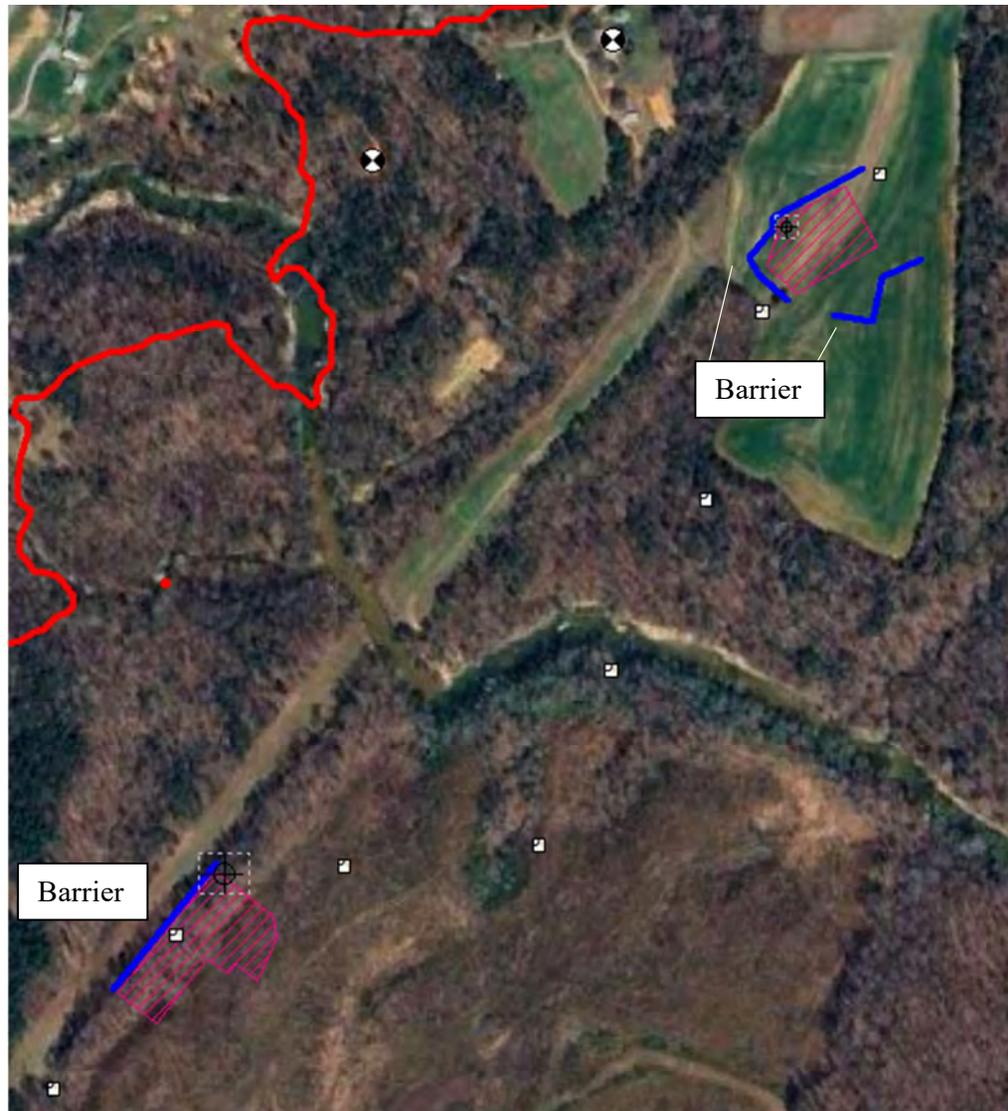


Figure 8: Predicted Unmitigated 48.6 dBA L_n Contour for Dan River HDD

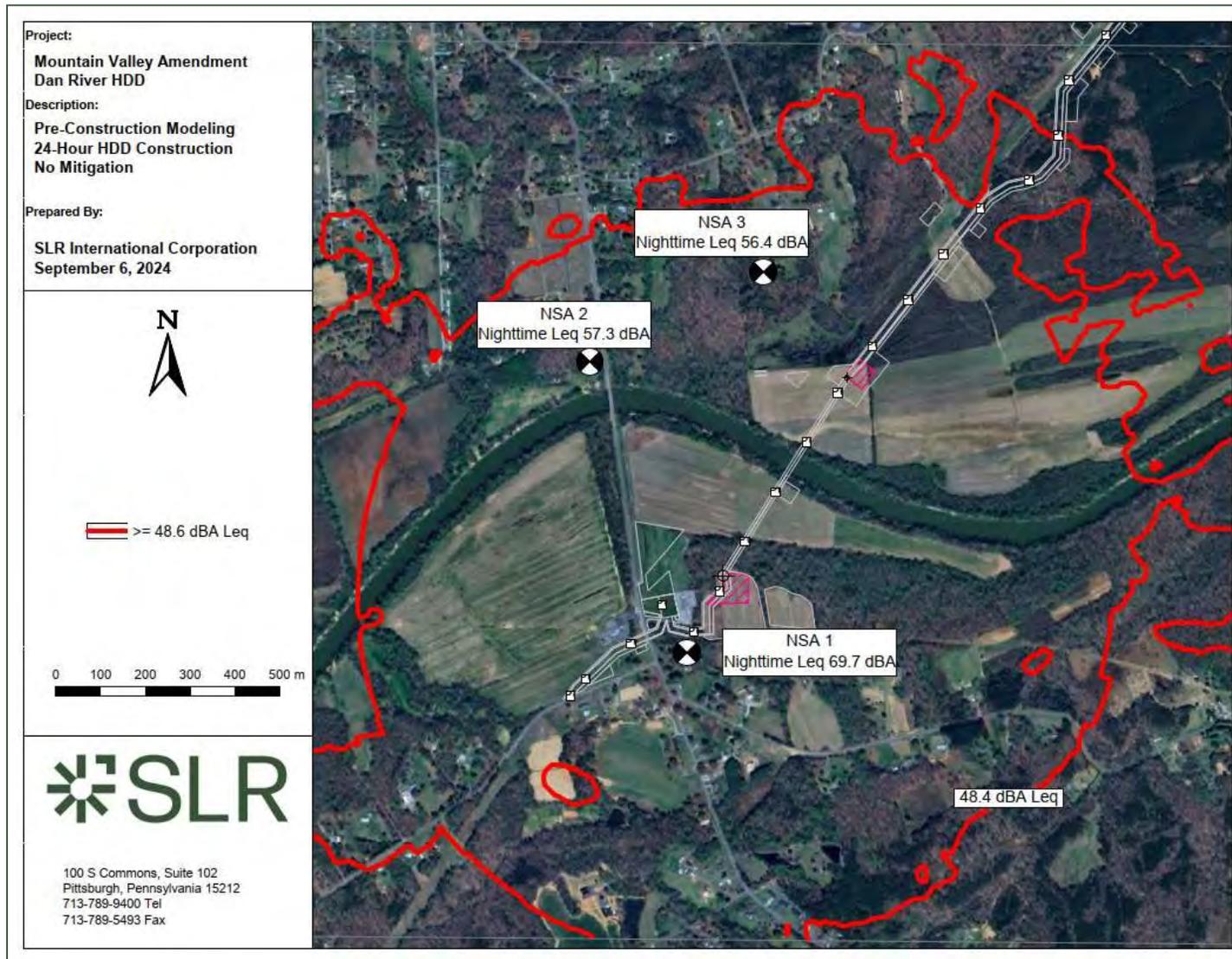


Figure 9: Predicted Mitigated 48.6 dBA L_n Contour for Dan River HDD

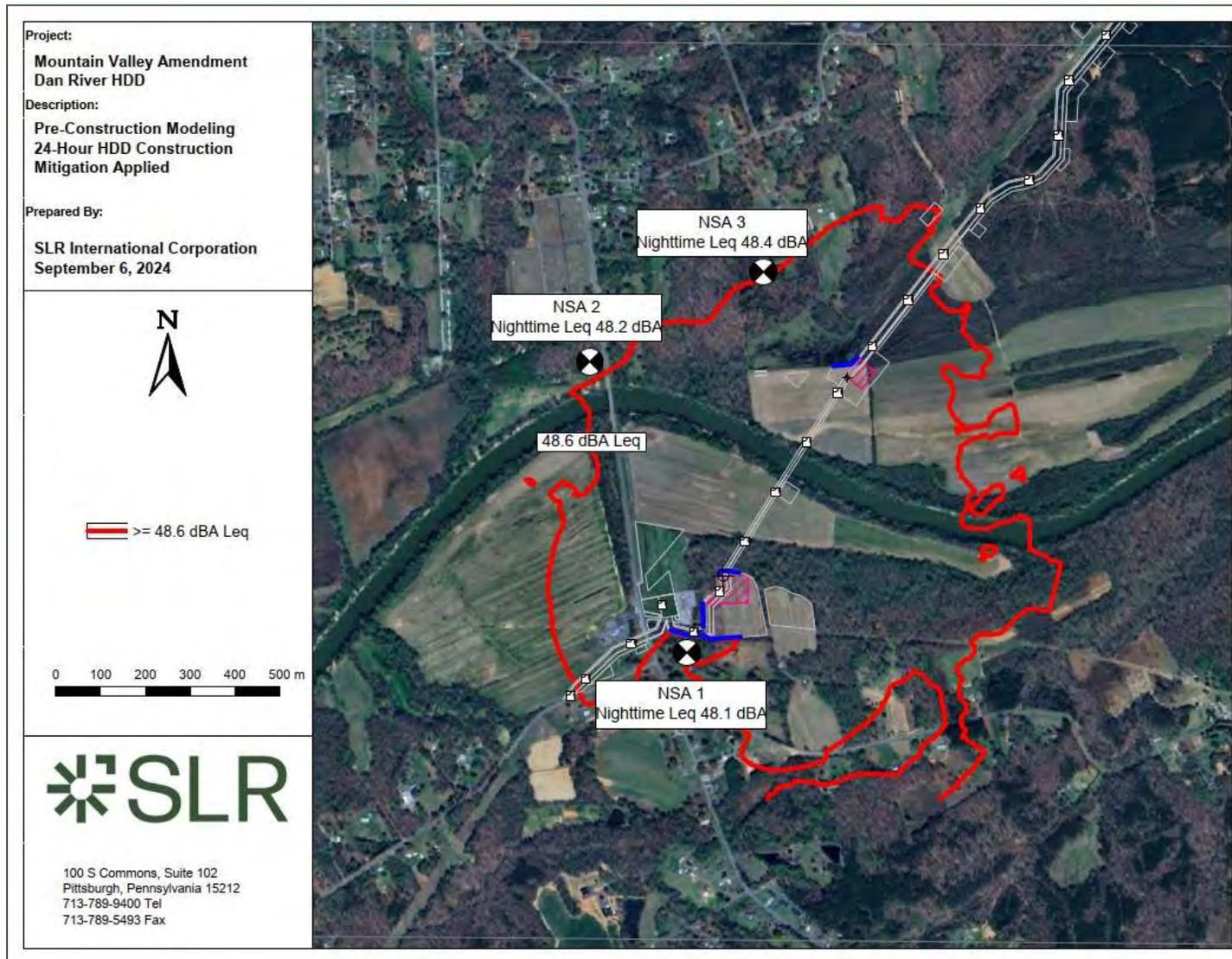


Figure 10: Dan River HDD Barriers



Figure 11: Typical Enclosure Layout for Diesel Powered Pump or Welder Equipment Axis Oriented North/South

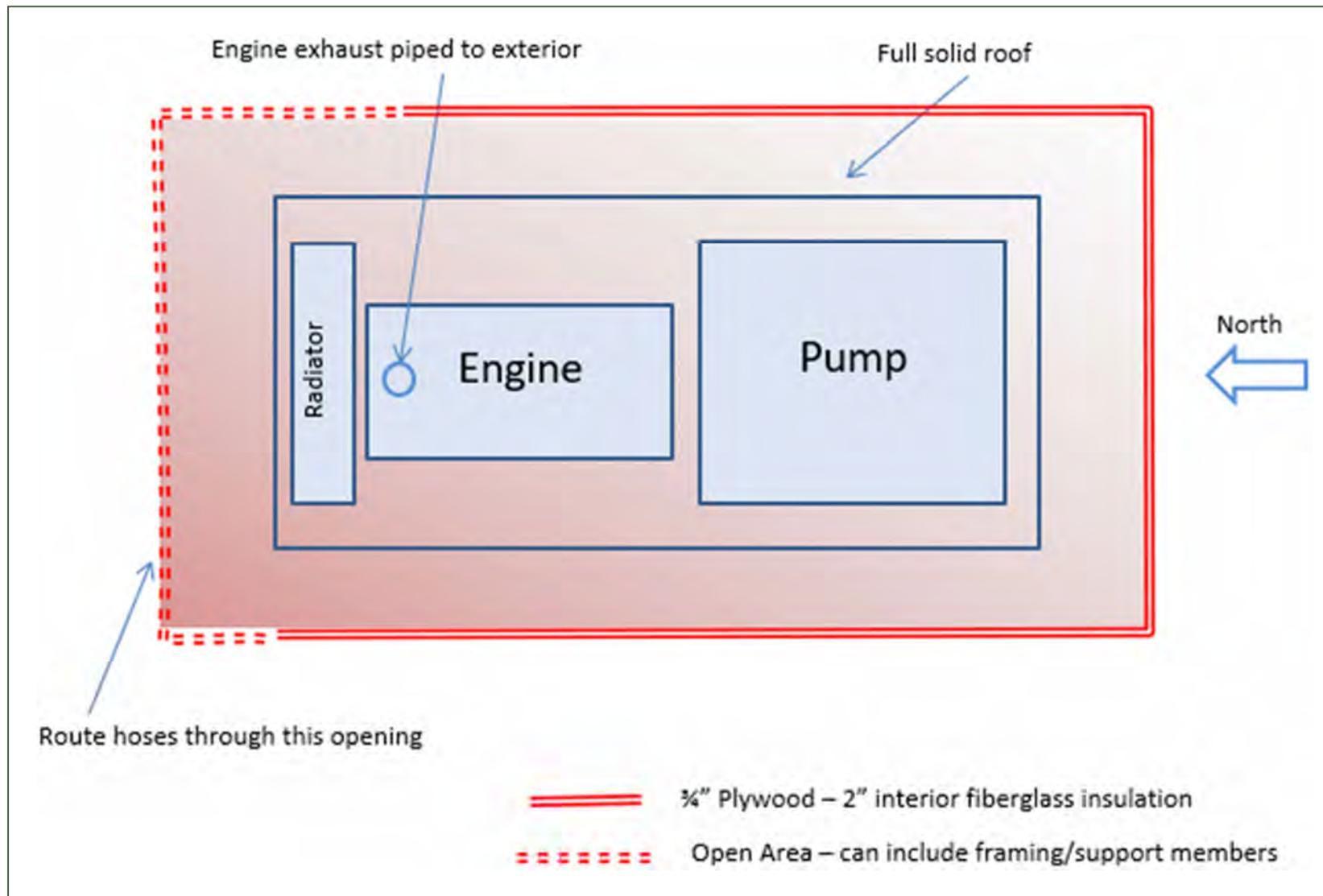
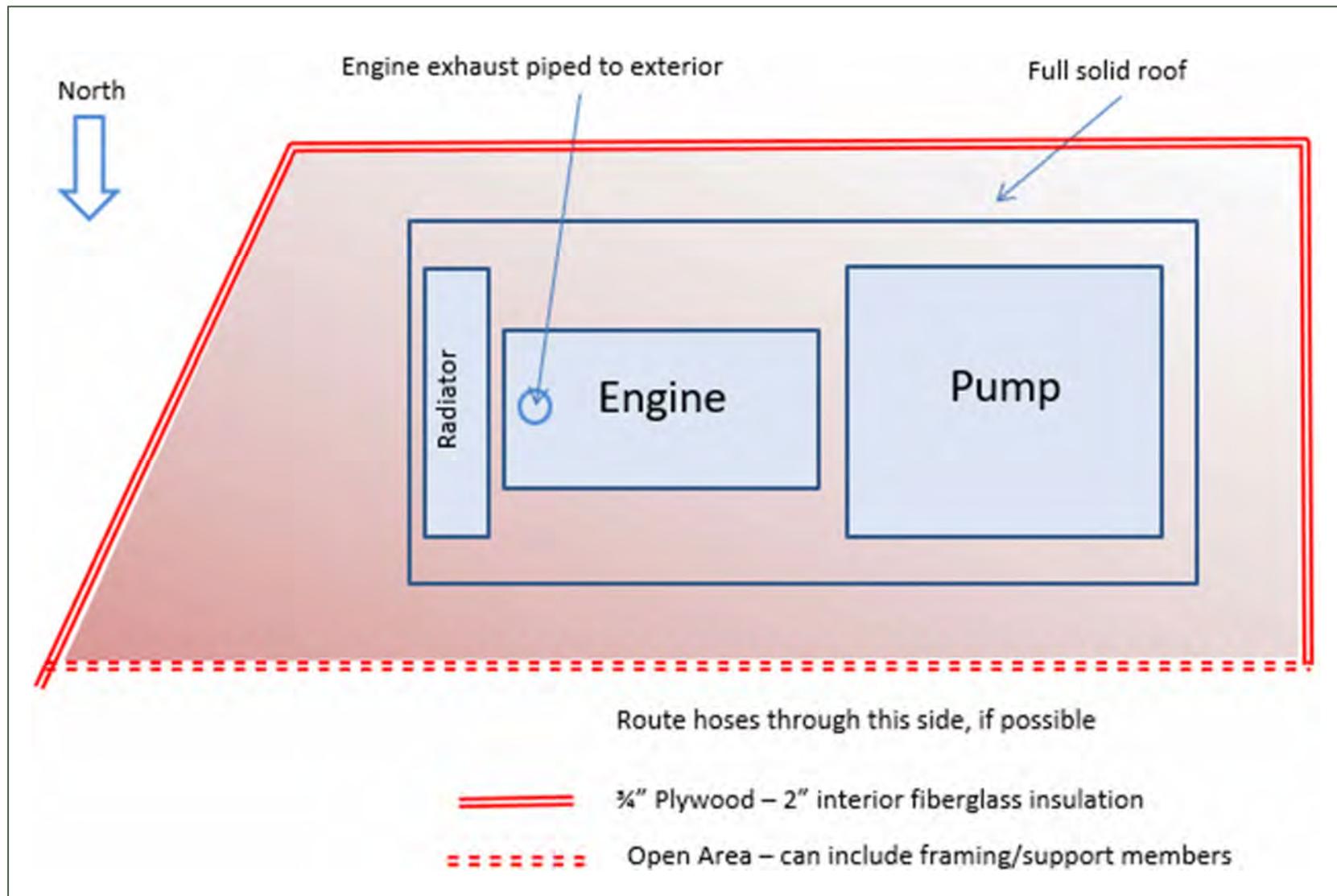


Figure 12: Typical Enclosure Layout for Diesel Powered Pump or Welder Equipment Axis Oriented East/West



Appendix B

Conventional Bore Nighttime Construction Noise Evaluation

March 2, 2026

Attention: James Sabol
Mountain Valley
2200 Energy Drive
Canonsburg, PA 15317

SLR Project No.: 135.000031.00001

RE: MVP Southgate Pipeline Noise Study – Conventional Boring Locations – Rev. 2

1.0 Introduction

Mountain Valley has requested that SLR International Corporation (SLR) perform additional noise modelling for the EQT MVP Southgate Pipeline project to evaluate potential noise impacts from 18 conventional bores. SLR has updated the noise model with the additional conventional boring locations and this report presents the results and impact assessment. Baseline sound level measurements were conducted on August 14 and August 15, 2024, and nighttime boring sound level impacts were predicted for the nearest noise sensitive areas (NSAs).

2.0 Environmental Sound Level Criteria

The Federal Energy Regulatory Commission (FERC) limits for noise from nighttime construction work are typically based on a goal of 55 dBA L_{dn} . The L_{dn} is essentially the logarithmic average of the sound levels during a 24-hour period, with a 10 dBA penalty added to the sound levels occurring during the more noise sensitive nighttime period from 10:00 p.m. to 7:00 a.m. Because of the nighttime penalty, a constant sound level at 48.6 dBA for 24-hours will result in an L_{dn} of 55 dBA.

As per the latest FERC guidance (FERC 2017) for the preparation of Resource Report 9, “Construction activity that would or may occur during nighttime hours should be performed with the goal that the activity contributes noise levels below 55 dBA L_{dn} and 48.6 L_{eq} , or no more than 10 dBA over background if ambient noise levels are above 55 dBA L_{dn} .” If construction activities are limited to the daytime hours, with no significant noise production at night, then there is no specific sound level target for those activities.

These FERC noise limits apply at the nearest Noise Sensitive Areas (NSAs), which are typically residences, churches, schools, or hospitals. The FERC noise limits are not property-line limits – they apply at the NSA structure itself.

Pittsylvania County, Virginia has a noise ordinance (Section 41-6) that applies at the property boundary of the noise source or at any point within any other affected property rather than at the NSA structure, so it cannot be directly compared to the FERC sound level requirements. The Pittsylvania County ordinance has an exemption for construction provided it takes place between 7:00 a.m. and 10:00 p.m. Pittsylvania County limits sound levels to 52 L_{eq} dBA at residential and agricultural property boundaries during nighttime hours (10:00 p.m. to 7:00 a.m.).

Mileposts 0 through 26.8 are located in Pittsylvania County and are subject to the nighttime limit of 52 L_{eq} dBA at the nearest property boundaries.

There are no other known state, county, or local regulations that would apply to these sites.

3.0 Sound Level Survey

NSA(s) were identified by SLR using aerial imagery and field observations. The closest NSA(s) within a half-mile of the sites were identified. The NSAs are summarized in **Table 3-1**.



Table 3-1: Summary of Noise Sensitive Areas

Bore/ Milepost	Noise Sensitive Area	Description	Approximate Distance from Milepost, Feet	Direction to NSA from Crossing	Coordinates	
					Lat	Long
0.4	NSA 1	Residence	2,625	W	36.823382°	-79.352580°
	NSA 2	Residence	2,750	SW	36.819067°	-79.348861°
0.8	NSA 1	Residence	1,210	NW	36.823382°	-79.352580°
	NSA 2	Residence	885	S	36.819067°	-79.348861°
2.0	NSA 1	Residence	1,905	E	36.806711°	-79.356816°
4.3	NSA 1	Residence	1,310	N	36.787061°	-79.387090°
	NSA 2	Residence	665	N	36.784730°	-79.390030°
	NSA 3	Residence	1,120	W	36.783394°	-79.392154°
	NSA 4	Residence	1,520	W	36.781358°	-79.392633°
	NSA 5	Residence	1,790	S	36.778778°	-79.389181°
5.3	NSA 1	Residence	2,275	E	36.773478°	-79.391834°
11.5	NSA 1	Residence	2,220	NE	36.711225°	-79.463436°
	NSA 2	Residence	1,835	E	36.707758°	-79.461556°
	NSA 3	Residence	1,930	SE	36.701922°	-79.463325°
	NSA 4	Residence	2,250	NE	36.711969°	-79.465039°
16.1	NSA 1	Residence	1,175	SSW	36.654567°	-79.519172°
	NSA 2	Residence	1,950	WSW	36.656904°	-79.517256°
	NSA 3	Residence	2,215	WNW	36.652392°	-79.519756°
	NSA 4	Residence	1,910	NNW	36.662145°	-79.514411°
17.4	NSA 1	Residence	615	NNW	36.643112°	-79.530437°
	NSA 2	Residence	680	N	36.641684°	-79.528434°
	NSA 3	Residence	1,660	ENE	36.642956°	-79.523266°
	NSA 4	Residence	1,905	ESE	36.642501°	-79.526275°
	NSA 5	Residence	1,950	S	36.636687°	-79.527834°
21.4	NSA 1	Residence	1,750	NE	36.602720°	-79.573611°
	NSA 2	Residence	715	SW	36.597560°	-79.577270°
	NSA 3	Residence	1,530	S	36.594564°	-79.573328°
22.5	NSA 1	Residence	215	E	36.587154°	-79.585856°
	NSA 2	Residence	355	WNW	36.587952°	-79.587185°
24.0	NSA 1	Church	1,290	WSW	36.571798°	-79.604579°
	NSA 2	Residence	1,905	W	36.572610°	-79.611364°
24.4	NSA 1	Church	1,080	NE	36.571798°	-79.604579°
	NSA 2	Residence	1,520	E	36.571905°	-79.612707°
	NSA 3	Residence	920	SW	36.566108°	-79.615794°
24.6	NSA 1	Residence	1,220	W	36.565594°	-79.615866°
	NSA 2	Residence	1,615	NW	36.571459°	-79.613586°
	NSA 3	Church	1,720	N	36.571798°	-79.604579°
26.5	NSA 1	Residence	2,015	S	36.539336°	-79.627839°
26.9	NSA 1	Residence	1,955	E	36.539336°	-79.627839°
	NSA 2	Residence	1,300	S	36.536433°	-79.634653°
27.2	NSA 1	Residence	830	E	36.536433°	-79.634653°
	NSA 2	Residence	2,065	WSW	36.532256°	-79.642580°
28.0	NSA 1	Residence	1,905	NE	36.532256°	-79.642580°
28.2	No NSA within ½ mile.					



3.1 Measurement Equipment

Sound level equipment used during the sound study included the following instruments:

- Larson Davis 831 SLM; Type 1; s/n 1737, A0335
- Larson Davis® CAL200 Calibrator; s/n 15533, 6266

A windscreen was used on the measurement microphone. The sound level meter was field-calibrated before and after the survey. All instruments have current laboratory certification that can be provided upon request. Measurements were conducted five feet above the ground.

3.2 Weather Conditions

Weather conditions were appropriate for a sound level study. A summary of the weather conditions is shown in **Table 3-2**.

Table 3-2: Summary of Weather Conditions

Date	August 14 – August 15, 2024
Temperature Range	61°F – 101.3°F
Relative Humidity Range	32% – 100 %
Wind Speed (Average)	0 mph – 6.2 mph
Wind From	NE
Sky Condition	Clear
Ground Condition	Dry

Complete weather data from the measurement survey were obtained from a Kestrel® weather station deployed while on site and are shown in **Figure 18 and Figure 19**.

3.3 Measurement Methodology

Sound levels were measured using the fast meter response and A-weighting. Data were collected in 1/3-octave bands and recorded using 1-second and 1-minute sampling periods for a 15-minute duration.

3.4 Environmental Sound Level Measurements

The sound study was performed on August 14-15, 2024, by Geoffrey Kulp and Rhianna Spong of SLR. A reference location nearby was chosen to conduct an overnight measurement. The reference overnight location was conducted using 10 second sampling period and 15-minute statistical intervals.

Figure 1, Figure 8, Figure 14, and Figure 17 show the measurement locations. Sound sources observed at the measurement locations are summarized in **Table 3-3**.



Table 3-3: Summary of Measurement Locations

Bore Location (Milepost)	Meas. Location (ML)	Closest Milepost to ML	Meas. Start Time	Meas. Duration HH:MM:SS	Source Observations During Measurements
MP 0.4	(ML 1) 36.680183°, -79.497320°	MP 0.4	4:15 PM	16:41:43	Audible sounds included insects, sound from the nearby residence, lawn equipment, foliage, bird caws, cows, nearby compressor station, and wildlife.
MP 0.8					
MP 2.0					
MP 4.3					
MP 5.3					
MP 11.5	(ML 2) 36.680183°, -79.497318°	MP 17.6	6:15 PM	15:26:08	Audible sounds included wildlife, insects, and local traffic.
MP 16.1					
MP 17.4					
MP 21.4					
MP 22.5	(ML 3) 36.661667°, -79.683750°	MP 25.7	9:41 AM	0:18:31	Audible sounds included wildlife, insects, foliage, and local traffic.
MP 24.0					
MP 24.4					
MP 26.5					
MP 26.9					
MP 27.2					
MP 28.0	(ML 4) 36.597179°, -79.376950°	MP 28.8	12:15 PM	22:29:20	Audible sounds included insects, cars, the nearby residence, and foliage.

3.5 Measurement Results

The sound level measurement results are summarized in **Table 3-4**. The measured day, night, and day-night sound levels are shown. Due to significant insect activity during the survey, measurement results were filtered to remove noise from these environmental sources. This was completed by correcting all sound energy at and above the 1,600 Hz one-third (1/3) octave band in accordance with ANSI/ASA S3/SC1.100-2014¹. Data are presented with and without the filtering applied.

¹ “Methods to Define and Measure the Residual Sound in Protected Natural and Quiet Residential Areas”, ANSI/ASA S3/SC1.100-2014.



Table 3-4: Summary of Sound Level Measurements

Bore Location	Meas. Location (ML)	Measured Sound Level, Unfiltered			Measured Sound Level, Filtered to Remove Noise from Birds and Insects			Noise Limit Based on Ambient Measurements
		dBA			dBA ^a			dBA
		L _d	L _n	L _{dn}	L _d	L _n	L _{dn}	L _{dn}
MP 0.4	ML 1	42.4	42.6	49.0	39.1	39.0	45.4	55
MP 0.8								
MP 4.3								
MP 5.3								
MP 11.5	ML 2	44.6	42.1	49.0	42.5	40.6	47.3	55
MP 16.1								
MP 17.4								
MP 21.4								
MP 22.5	ML 3	41.7	39.2 ^b	46.1	41.1	39.2 ^c	43.5	55
MP 24.0								
MP 24.4								
MP 26.5								
MP 26.9								
MP 27.2								
MP 28.0	ML 4	49.8	46.6	53.6	47.4	37.6	47.5	55

a. Post-processed to remove noise from birds, insects, and passing vehicles in accordance with ANSI ANSI/ASA S3/SC1.100-2014.
b. The difference between the unfiltered ML 2 daytime and nighttime measurements was used to estimate the unfiltered L_n at ML 3.
c. The difference between the filtered ML 2 daytime and nighttime was used to calculate the L_n measurements was used to estimate the filtered L_n at ML 3.

No nighttime sound levels were measured at ML 3, see **Table 3-3**. A reference overnight sound meter was placed near ML 2 in an area where the observed ambient sounds were similar to those observed at ML 3. The sound level difference between the daytime and nighttime levels at the reference overnight measurement location was subtracted from the L_d values measured at the railroad crossings to estimate their L_n values. The overall measured sound levels are inclusive of all environmental noise sources and includes noise from birds, insects, and foliage

The results in **Table 3-4** show that the estimated unfiltered ambient sound levels range from 46.1 to 53.6 dBA L_{dn} near the bore locations. The filtered sound levels ranged from 43.5 to 47.5 dBA L_{dn} near the bore locations.

4.0 Site Description

The mileposts along the pipeline and coordinates are given in **Table 4-1**. Assumptions for boring activity durations for each site are listed in **Table 4-2**. The total duration of each bore may vary. There may be a rare exception, but under normal operations pit excavation will only be performed



during daylight hours. Nighttime heavy equipment use will be intermittent for relaying material such as auger pipe, cuttings, lowering in bore pipe sections., etc.

Table 4-1: Boring Site Locations - Milepost, and Coordinates

Milepost	Coordinates
0.4	36.825755, -79.344159
0.8	36.821477, -79.349027
2.0	36.808636, -79.362855
4.3	36.783626, -79.388294
5.3	36.773570, -79.399575
11.5	36.706009, -79.467373
16.1	36.657518, -79.517385
17.4	36.641645, -79.529251
21.4	36.599599, -79.573582
22.5	36.587086, -79.586609
24.0	36.572929, -79.604871
24.4	36.569386, -79.610178
24.6	36.567185, -79.612196
26.5	36.545302, -79.629009
26.9	36.539973, -79.634321
27.2	36.539973, -79.634321
28.0	36.528908, -79.645341
28.2	36.526003, -79.648116

Table 4-2: Bore Pit Excavation and Boring Operations

Location Name	Boring Operation Duration (hrs/day)
Typical Boring Activity	10 hrs/day, Excavate and Shore Launch/Receiving Pit 10 hrs/day, Gravel Base, Set Tracks, Install Bore Machine 24 hrs/day, Bore Crossing – Sacrificial Pipe 24 hrs/day, Bore Crossing – Production Pipe (Weld, Coat, Push)



5.0 Sound Level Prediction

5.1 Boring Equipment

A boring noise model was developed for the project using US Federal Highway Administration (FHWA 2008) Roadway Construction Noise Model (RCNM) noise data for the expected construction equipment that will be used during boring. The RCNM manual was used in combination with an equipment schedule provided by Mountain Valley (**Table 5-1, Table 5-2, and Table 5-3**) to obtain sound power levels during construction for the conventional boring locations. Boring operations were separated into two phases: “pit digging” and “boring”. The noise model was used to predict the Boring Phase sound level contribution at NSAs.

Construction equipment does not operate continuously and typically is operating at maximum sound levels for only a small percentage of the overall period. The percentage of the work period during which the equipment operates at the listed sound level is termed the usage factor. The usage factor for each piece of equipment was provided by MVP. Typical sound power levels (L_w) for peak boring construction operations are shown in **Table 5-4** and **Table 5-5** below. Pit digging is not planned to occur during the night, so the evaluation was performed for nighttime boring activities.

Table 5-1: Pit-Digging Phase Equipment List

Equipment	Quantity	Usage Factor
Entry/Exit Work Area		
Sideboom -CAT 583	2	20%
Excavator - CAT 345 - CAT 352 / JD 470 or Comparable	1	40%
Excavator - CAT 335 & 336 / JD 350 or Comparable	1	40%
Excavator Attachment - 349 - Hammer 12,000 ft lb. ¹	1	20%
Morooka - 3000 or Comparable	2	40%
Dozer - D8T	1	40%
Light Plant ¹	6	50%
¹ Used during nighttime only		



Table 5-2: Boring Phase Entry Side Equipment List

Equipment	Quantity	Usage Factor
Entry/Exit Work Area		
Excavator - CAT 345 - CAT 352 / JD 470 or Comparable	1	40%
Excavator - CAT 335 & 336 / JD 350 or Comparable	1	40%
Excavator Attachment - 349 - Hammer 12,000 ft lb. ¹	1	20%
Morooka - 3000 or Comparable	2	30%
Dozer - D8T ¹	1	40%
Air Compressor - 185	1	20%
Bore - Track Machine - w/ Push Plate, Head, Auger ³	1	20%
Pump - Mud (TT Tech Bentonite Pump or Comparable)	1	50%
Welder - Engine Driven (Lincoln/Miller or Comparable)	2	20%
Light Plant ²	6	50%
¹ Used during daytime only		
² Used during nighttime only		
³ Used inside the pit only		

Table 5-3: Boring Phase Exit Side Equipment List

Equipment	Quantity	Usage Factor
Entry/Exit Work Area		
Excavator - CAT 345 - CAT 352 / JD 470 or Comparable	1	40%
Excavator - CAT 335 & 336 / JD 350 or Comparable	1	40%
Pump - Mud (TT Tech Bentonite Pump or Comparable)	1	20%
Light Plant ¹	2	30%
¹ Used during nighttime only		

Crew Trucks were considered transient noise and were not included in calculations.

Table 5-4: Equipment Sound Power Levels (L_w) of Pit-Digging Phase

Noise Source	Sound Power Level at Octave Band Center Frequency, dB									Total dBA
	31.5	63	125	250	500	1000	2000	4000	8000	
Daytime, dB	114	119	119	124	119	114	109	104	99	120
Nighttime, dB	111	116	116	121	116	111	106	101	96	118



Table 5-5: Equipment Sound Power Levels (L_w) of Boring Phase

Noise Source	Sound Power Level at Octave Band Center Frequency, dB									Total dBA
	31.5	63	125	250	500	1000	2000	4000	8000	
Daytime (Inside Pit), dB	105	110	110	115	110	105	100	95	90	112
Nighttime (Inside Pit), dB	105	110	110	115	110	105	100	95	90	112
Daytime (Entry at Grade), dB	115	120	120	125	120	115	110	105	100	122
Nighttime (Entry at Grade), dB	111	116	116	121	116	111	106	101	96	118
Daytime (Exit at Grade), dB	110	115	115	120	115	110	105	100	95	116
Nighttime (Exit at Grade), dB	110	115	115	120	115	110	105	100	95	116

5.2 Prediction Methodology

A three-dimensional computer noise model was constructed to analyze the noise contributions expected from the proposed construction equipment. The model was developed using CadnaA, a commercial noise modeling package developed by DataKustik GmbH (2025, MR 1 version 211.5558, and updated with 2026, MR1 version 215.5625). The software takes into account spreading losses, ground and atmospheric effects, shielding from barriers and buildings, reflections from surfaces and other sound propagation properties. The software is based on published engineering standards.

The ISO 9613-2 standard was used to calculate all propagation effects, including air and ground absorption, and spreading losses. Weather conditions used in the calculation were ISO 9613-2 default conditions. The default ISO conditions are representative of a moderate downwind condition under typical inversion conditions and are considered conservative as they will tend to overpredict sound levels in most cases.

Ground absorption for the entire Project area was conservatively set as 0.5, representing a mix of reflective and absorptive ground. This is a conservative assumption, as the majority of the Project area is undeveloped forests or fields, which are ground types that would typically be assigned a higher ground absorption coefficient of 1.0 (Kephalopoulos 2012).

To be conservative, foliage was not included in the model. The terrain was modeled based on USGS topographical data at a resolution of 10 by 10 meters. A temperature of 20 degrees Celsius and 70 percent relative humidity were used for the atmospheric absorption calculations. The ground was modeled as mixed, with a 0.5 absorption coefficient.

The boring machine was placed in a pit. Pit depths were provided by MVP. All other construction equipment was arranged as an area source over the work area, six and a half feet



above grade. This is appropriate because the site contains stationary and mobile equipment. The mobile equipment may move around the work area, as needed.

Bore entry work areas have significantly more equipment than exit work areas and are anticipated to generate higher sound level impacts. The entry work area has a higher sound power level than the exit work area, due to the presence of the drill rig and additional supporting equipment. The noise impact analysis for each conventional bore was performed assuming the entry pit location was at a lower elevation than the exit side. Where entry and exit location elevations were similar, the entry equipment was placed in a conservative location (closer to the nearest NSA(s)).

6.0 Sound Level Assessment

6.1 Base Model Results

Table 6-1 below summarizes the calculated A-weighted equivalent unmitigated sound level, dBA L_{eq} , for the construction activity period. If pit-digging and boring activities take place during nighttime hours, then FERC guidance gives a sound level limit of 48.6 dBA L_{eq} for those nighttime activities.



Table 6-1: Predicted Temporary Sound Levels at NSAs Due to Construction, 24-Hour Boring

Bore Location	NSA	Existing Ambient Sound Levels, dBA ^a			Predicted Sound Level –24-Hour Construction, dBA		Construction Plus Ambient, dBA		Temporary Increase in Sound Level, dBA	
		Day	Night	L _{dn}	Night	L _{dn}	Night	L _{dn}	Night	L _{dn}
MP 0.4	1	39.1	39.0	45.4	48.6	55.0	49.1	55.5	10.1	10.1
	2	39.1	39.0	45.4	43.2	49.6	44.6	51.0	5.6	5.6
MP 0.8	1	39.1	39.0	45.4	54.3	60.7	54.4	60.8	15.4	15.4
	2	39.1	39.0	45.4	55.6	62.0	55.7	62.1	16.7	16.7
MP 2.0	1	39.1	39.0	45.4	53.7	60.1	53.8	60.2	14.8	14.8
MP 4.3	1	39.1	39.0	45.4	48.6	55.0	49.1	55.5	10.1	10.1
	2	39.1	39.0	45.4	62.3	68.7	62.3	68.7	23.3	23.3
	3	39.1	39.0	45.4	53.2	59.6	53.4	59.8	14.4	14.4
	4	39.1	39.0	45.4	54.2	60.6	54.3	60.7	15.3	15.3
	5	39.1	39.0	45.4	52.7	59.1	52.9	59.3	13.9	13.9
MP 5.3	1	39.1	39.0	45.4	44.5	50.9	45.6	52.0	6.6	6.6
MP 11.5	1	42.5	40.6	47.3	44.0	50.4	45.6	52.1	5.0	4.8
	2	42.5	40.6	47.3	46.2	52.6	47.3	53.7	6.7	6.4
	3	42.5	40.6	47.3	46.6	53.0	47.6	54.0	7.0	6.7
	4	42.5	40.6	47.3	43.7	50.1	45.4	51.9	4.8	4.6
MP 16.1	1	42.5	40.6	47.3	48.3	54.7	49.0	55.4	8.4	8.1
	2	42.5	40.6	47.3	50.6	57.0	51.0	57.4	10.4	10.1
	3	42.5	40.6	47.3	48.2	54.6	48.9	55.3	8.3	8.0
	4	42.5	40.6	47.3	51.1	57.5	51.5	57.9	10.9	10.6
MP 17.4	1	42.5	40.6	47.3	61.7	68.1	61.7	68.1	21.1	20.8
	2	42.5	40.6	47.3	54.9	61.3	55.1	61.5	14.5	14.2
	3	42.5	40.6	47.3	45.9	52.3	47.0	53.5	6.4	6.2
	4	42.5	40.6	47.3	46.3	52.7	47.3	53.8	6.7	6.5
	5	42.5	40.6	47.3	46.0	52.4	47.1	53.6	6.5	6.3
MP 21.4	1	42.5	40.6	47.3	49.1	55.5	49.7	56.1	9.1	8.8
	2	42.5	40.6	47.3	54.0	60.4	54.2	60.6	13.6	13.3
	3	42.5	40.6	47.3	47.9	54.3	48.6	55.1	8.0	7.8
MP 22.5	1	41.1	39.2	43.5	73.6	80.0	73.6	80.0	34.4	36.5
	2	41.1	39.2	43.5	65.8	72.2	65.8	72.2	26.6	28.7
MP 24.0	1	41.1	39.2	43.5	53.6	60.0	53.8	60.1	14.6	16.6
	2	41.1	39.2	43.5	48.0	54.4	48.5	54.7	9.3	11.2



Bore Location	NSA	Existing Ambient Sound Levels, dBA ^a			Predicted Sound Level –24-Hour Construction, dBA		Construction Plus Ambient, dBA		Temporary Increase in Sound Level, dBA	
		Day	Night	L _{dn}	Night	L _{dn}	Night	L _{dn}	Night	L _{dn}
MP 24.4	1	41.1	39.2	43.5	48.1	54.5	48.6	54.8	9.4	11.3
	2	41.1	39.2	43.5	54.6	61.0	54.7	61.1	15.5	17.6
	3	41.1	39.2	43.5	47.1	53.5	47.8	53.9	8.6	10.4
MP 24.6	1	41.1	39.2	43.5	53.0	59.4	53.2	59.5	14.0	16.0
	2	41.1	39.2	43.5	46.7	53.1	47.4	53.6	8.2	10.1
	3	41.1	39.2	43.5	46.1	52.5	46.9	53.0	7.7	9.5
MP 26.5	1	41.1	39.2	43.5	47.6	54.0	48.2	54.4	9.0	10.9
MP 26.9	1	41.1	39.2	43.5	46.8	53.2	47.5	53.6	8.3	10.1
	2	41.1	39.2	43.5	51.2	57.6	51.5	57.8	12.3	14.3
MP 27.2	1	41.1	39.2	43.5	51.9	58.3	52.1	58.4	12.9	14.9
	2	41.1	39.2	43.5	44.9	51.3	45.9	52.0	6.7	8.5
MP 28.0	1	47.4	37.6	47.5	47.2	53.6	47.7	54.6	10.1	7.1

^a. Post-processed to remove noise from birds, insects, and passing vehicles in accordance with ANSI ANSI/ASA S3/SC1.100-2014.

^b. L_{dn} was obtained by adding 6.4 dB to the predicted sound levels due to nighttime construction.

Sound level modeling predicts that the sound levels at all NSAs near Mileposts 0.4, 5.3, 11.5, 26.5, and 28.0 will not exceed 48.6 dBA L_{eq} during unmitigated nighttime boring activities. The predicted nighttime construction noise impacts are above the FERC limits at the closest NSAs to several of the conventional bore work areas. These are indicated with shaded cells in **Table 6-1**.

Noise contour plots for each conventional bore location showing the distance at which the predicted sound levels are equal to the FERC nighttime noise limit (shown as a red line of equal sound level) are presented in **Figure 20 through Figure 36**. Sound levels during 24-hour boring were also predicted at the nearest property lines to each conventional bore to assess compliance with the Pittsylvania County noise limit. The Pittsylvania County noise limit noise contour is shown as a yellow line in **Figure 20 through Figure 36**.

As the nighttime boring activities will be completed in a few days, it is often appropriate to consider compensation for the affected residents to allow for temporary relocation during nighttime boring activities rather than to implement extensive noise mitigation measures. Noise impact contours have been included in **Figure 20 through Figure 36** that show the area in which predicted sound levels from boring activities are above nighttime FERC limits. All identified NSAs within the area should be considered for compensation for temporary relocation during nighttime boring activities.

If temporary compensation for relocation is not practical, then a field noise management plan will need to be developed, in conjunction with the site manager. The field noise management plan will include specific noise mitigation recommendations for each site that will be required to meet the FERC nighttime construction noise targets. Each plan will be based on feedback from the drilling contractor and construction personnel such as actual site arrangements including a



determination of which side of the bore will be the entry and exit. This will allow more accurate noise modeling and appropriate noise mitigation design.

7.0 Conclusion

SLR has updated the noise models for the conventional bores as part of the Mountain Valley Amendment project, using an updated boring equipment list provided by Mountain Valley. The noise models predicts that the sound levels at all NSAs near Mileposts 0.4, 5.3, 11.5, 26.5, and 28.0 will be less than 55 dBA L_{dn} during unmitigated nighttime boring activities.

For the remaining bores, and as the nighttime boring activities will be completed in a few days, it is often appropriate to consider compensation for the affected residents to allow for temporary relocation compensation during nighttime boring activities rather than to implement extensive noise mitigation measures. If temporary compensation for relocation is not practical then a field noise management plan will need to be developed, in conjunction with the site manager.

Property line sound levels were also assessed at each site to compare to the Pittsylvania County, Virginia noise limit of 52 dBA L_{eq} during nighttime hours. If nighttime boring is required and sound levels are to be reduced at the property line locations, a nighttime construction noise plan should be developed. Due to the preliminary nature of the information presented in this report, results may change as the construction plan is finalized.

This concludes our Technical Report for the Mountain Valley Amendment conventional bores. Please contact us if you have any questions.

Regards,

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8.0 References

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Kephalopoulos, Stylianos et al. (2012). Common Noise Assessment Methods in Europe (CNOSSUS-EU) European Commission Joint Research Centre, Institute for Health and Consumer Protection, TP 281 21027 – Ispra (VA), Italy.

ISO 9613-2 (1996) Acoustics - Attenuation of Sound During Propagation Outdoors - Part 2: General method of calculation



Figure 1: MP 0.4, ML 1 NSAs and Measurement Locations



Figure 2: MP 0.8, ML 1 NSAs and Measurement Locations



Figure 3: MP 2.0 NSAs and Measurement Locations



Figure 4: MP 4.3 NSAs and Measurement Locations



Figure 5: MP 5.3 NSAs and Measurement Locations



Figure 6: MP 11.5 NSAs and Measurement Locations



Figure 7: MP 16.1 NSAs and Measurement Locations



Figure 8: MP 17.4 NSAs and Measurement Locations

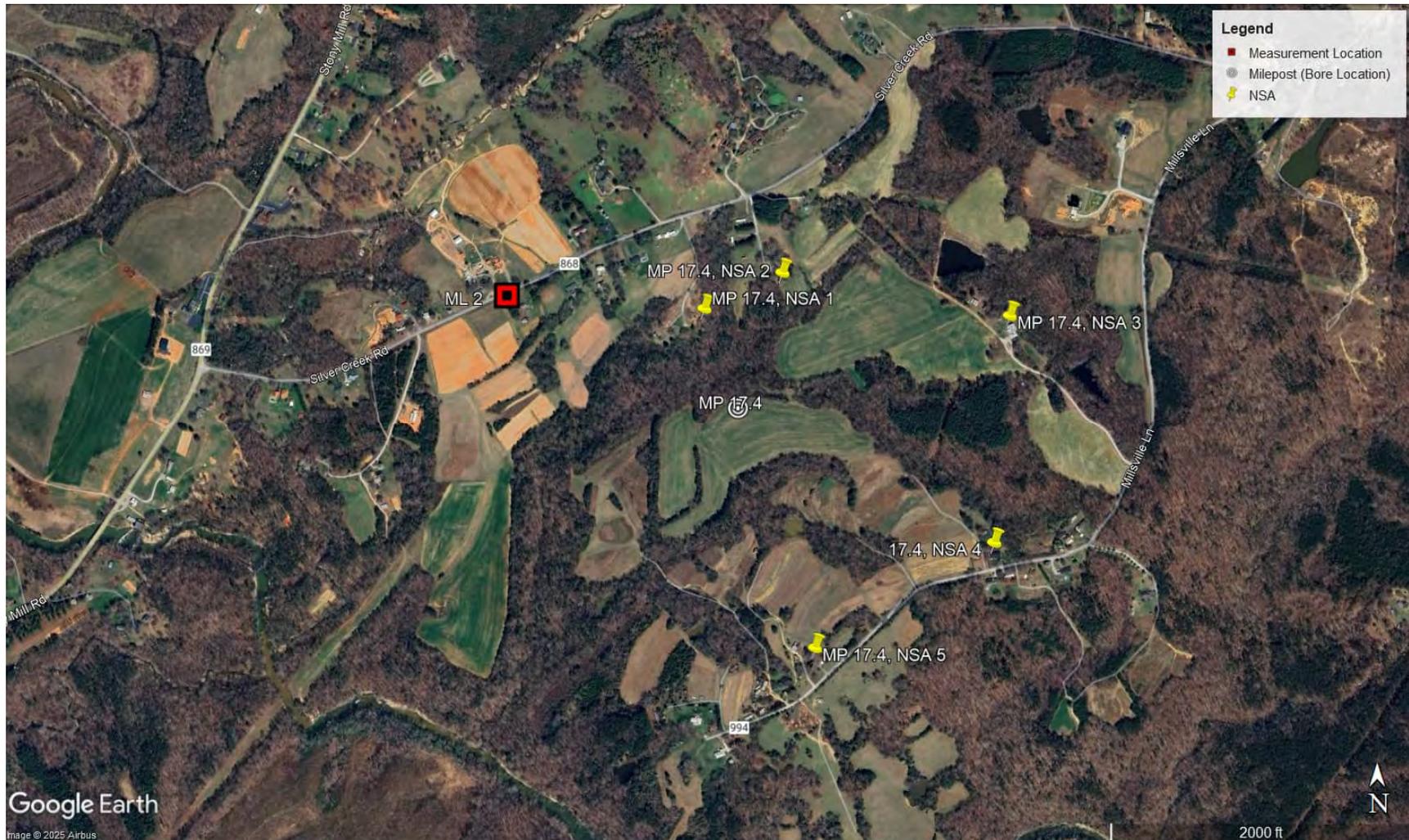


Figure 9: MP 21.4 NSAs and Measurement Locations

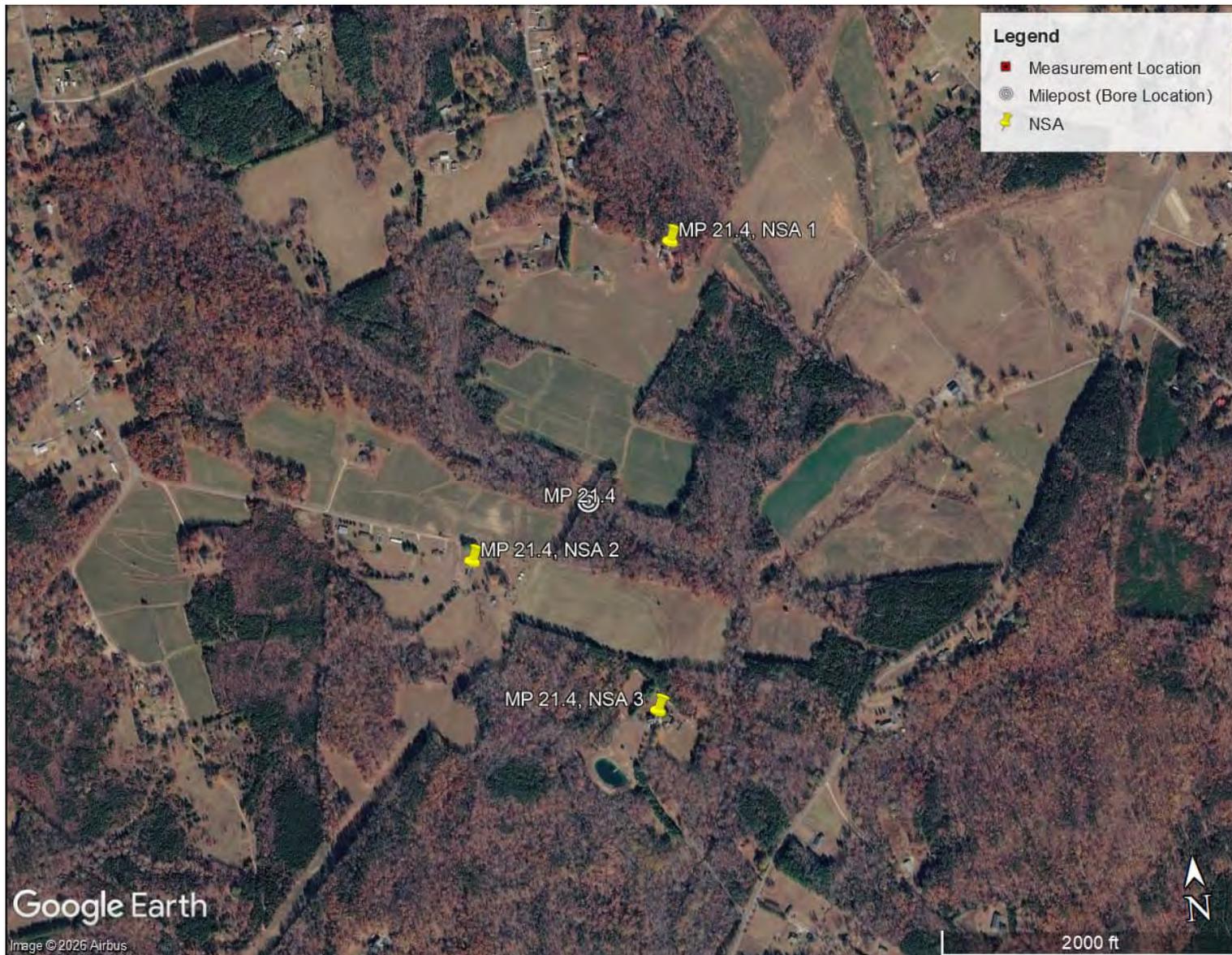


Figure 10: MP 22.5 NSAs and Measurement Locations



Figure 11: MP 24.0 NSAs and Measurement Locations



Figure 13: MP 24.6 NSAs and Measurement Locations



Figure 14: MP 26.5 NSAs and Measurement Locations

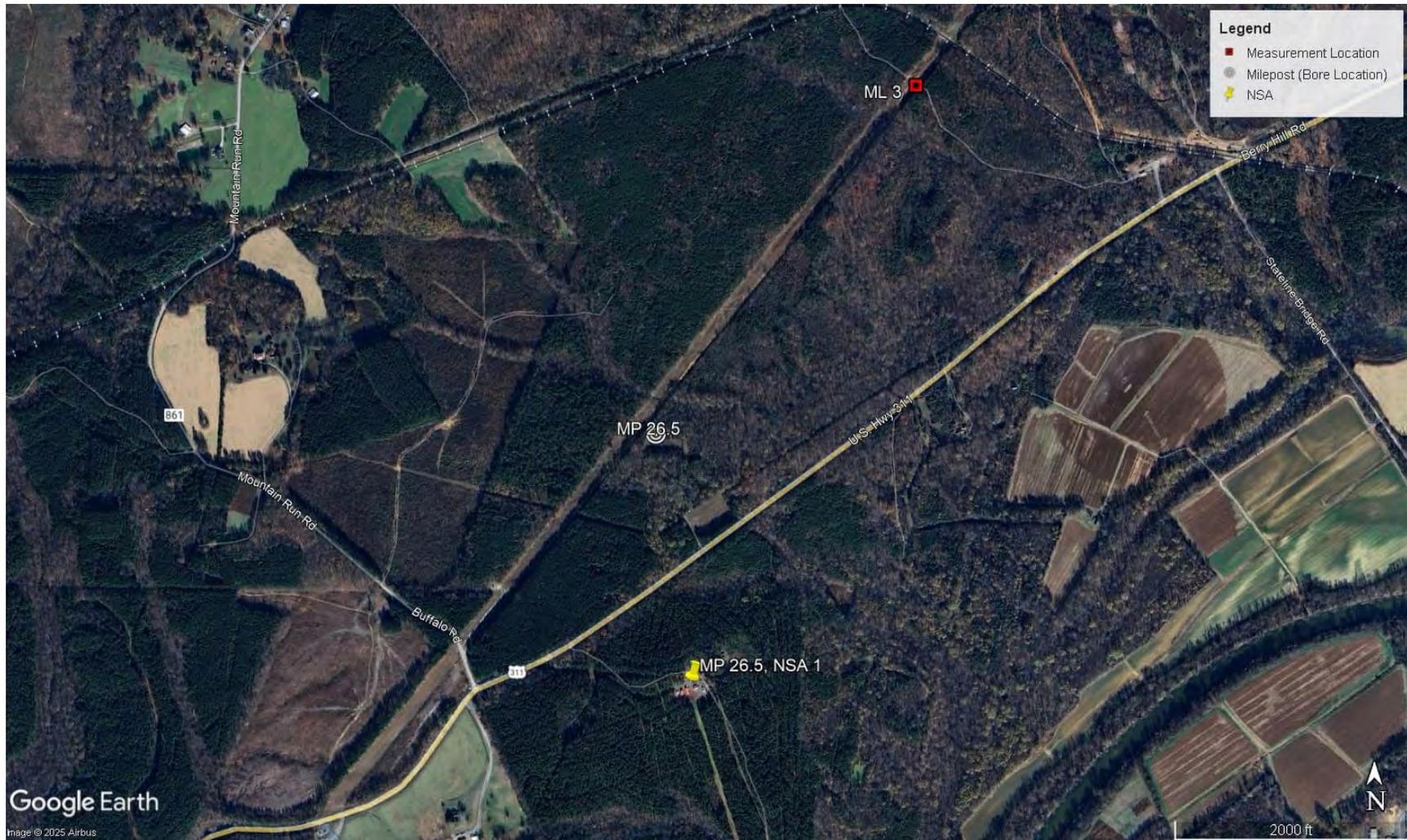


Figure 15: MP 26.9 NSAs and Measurement Locations

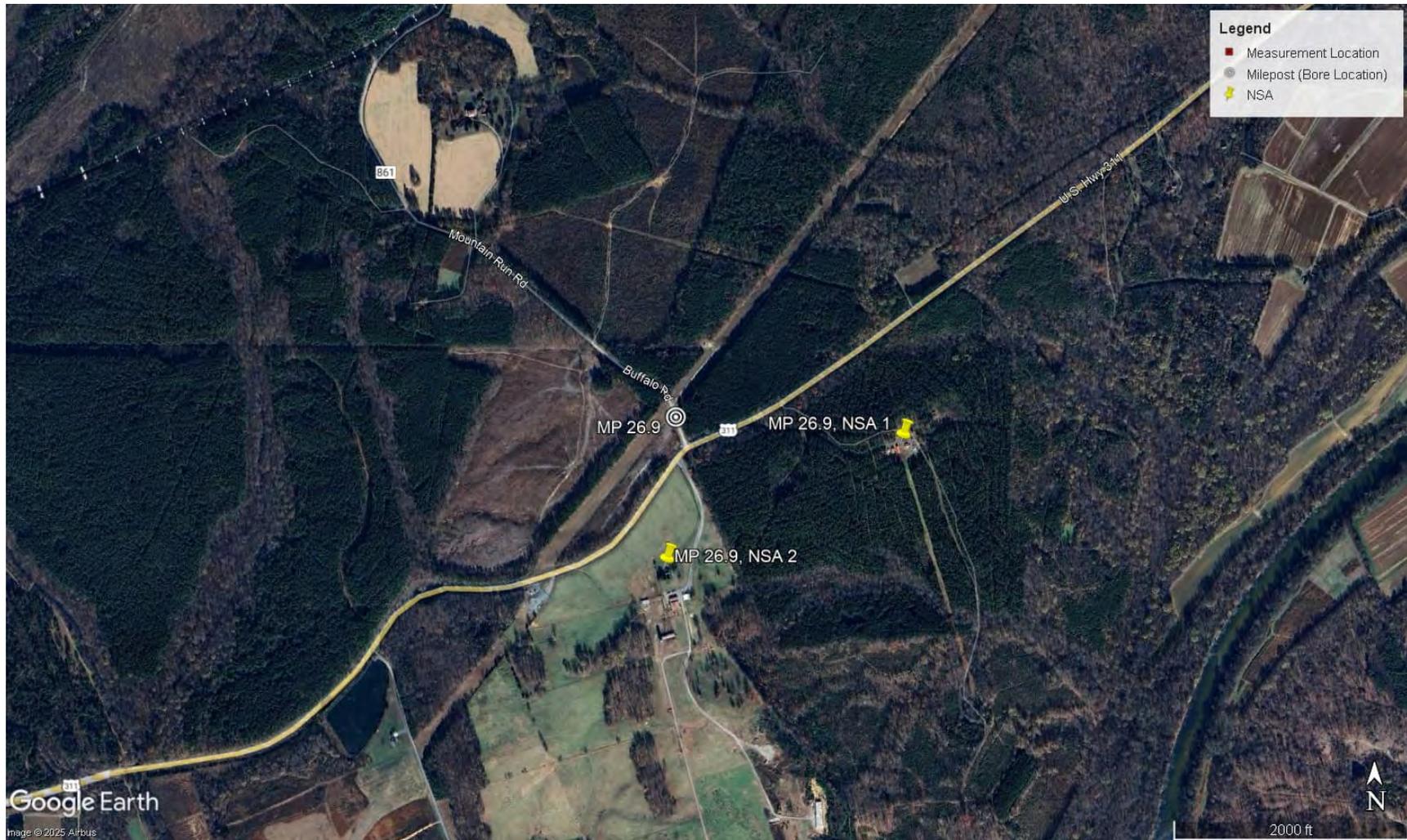


Figure 16: MP 27.2 NSAs and Measurement Locations



Figure 17: MP 28.0 NSAs and Measurement Locations



Figure 18: Weather Data (Temperature and Relative Humidity) – August 14 to August 15, 2024

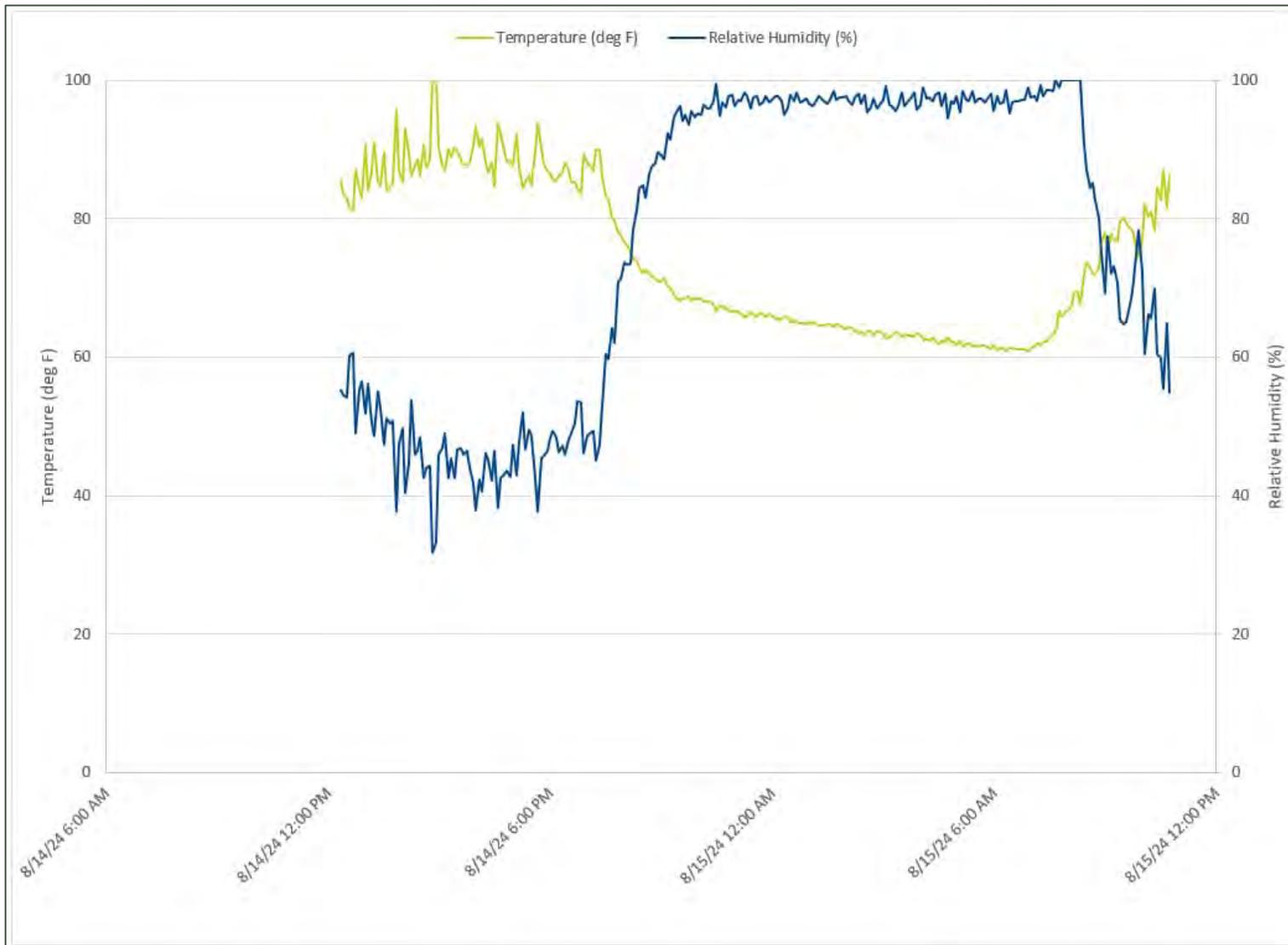


Figure 19: Weather Data (Wind Speed and Direction) – August 14 to August 15, 2024

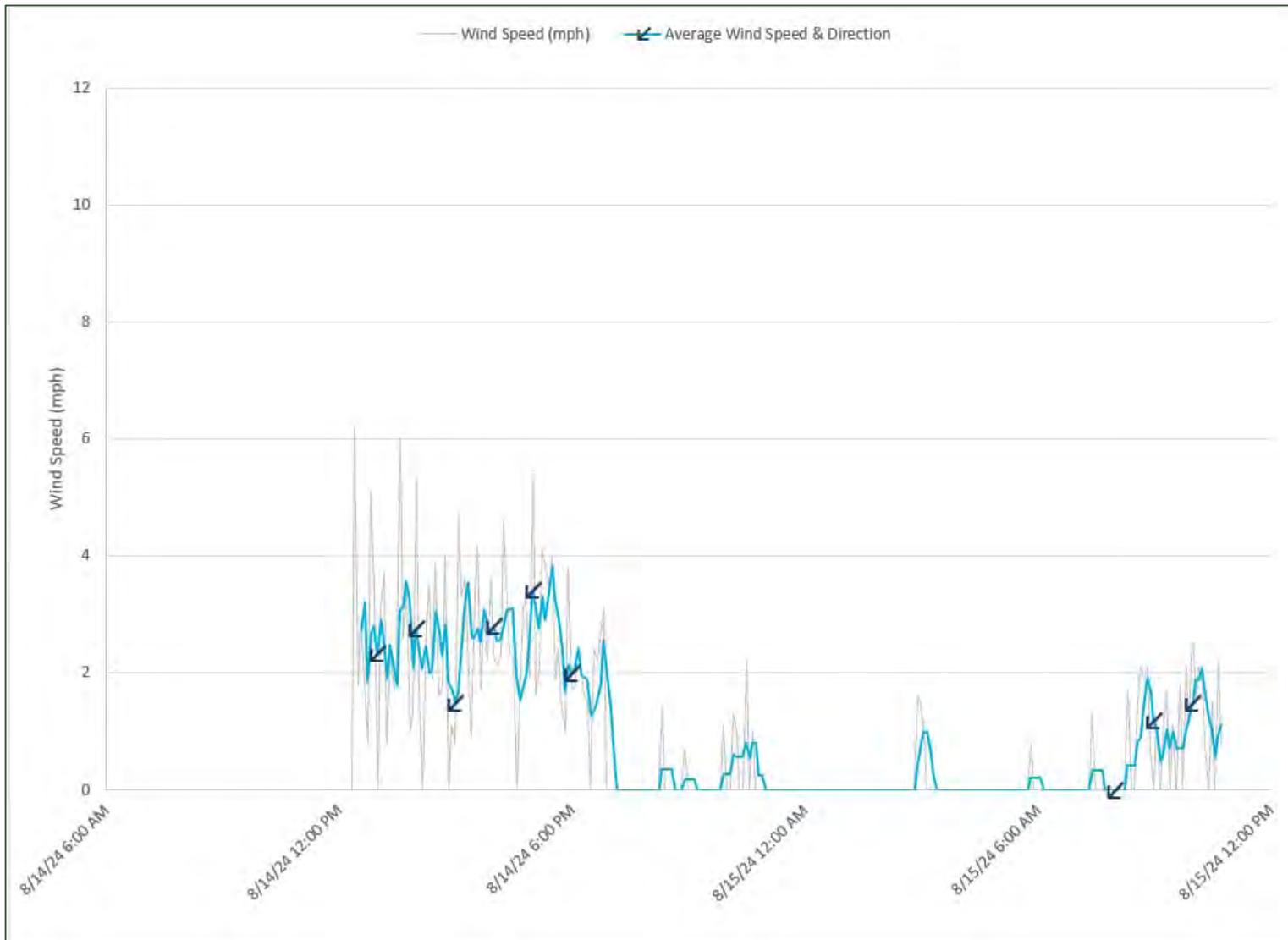


Figure 20: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 0.4 Conventional Bore

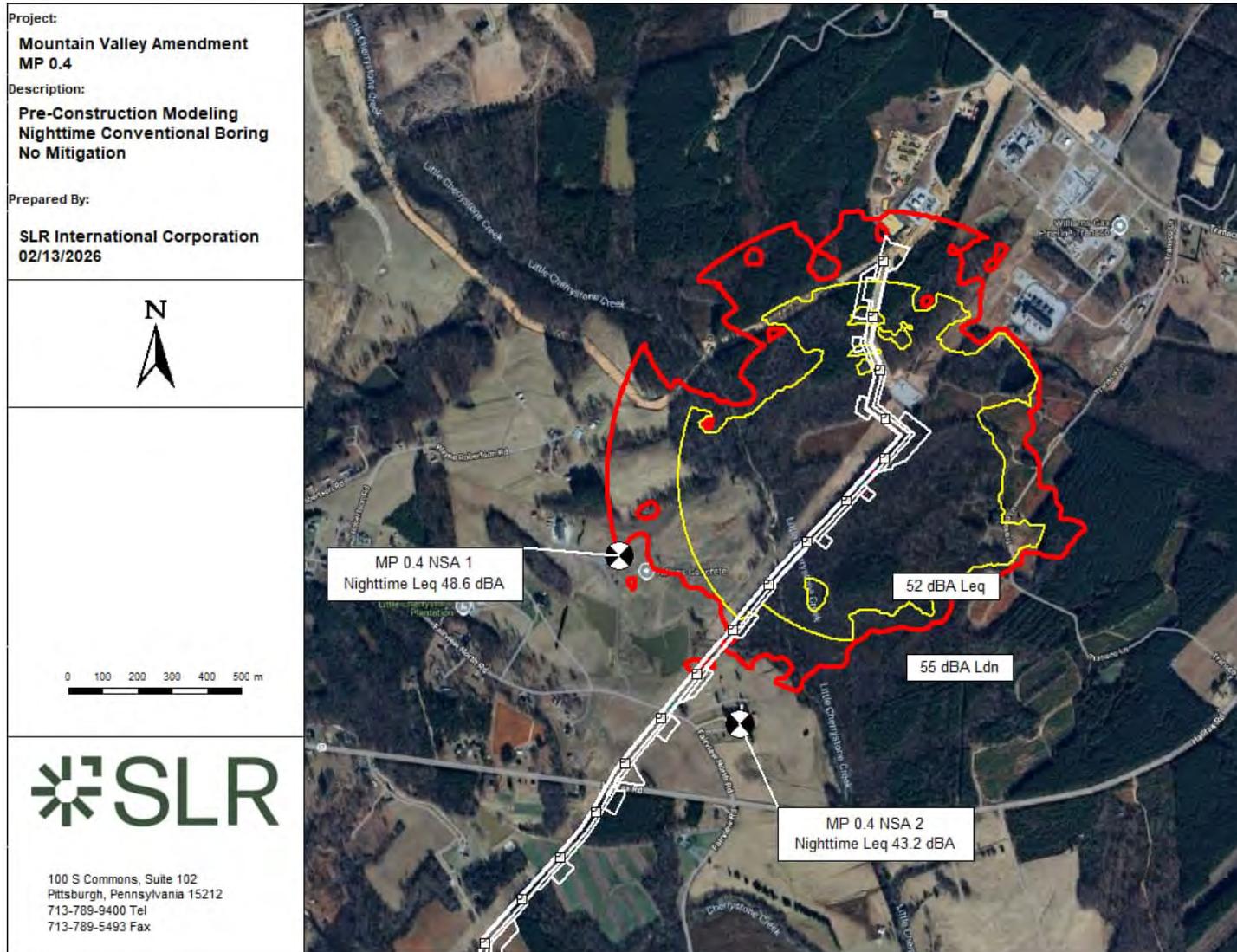


Figure 21: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 0.8 Conventional Bore

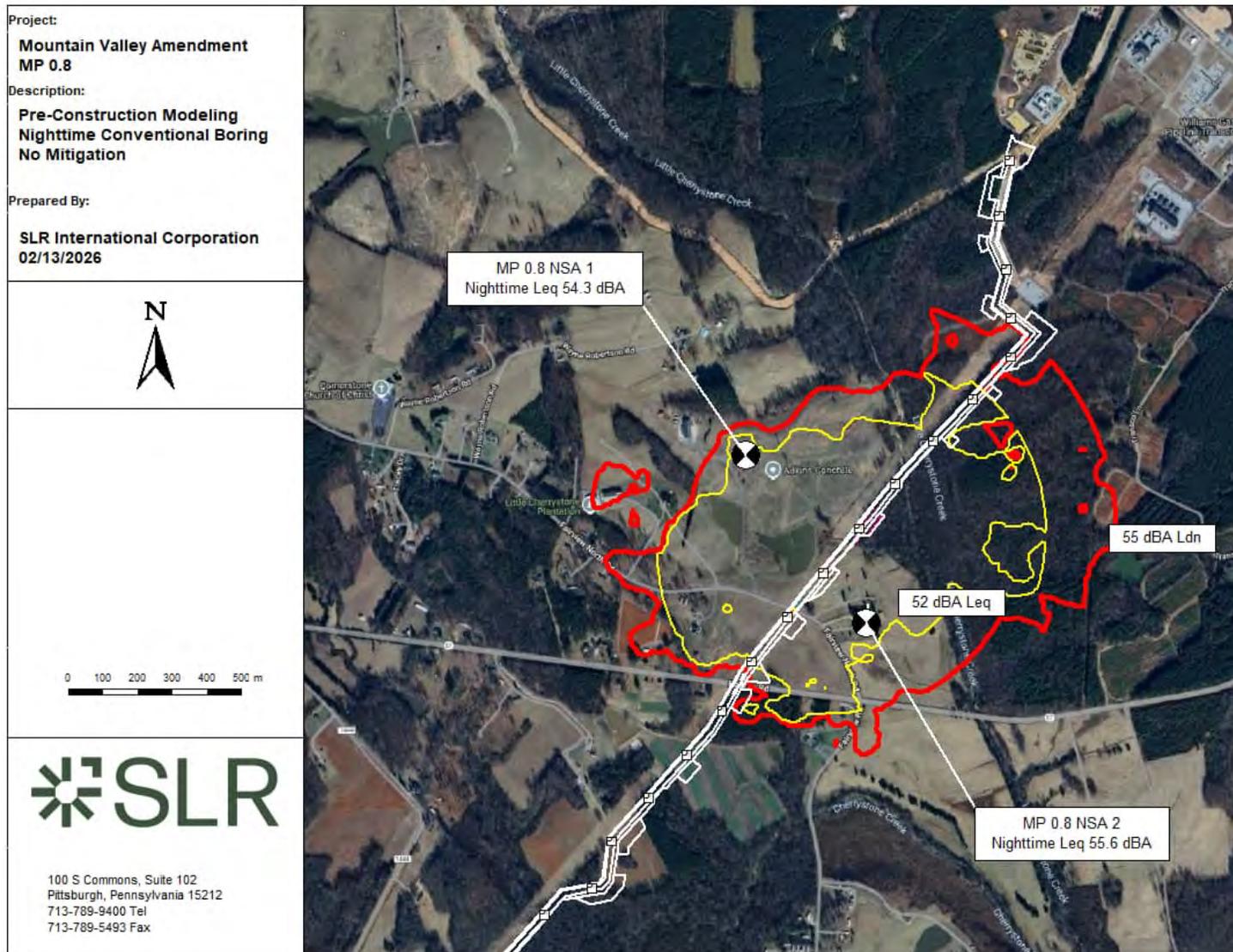


Figure 22: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 2.0 Conventional Bore

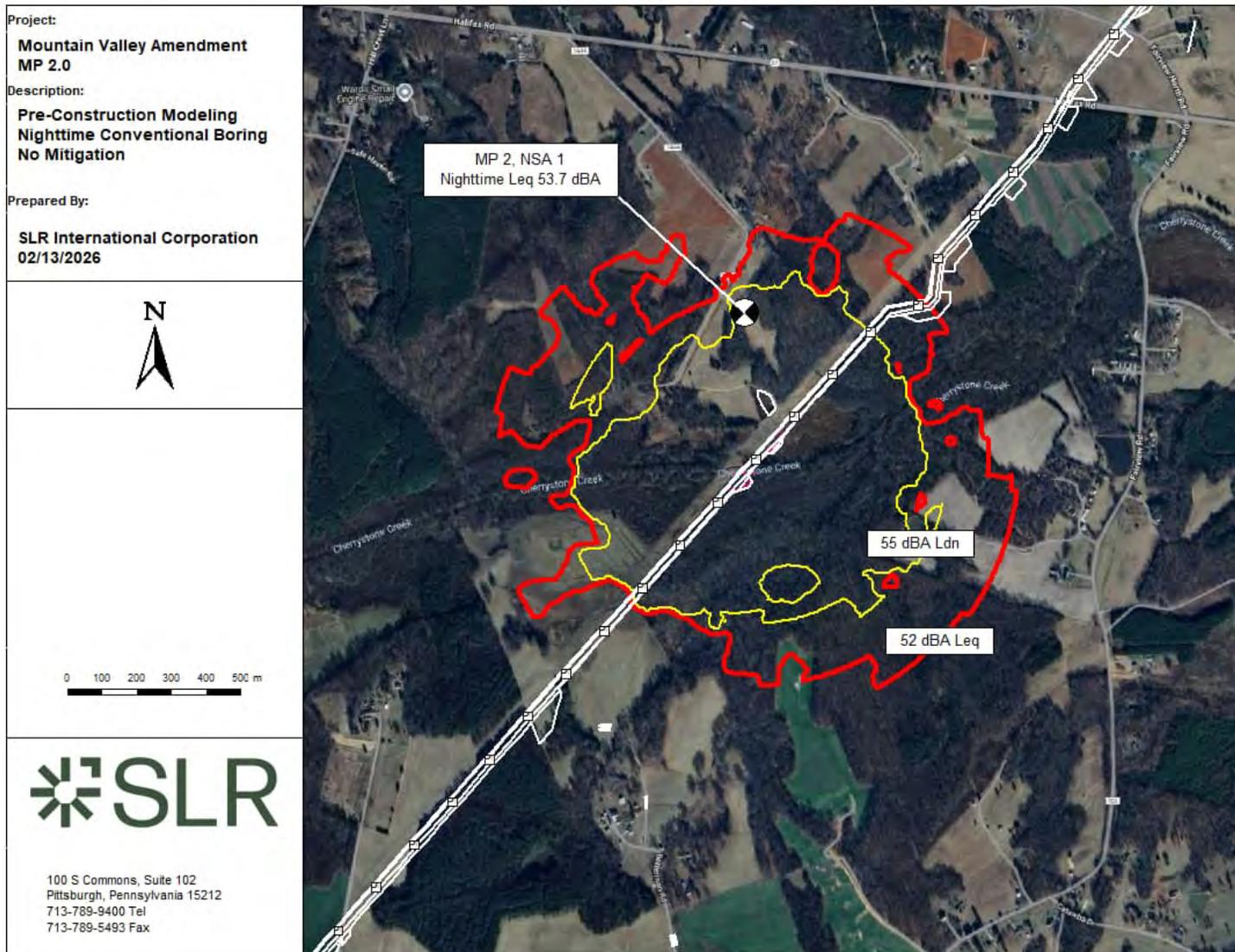


Figure 23: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 4.3 Conventional Bore

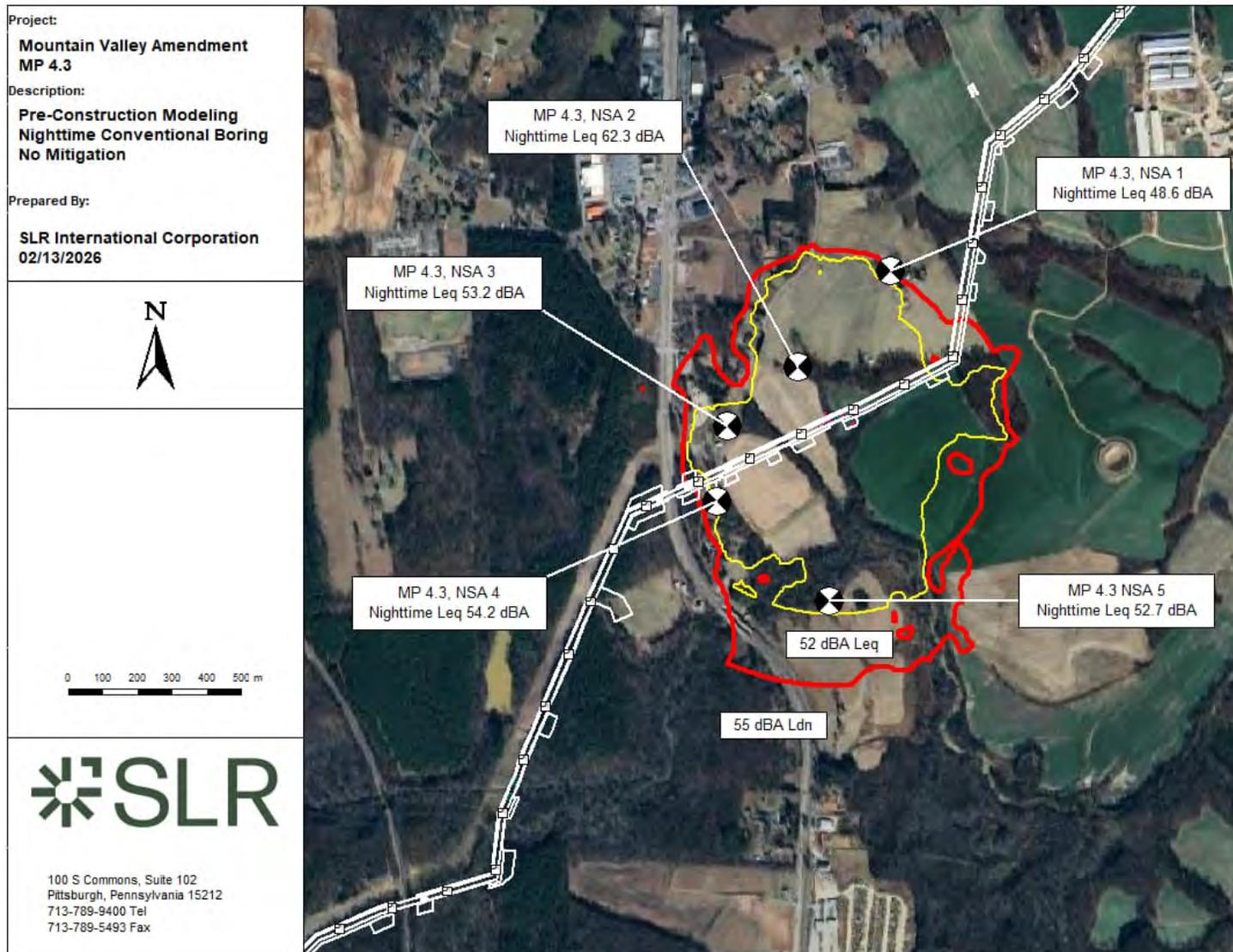


Figure 24: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 5.3 Conventional Bore

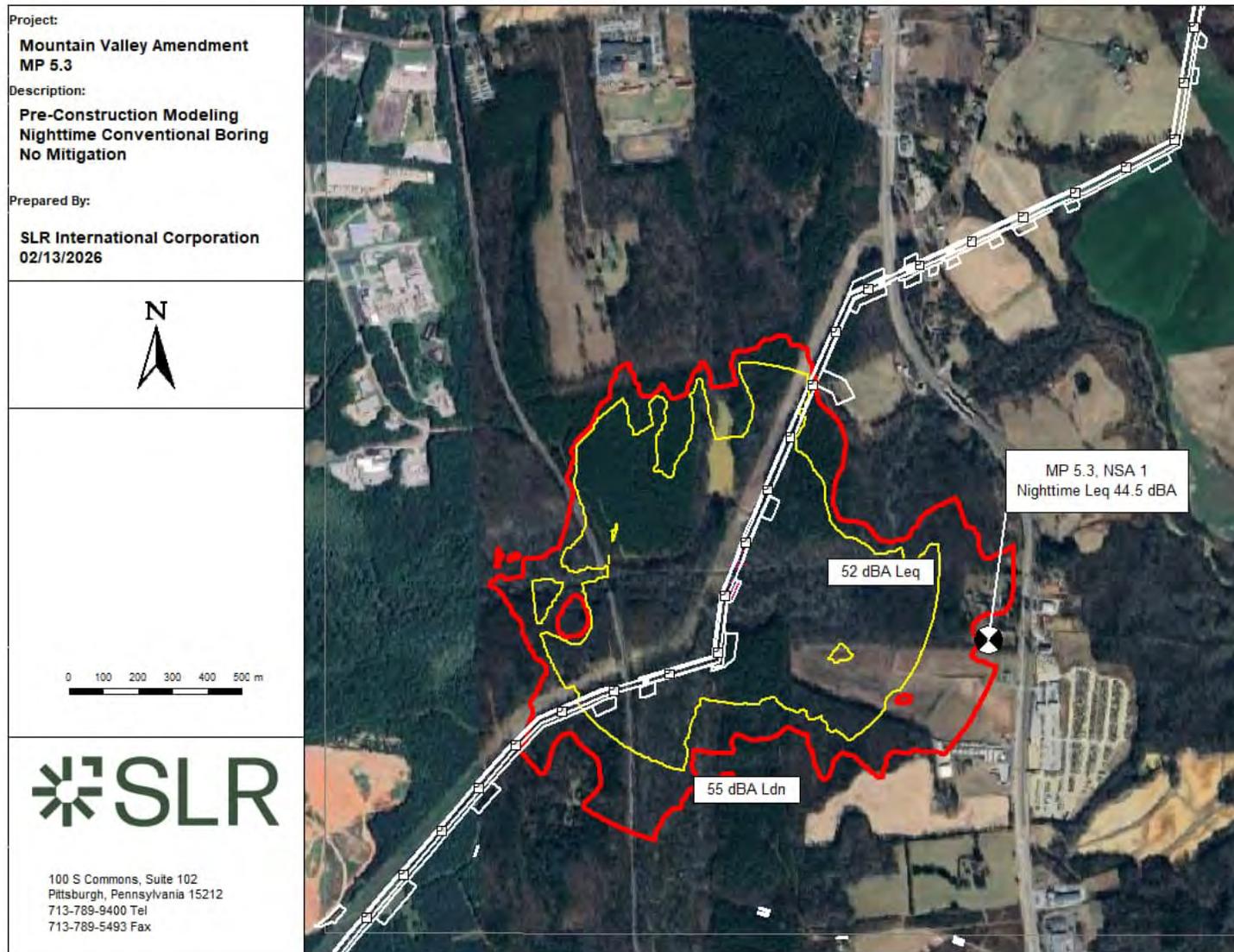


Figure 25: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 11.5 Conventional Bore

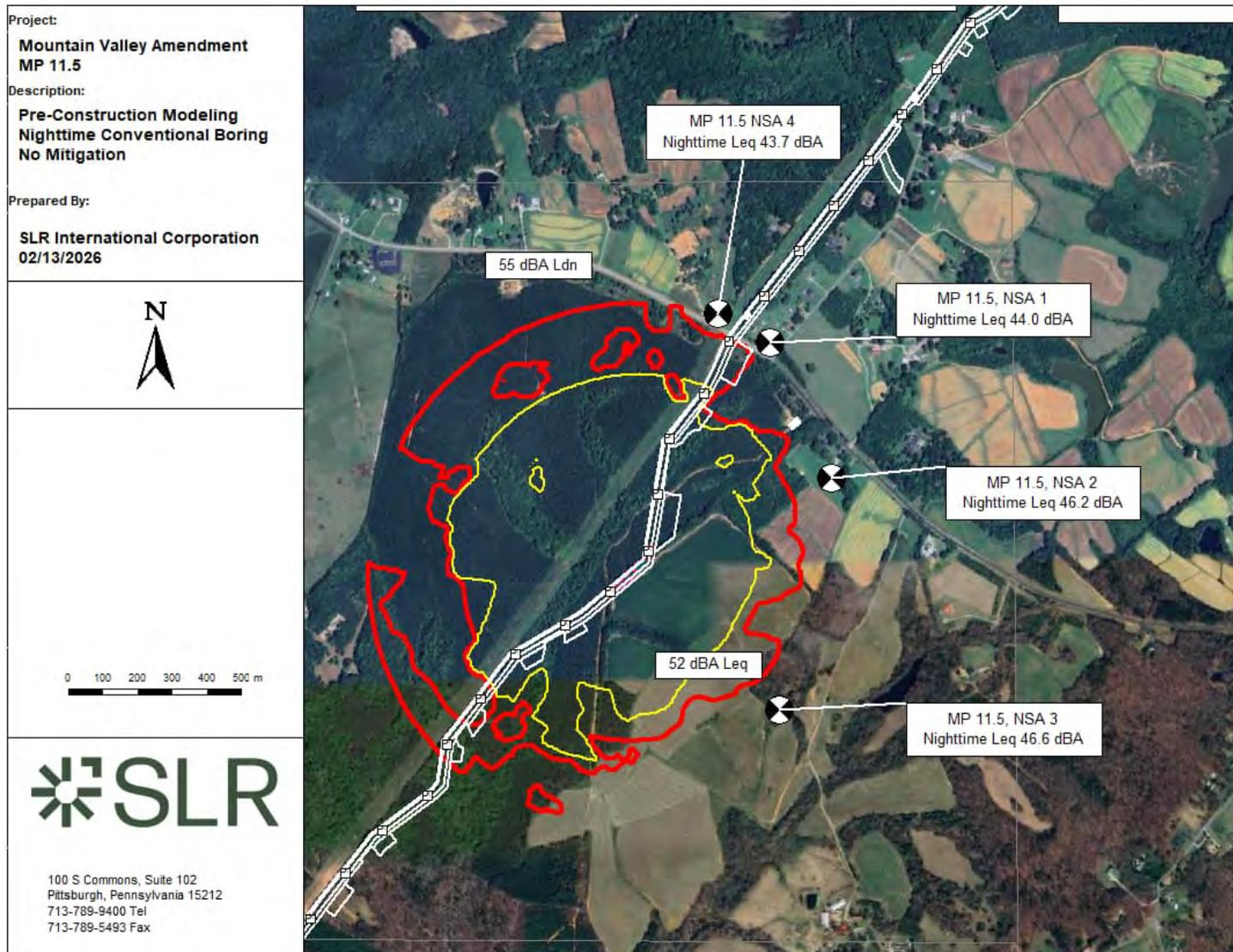


Figure 26: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 16.1 Conventional Bore

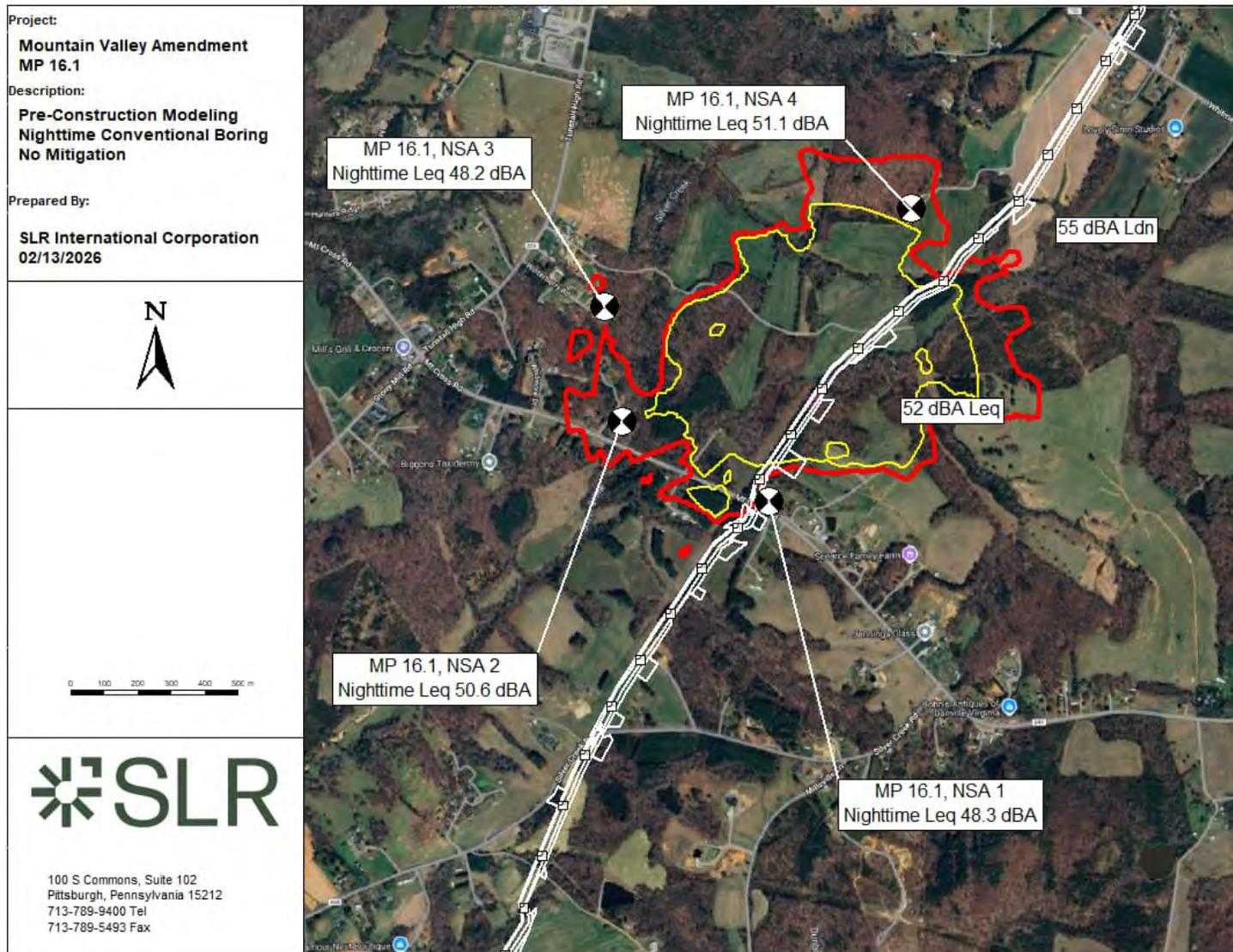


Figure 27: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 17.4 Conventional Bore

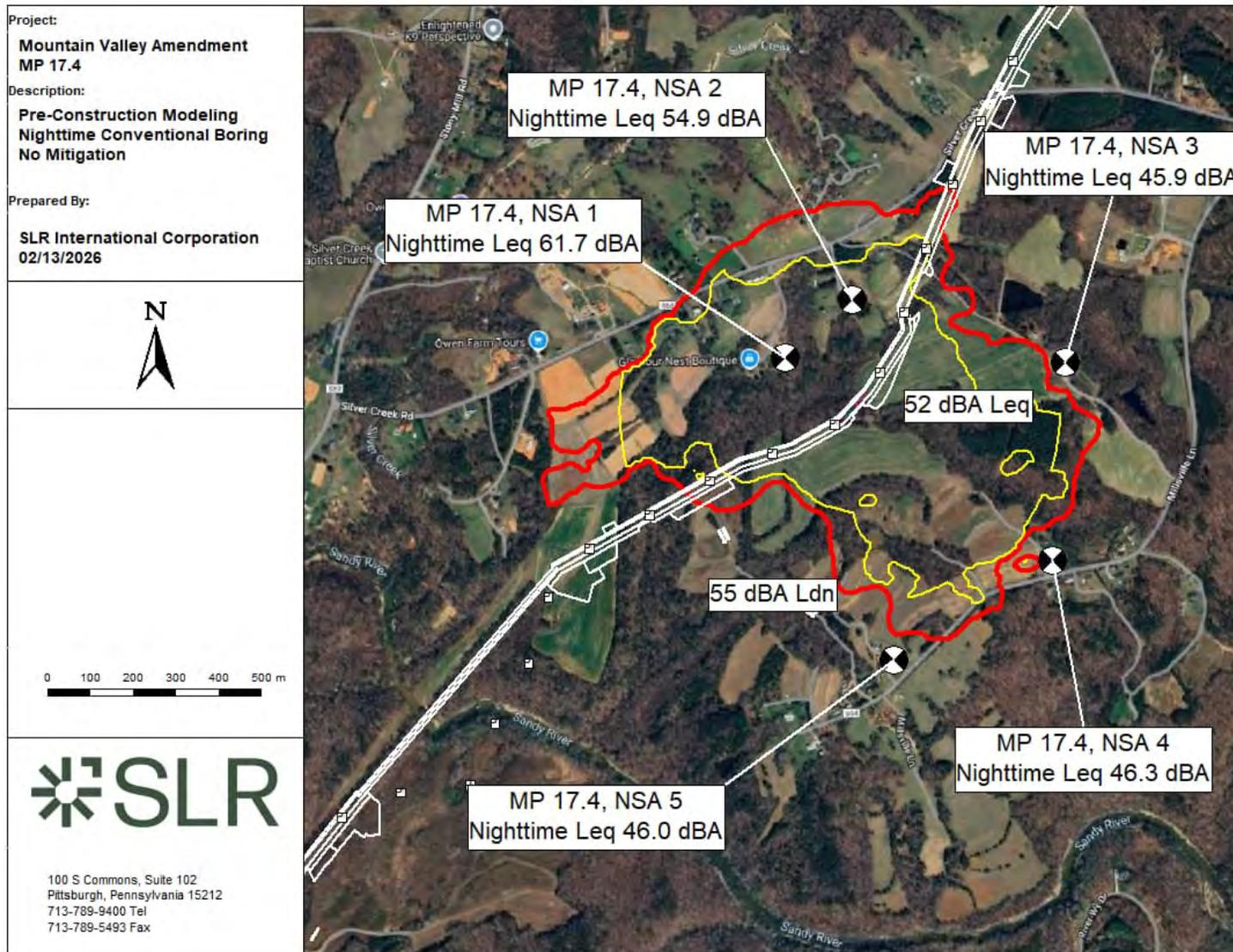


Figure 28: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 21.4 Conventional Bore

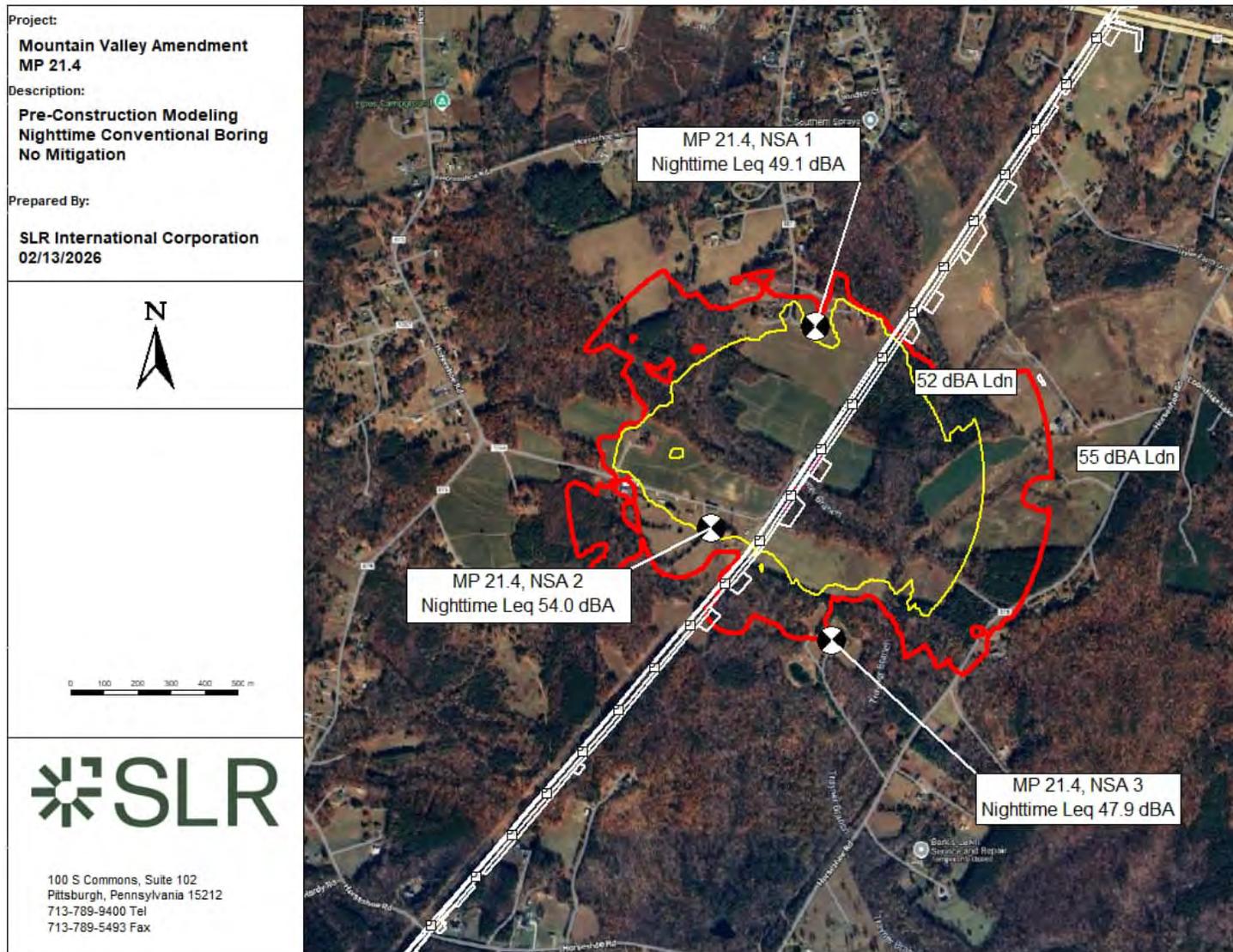


Figure 29: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 22.5 Conventional Bore

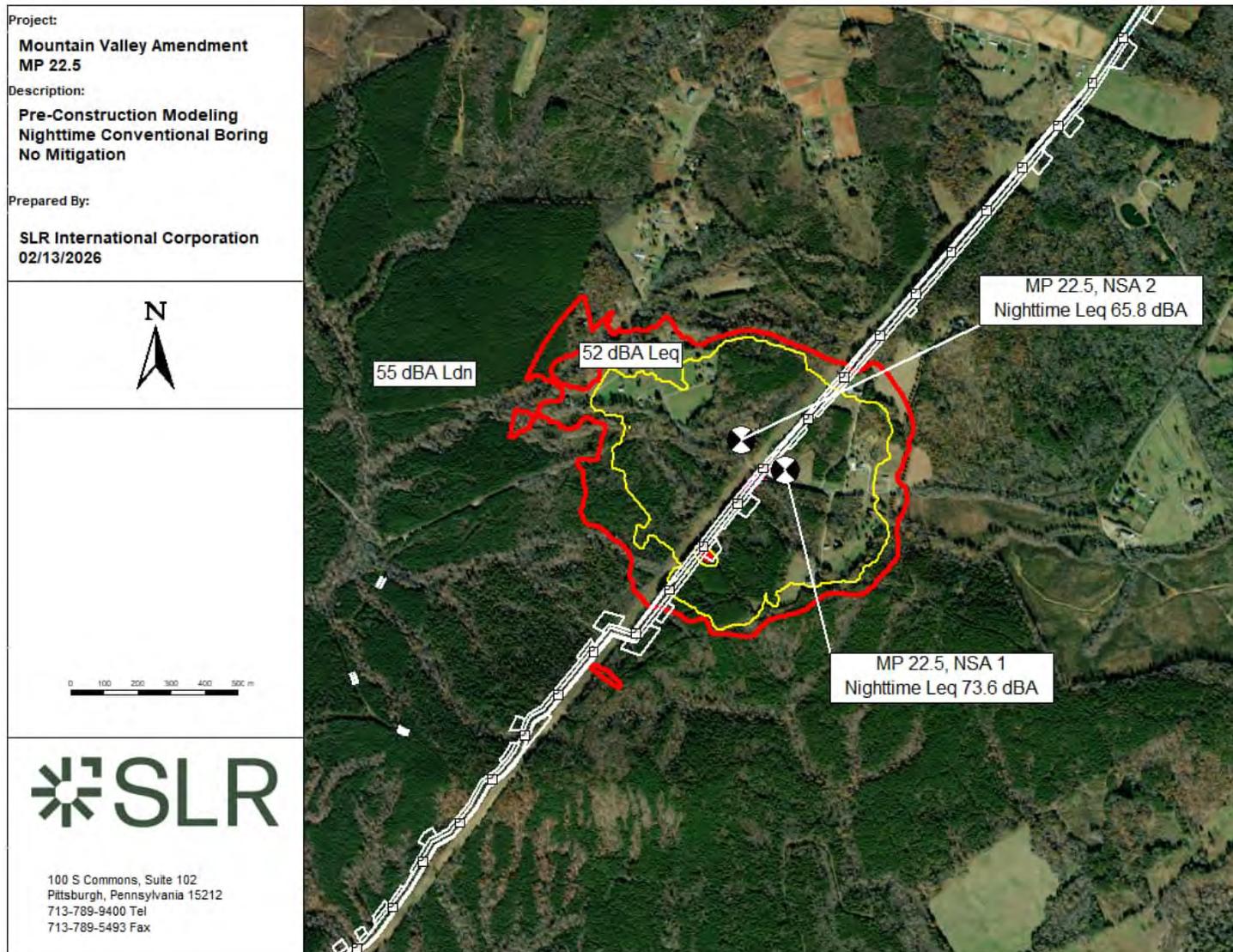


Figure 30: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 24.0 Conventional Bore

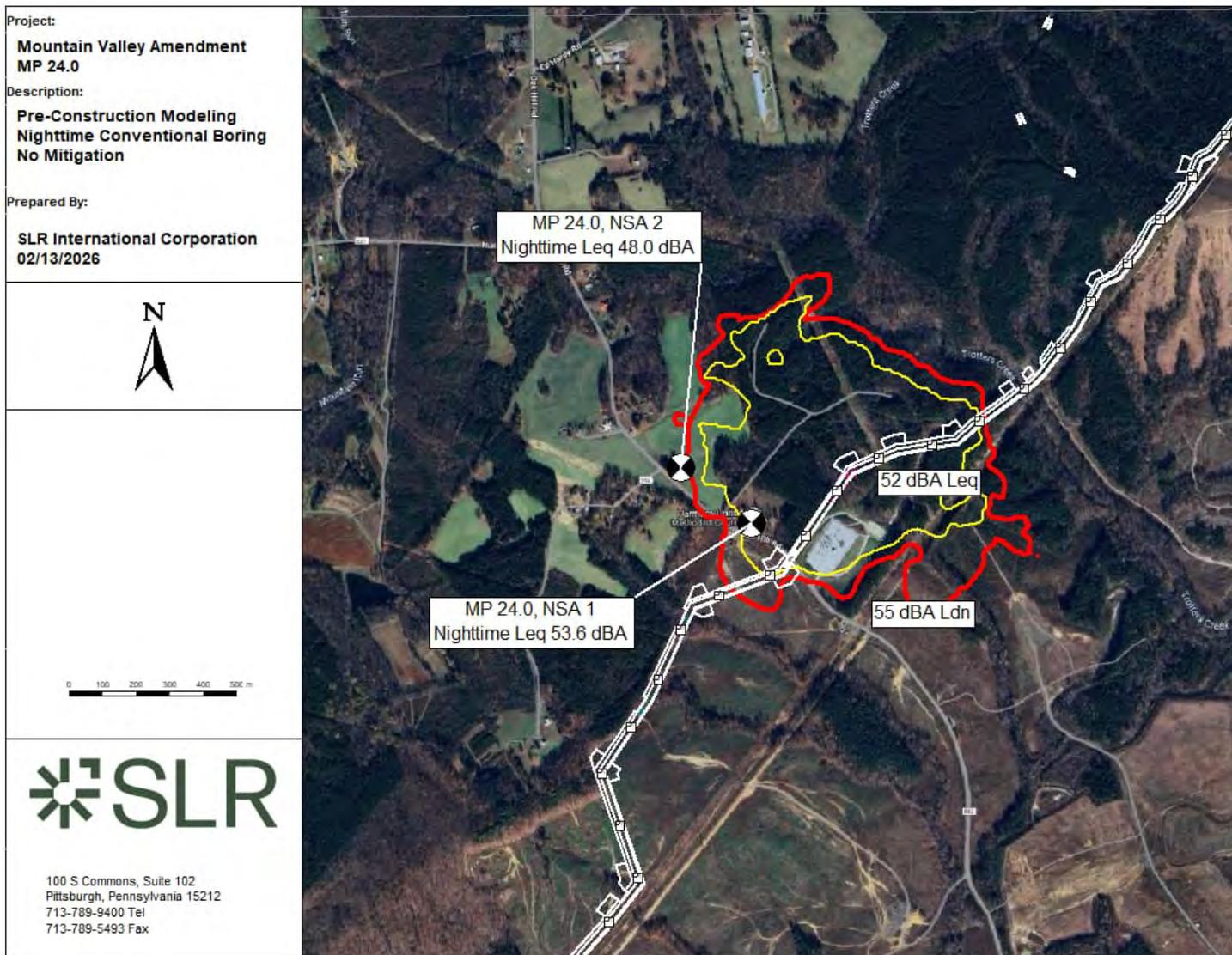


Figure 31: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 24.4 Conventional Bore

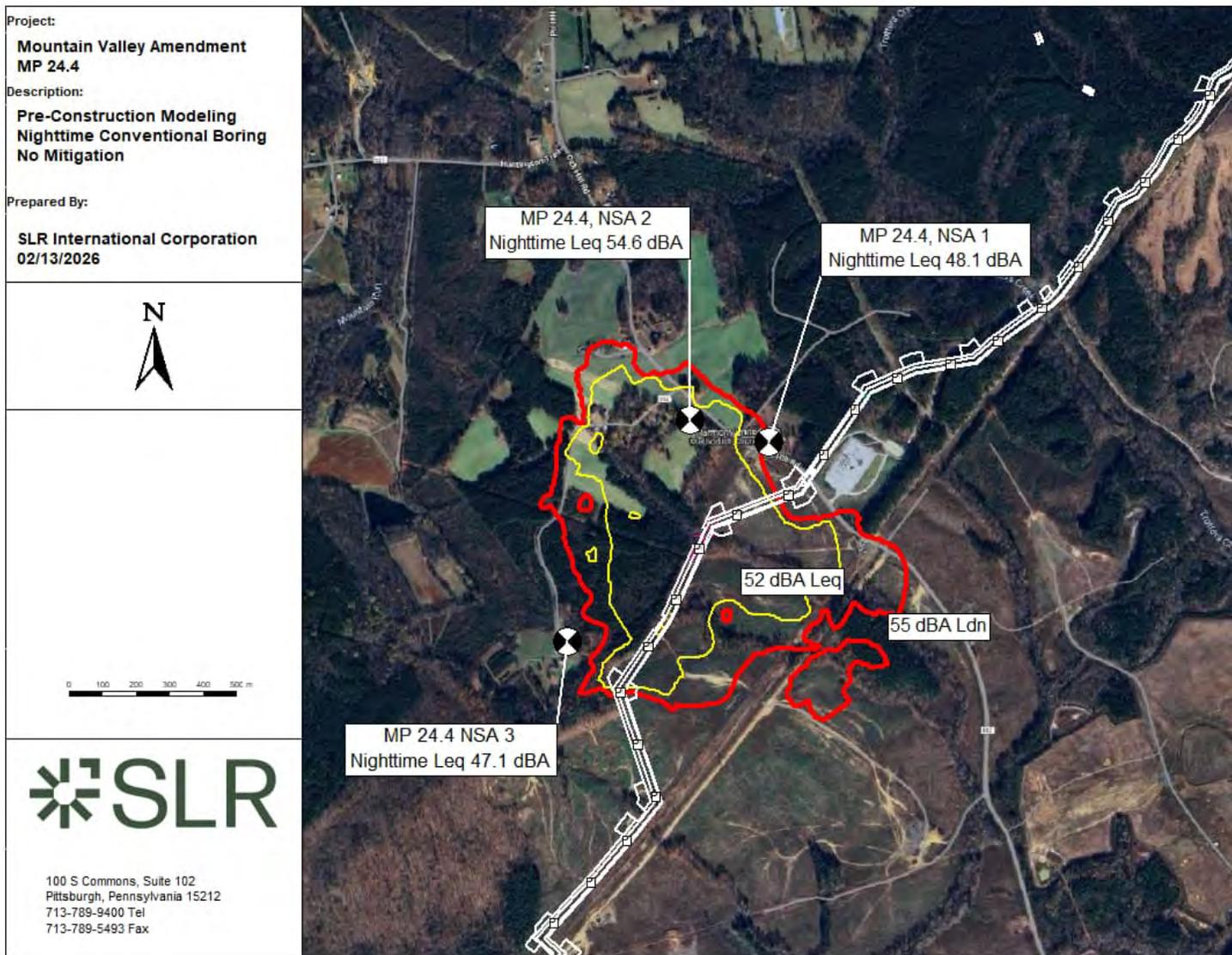


Figure 32: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 24.6 Conventional Bore

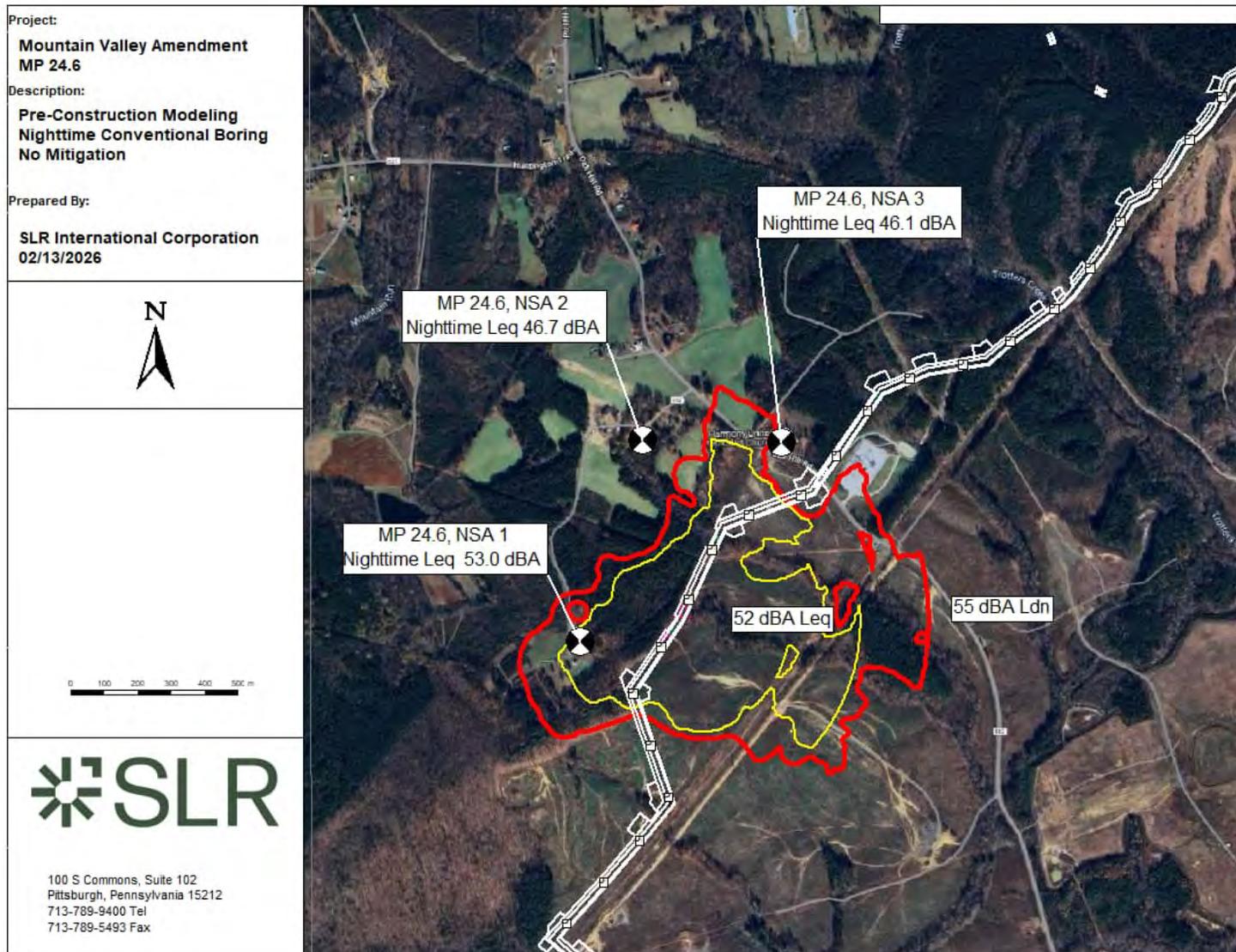


Figure 33: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 26.5 Conventional Bore

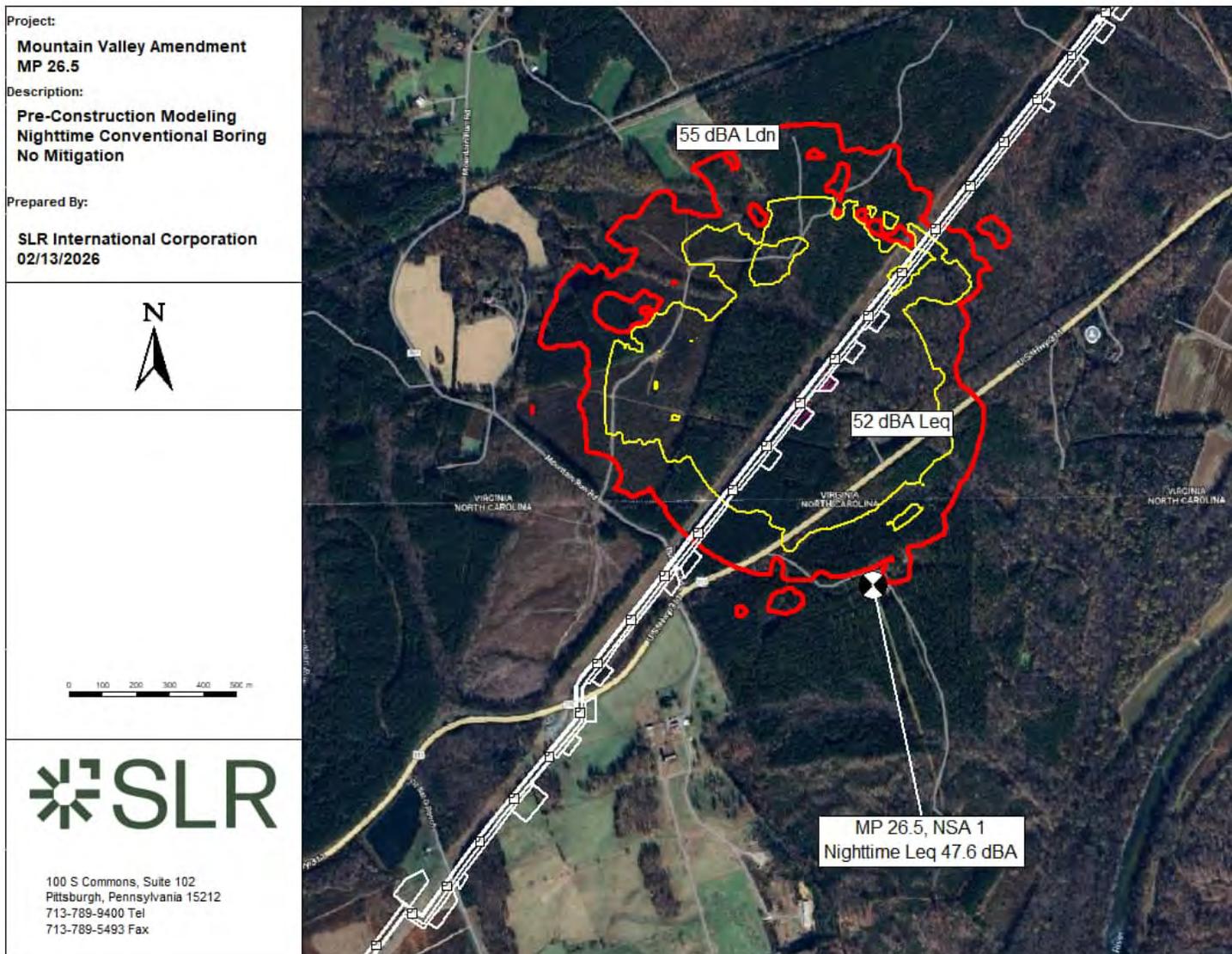


Figure 34: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 26.9 Conventional Bore

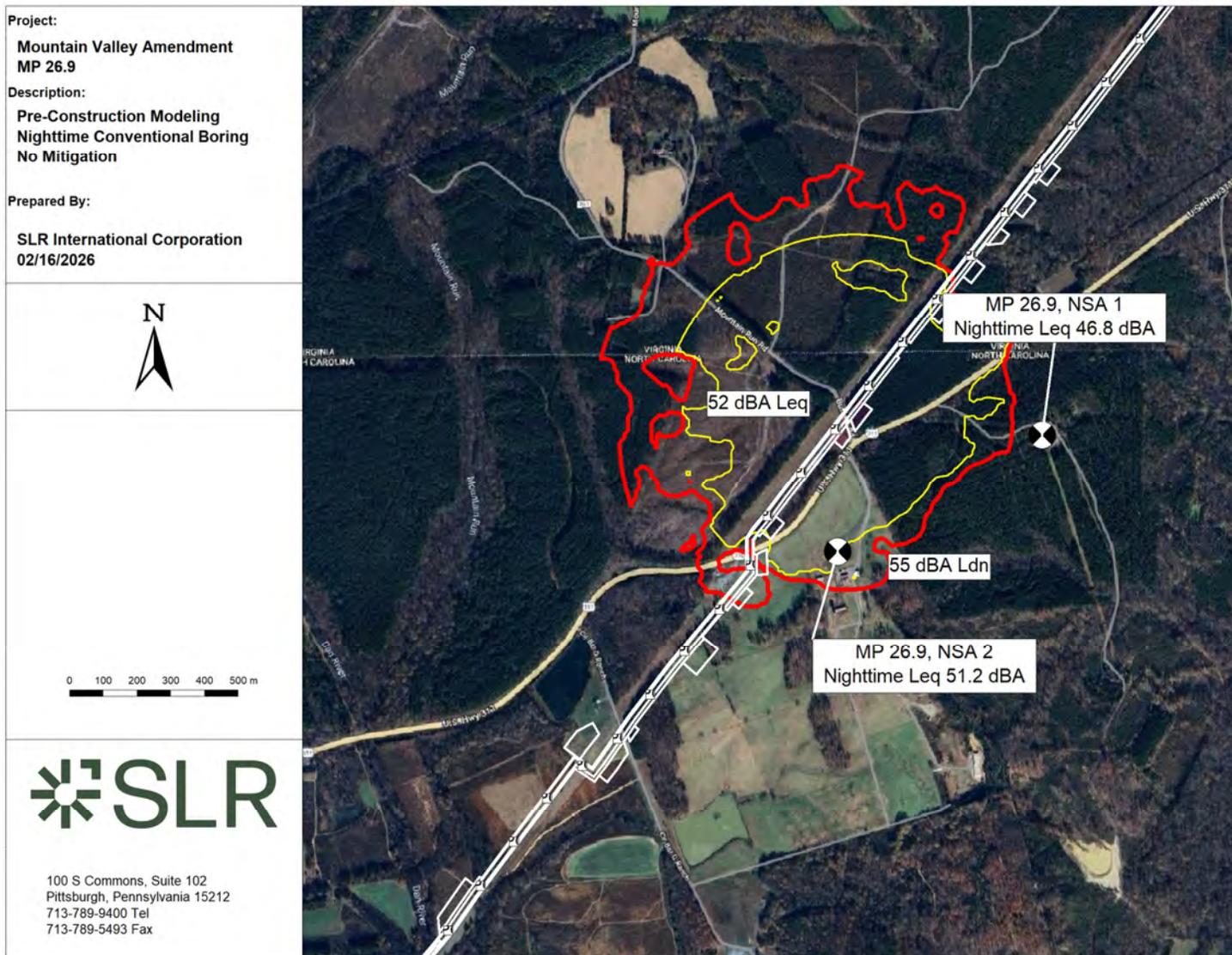


Figure 35: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 27.2 Conventional Bore

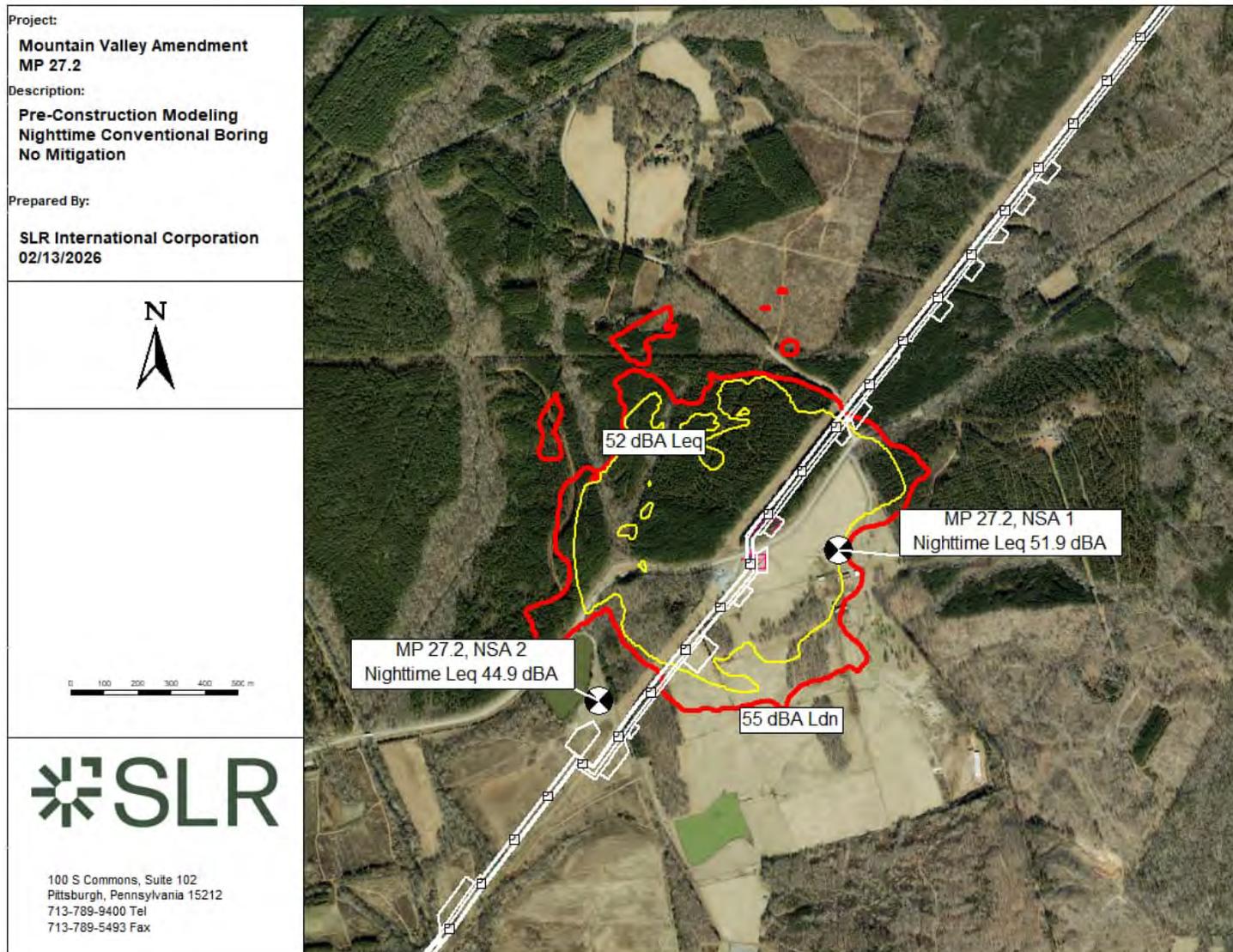


Figure 36: Predicted Unmitigated 55 dBA L_{dn} Contour for MP 28.0 Conventional Bore

