

Appendix E
Traffic Noise Analysis For I-94 East-West
Corridor Project (70th Street to 16th Street)



Traffic Noise Analysis for I-94 East-West Corridor Project

(70th Street to 16th Street)

Submitted to

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B Traffic Noise Impact Summary



Acronyms and Abbreviations

Ambient Noise Level: The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.

A-Scale: A weighting system which best approximates the frequency response of the average human ear.

A-Weighted Sound Level [dBA]: The sound-pressure level in decibels as measured on a sound-level meter using the A weighted filter network. The A-weighted filter deemphasizes very low- and very high-frequency components of sound, in a manner similar to the frequency response of the human ear, and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.

Approach: Means one (1) decibel less than the levels in the Noise Level Criteria for Considering Barriers.

ATC: American Transmission Company - American Transmission Co. is a Wisconsin-based company that owns and operates the high-voltage electric transmission system that powers communities in portions of the Upper Midwest.

Benefited Receptor: A receptor or common use area receiving a minimum eight (8) decibels reduction in sound level as a result of the proposed abatement measure.

CFR: Code of Federal Regulation

Common Noise Environment: A group of receptors within the same Land Use Category listed in the Noise Level Criteria For Considering Barriers, that are exposed to similar noise sources and levels; traffic volumes, traffic mix, and speed; and topographic features. Generally, common noise environments occur between two secondary noise sources such as interchanges, intersections and cross-roads.

Common Use Area: An outdoor place in a multi-unit residential complex where frequent human use by all complex residents occurs and a lowered noise level would be of benefit.

Decibel (dB): The unit of measure of sound intensity. The decibel scale audible to humans spans approximately 140 dB.

Design Year: Means 20 years after the completion of construction of the highway facility. 2050 for the I-94 E-W Project

EIS: Environmental Impact Statement

Equivalent Noise Level (Leq): The average A-weighted noise level during the measurement period.

Existing Noise Level: The highest hourly traffic noise level caused by existing conditions in a particular area.

Feasibility: The combination of acoustical and engineering factors considered in the evaluation of a noise abatement measure.

FHWA: Federal Highway Administration

Future Noise Level: The highest hourly traffic noise level based on estimated design year (2050) traffic volumes.

HOT: High-occupancy toll

HOV: High-occupancy vehicle

Impacted Receptor: The recipient that has a traffic noise impact.



Intrusive: Noise that intrudes over and above the ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content, as well as the prevailing ambient noise level.

Leq: The equivalent steady-state noise level, as measured in decibels on the A-weighted scale (dBA), which in a stated period of time contains the same acoustic energy as the time-varying noise level during the same period.

Leq(h): The hourly value of Leq

Mph: Miles per hour

NAC: FHWA Noise Abatement Criteria

NLC: WisDOT Noise Level Criteria

Noise: Unwanted sound

Noise Barrier: A physical obstruction that is constructed between the highway noise source and the noise sensitive receptor(s) that lowers the noise level, including stand-alone noise walls, noise berms (earth or other materials), and combination berm/wall systems.

Noise Level: The sound level obtained through use of A-weighting characteristics. The unit of measure is the decibel (dB), commonly referred to as dBA when A-weighting is used.

Noise Reduction Design Goal: The department's criteria of a nine (9) decibel sound level reduction required at one (1) receptor or common use area as a result of the proposed abatement measure before a reasonableness determination can be made.

Permitted: A definite commitment to develop land with an approved specific design of land use activities as evidenced by the issuance of a building permit.

Property Owner: An individual or group of individuals that holds a title, deed or other legal documentation of ownership of a property or residence.

Reasonableness: The combination of social, economic, and environmental factors considered in the evaluation of a noise abatement measure.

Receptor: A discrete or representative location of a noise sensitive area(s) for any of the land uses listed in **Table 2-3** where frequent human use occurs and a lowered noise level would be of benefit.

Residence: The official location of a household.

SEWRPC: Southeastern Wisconsin Regional Planning Commission

Substantial Noise Increase: An increase of 15 dB(A) or more in the design year over the existing noise level.

TNM: Traffic Noise Model

Traffic Noise Impacts: Design year build conditions that approach or exceed the Noise Level Criteria for Considering Barriers for the applicable Land Use Category or a substantial noise increase in the design year over the existing noise level.

23 CFR 772: Title 23, Section 772 of the Code of Federal Regulations

Introduction

The I-94 East-West Project improvements will reconstruct Interstate 94 (I-94) between 70th Street and 16th Street, a distance of about 3.5 miles, and extend Washington Street on new alignment (approximately 0.6 mile south of I-94 between 70th Street and Hawley Road) in Milwaukee, Wisconsin (see **Exhibit 1-1**). The scope of the proposed action is to rebuild the freeway and bridges, modify interchange access to improve safety and traffic flow, and reconstruct local streets affected by the freeway reconstruction.

This traffic noise study has been prepared to evaluate traffic noise related to these roadway improvements and is an update to the 2016 Final EIS noise analysis. This updated study considers new traffic projections, the 6-lane with both half-Hawley and full-Hawley Interchange alternative and the DDI at the Stadium Interchange. The noise study area, shown in **Exhibit 1-2** (including a 500-foot buffer), is in the City of Milwaukee, Milwaukee County, Wisconsin.

This analysis will document existing and predicted future noise conditions in the project corridor. The existing land use adjacent to the road is a mixture of residential, commercial/industrial, and cemeteries.

This report presents the federal and state noise regulations (Section 2), field noise monitoring (Section 3), a description of the noise analysis method (Section 4), traffic noise model results (Section 5), the noise abatement analysis (Section 6), the likelihood statement (Section 7), construction noise (Section 8), coordination with local officials for undeveloped lands (Section 9), and the noise analysis conclusion (Section 10).

Noise Background and Regulations

2.1 Noise Background

Sound is a form of vibration that causes pressure variations in elastic media such as air and water. Noise is unwanted and disruptive sound. The ear is sensitive to pressure variation and perceives it as sound. The intensity of these pressure variations causes the ear to detect different levels of loudness. These pressure differences are most commonly measured in decibels.

The decibel (dB) is the unit of measurement for sound. The decibel scale audible to humans spans approximately 140 dB. A level of zero dB corresponds to the lower limit of audibility, while 140 dB produces a sensation more like pain than sound. The decibel scale is a logarithmic representation of the actual sound pressure variations. Therefore, a 26 percent change in the energy level only changes the sound level 1 dB. The human ear would not detect this change except in a controlled environment. Doubling the energy level would result in a 3-dB increase, which would be barely perceptible in the natural environment. Tripling the energy sound level would result in a clearly noticeable change of 5 dB in the sound level.

A change of 10 times the energy level would result in a 10 dB change in the sound level. This would be perceived as a doubling (or halving) of the apparent loudness.

The human ear has a non-linear sensitivity to noise. To account for this in noise measurements, electronic weighting scales are used to define the relative loudness of different frequencies. The “A” weighting scale is widely used in environmental work because it closely resembles the non-linearity of human hearing. Therefore, the unit of measurement for a decibel A-weighted noise level is dBA.

Traffic noise is not constant. It varies as each vehicle passes a point. The time-varying characteristics of environmental noise are analyzed statistically to determine the duration and intensity of noise exposure. In an urban environment, noise is made up of two distinct parts. One is ambient, or background noise. Wind noise and distant traffic noise make up the acoustical environment surrounding the project. These sounds are not readily recognized but combine to produce a non-irritating ambient sound level. This background sound level varies throughout the day, being lowest at night and highest during the day. The other component of urban noise is intermittent and louder than the background noise. Transportation noise and local industrial noise are examples of this type of noise. It is for these reasons that environmental noise is analyzed statistically.

The statistical descriptor used for traffic noise is Leq. Leq is the constant, average sound level that, over a period of time, contains the same amount of sound energy as the varying levels of the traffic noise. The Leq correlates reasonably well the effects of noise on people. It is also easily measurable with integrating sound level meters. The time period for traffic noise is 1 hour. Therefore, the unit of measure for traffic noise is Leq(1h) dBA.

Highway noise sources have been divided into the five types:

- Automobiles—All vehicles with two axles and four tires, includes passenger vehicles and light trucks, less than 10,000 pounds.
- Medium trucks—All vehicles having two axles and six tires, vehicle weight between 10,000 and 26,000 pounds.
- Heavy trucks—All vehicles having three or more axles, vehicle weight greater than 26,000 pounds.
- Buses—All vehicles designed to carry more than nine passengers.

- Motorcycles—All vehicles with two or three tires and an open-air driver/passenger compartment.

Noise levels produced by highway vehicles can be attributed to three major categories:

- Running gear and accessories (tires, drive train, fan, and other auxiliary equipment)
- Engine (intake and exhaust noise, radiation from engine casing)
- Aerodynamic and body noise

Tires are the dominant noise source at speeds greater than 20 to 30 mph for cars and 50 mph for trucks.¹ Tire sound levels increase with vehicle speed but also depend upon road surface, vehicle weight, tread design and wear. Change in any of these can vary noise levels. At lower speeds, especially in trucks and buses, the dominant noise source is the engine and related accessories.

Technical noise terms used in this report are defined in the **Acronyms, Abbreviations and Definitions, Pages vii and viii.**

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as startling and hearing loss

In most cases, environmental noise produces effects in the subjective and interference categories only. Workers in industrial plants, however, typically experience noise effects in the physiological category. No completely satisfactory way exists to measure the subjective effects of noise, or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of a standard is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise. Thus, an important way of determining a person's subjective reaction to a new noise is to compare it to the existing or "ambient" environment to which that person has adapted. In general, the more a new noise exceeds the previously ambient noise level, the less acceptable the new noise will be judged by listeners. **Table 2-1** shows typical noise levels of transportation sources and general subjective responses.

¹ https://www.fhwa.dot.gov/pavement/sustainability/articles/tire_noise.cfm

TABLE 2-1
Typical Noise Levels

Transportation Sources	Noise Level (dBA)	Other Sources	Description
	130	Gunshot (5 ft)	Painfully Loud
	125		
Jet Takeoff (200 ft)	120		
Car Horn (3 ft)	115		Maximum Vocal Effort
	110		
	105		
	100	Shout (1.5 ft)	
	95		Very Annoying
Heavy Truck (50 ft)	90	Jackhammer (50 ft)	
Train on a Structure (50 ft)	85	Home Shop Tools (3 ft) Backhoe (50 ft)	
	80	Bulldozer(50 ft)	Annoying
Train (50 feet)	75	Vacuum Cleaner (3 ft) Blender (3 ft)	
City Bus at Stop (50 ft)	70	Lawn Mower (50 ft)	
Freeway Traffic (50 ft)	65	Large Office Washing Machine (3 ft)	Intrusive
Train in Station (50 ft)	60	TV (10 ft)	
	55	Talking (10 ft)	
Light Traffic (50 ft)	50		Quiet
Light Traffic (100 ft)	45	Refrigerator (3 ft)	
	40	Bedroom Library	
	35		
	30	Soft Whisper (15 ft)	Very Quiet

Regarding increases in A-weighted noise level, consider the following relationships:

- Except in carefully controlled laboratory experiments, a change of 1 to 2 dB cannot be perceived by humans.
- Outside the laboratory, a 3-dB change is just perceivable.
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected.
- A 10-dB increase is heard subjectively as an approximate doubling in loudness and may cause an adverse community response.

2.2 Federal Regulations

Traffic noise analyses are required for all projects considered a Type I project. Federal regulations (23 Code of Federal Regulations [CFR 772], 2010) define Type I projects as any of the following:

- The construction of a highway on new location
- The physical alteration of an existing highway where there is either:
 - Substantial horizontal alteration - a project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the build condition

- Substantial vertical alteration – a project that removes shielding, therefore exposing the line-of-sight between the receptor and the traffic noise source. This is done by either altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor.
- The addition of a through-traffic lane(s). This includes the addition of a through-traffic lane that functions as a high-occupancy vehicle (HOV) lane, high-occupancy toll (HOT) lane, bus lane, or truck climbing lane.
- The addition of an auxiliary lane, except for when the auxiliary lane is a turn lane
- The addition or relocation of interchange lanes or ramps added to a quadrant to complete an existing partial interchange
- Restriping existing pavement for the purpose of adding a through-traffic lane or an auxiliary lane
- The addition of a new or substantial alteration of a weigh station, rest stop, ride-share lot or toll plaza.

The proposed improvements to I-94 would be characterized as a Type I noise project as they may include the addition of through-traffic lane(s) and will include substantial horizontal and vertical alterations and new auxiliary lanes in many parts of the corridor.

The federal criteria for evaluating noise impacts used in this report are contained in “Procedures for Abatement of Highway Traffic Noise and Construction Noise” (23 CFR 772, 2010). The Categories B and C criteria in that document apply to residences, cemeteries, churches, schools, recreation areas, and similar land uses. They represent an hourly sound level that approaches, meets, or exceeds 67 dBA Leq. Other developed land, such as commercial or industrial uses, is included in Category E, for which an hourly sound-level criterion that approaches, meets, or exceeds 72 dBA Leq has been established. There are no criteria for undeveloped lands that are not permitted or for industrial land uses. The sound levels are described in more detail in **Table 2-2** and are measured at the exterior of structures during peak-hour noise conditions.

TABLE 2-2
Noise Level Criteria (NLC)¹ for Considering Barriers

Land Use Category	Leq(h) (dBA) (Evaluation Location)	Description of Land Use Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve their intended purpose.
B*	67 (Exterior)	Residential.
C*	67 (Exterior)	Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (Interior)	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E*	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A through D or F.

TABLE 2-2
Noise Level Criteria (NLC)¹ for Considering Barriers

Land Use Category	Leq(h) (dBA) (Evaluation Location)	Description of Land Use Category
F	—	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	—	Undeveloped lands that are not permitted.

Source: 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise (2010)

¹WisDOT has substituted the term “Noise Abatement Criteria” used in 23 CFR 772 with “Noise Level Criteria” throughout Chapter 23 (Noise) of the Facilities Development Manual (November 15, 2021) and in supporting documents. Further, Table 1 in 23 CFR 772 is the Noise Abatement Criteria for various land uses. WisDOT has adopted the land use categories, impact levels and evaluation locations in 23 CFR 772, Table 1, but refers to this table as “Noise Level Criteria for Considering Barriers” in this Section. The word “Level” is used instead of “Abatement” because the department believes the use of the term “Noise Abatement Criteria” means that the noise impact levels indicated in the table require that abatement be provided. The term “Noise Level Criteria” accurately reflects the intent of the table which is to identify a sound level at which a noise impact occurs, thus requiring a determination of whether or not abatement is feasible, reasonable, and likely to be incorporated into the project.

* Includes undeveloped lands permitted for this activity category or publicly-owned recreation lands formally designated in a public agency’s Master Plan.

In addition to the criterion sound levels, the Federal Highway Administration (FHWA) considers a traffic noise impact to occur if predicted sound levels result in a substantial increase above existing noise levels. FHWA guidance does not specifically define what constitutes a substantial increase, but instead gives state highway agencies flexibility in establishing their own definitions.

2.3 WisDOT Policy

The WisDOT Noise Policy, consistent with 23 CFR 772, is presented in Chapter 23 of WisDOT’s *Facilities Development Manual* (May 17, 2022).

To fulfill the detailed analysis requirements for Type I projects, existing sound levels must be determined by measurement and/or by computer modeling. Future sound levels are predicted by implementing the FHWA model. Noise impacts are then determined from the existing and future sound levels.

Traffic volumes and geometric data are obtained within the project limits. For the complete analysis, the worst-case traffic condition for the existing year (2019) and the design year (2050) should be used. The vehicle mix for both years must be compiled into a minimum of three categories: automobiles, medium trucks, and heavy trucks (buses and motorcycles will also be categorized if the numbers are substantial). Receptors must be located at representative sites in the project area. Once the existing and future sound levels are established, the impact of the sound upon the receptors and the criteria for which mitigation should be considered must be determined. If it is determined there is a noise impact, abatement should be evaluated.

WisDOT’s noise policy has established the following criteria to define traffic noise impacts for Type 1 projects:

- The predicted equivalent design year traffic sound levels at a receptor or common use area approach or exceed the NLC For Considering Barriers for any Land Use Category listed in **Table 2-2** applicable in the study area,
- Or, when predicted future sound levels exceed existing levels by 15 dB or more.

“Approach” is defined as 1 dBA less than the NLC for the applicable Land Use Category. As a result, WisDOT’s *Facilities Development Manual* (2022) considers traffic noise impacts to occur if predicted



design year traffic noise levels approach 66 dBA for Categories B and C; 71 dBA for Category E; approach or exceed the noise level criteria in **Table 2-2**; or if build noise levels increase above existing levels by 15 dBA or greater.

Field Noise Level Measurements

3.1 Field Noise Level Measurement Methodology

Actual noise level measurements (noise monitoring) provide a “snapshot” of existing site conditions. The traffic volumes and conditions during the actual noise level measurements need to be considered when evaluating field measurements as typical for the area.

Traffic noise levels measured during monitoring events are representative of the traffic characteristics (volume, speed, and composition) for the period measured. Traffic was moving under free-flow conditions during the monitoring period. This may or may not be the peak-period noise condition at the location being measured. Noise levels are also influenced by noise sources in the area other than the traffic noise and the characteristics of the location, such as shielding afforded by existing berms or structures. Consequently, comparison of the noise levels between locations needs to also consider the variations in site characteristics in addition to varying traffic conditions. The noise meter was set in a location where human activity typically occurs or in a location representative of that location. **Tables 3-2** and **3-3** present the measured existing noise levels collected at the six sites. The locations of the field sites are shown on **Exhibit 1-2**.

The following methods were used to collect noise level measurements.

3.1.1 Traffic Volumes

Traffic volumes along roadways adjacent to receptors were counted during field monitoring. The number of cars, trucks, motorcycles, and buses were recorded separately along with any other noise sources observed during monitoring. The traffic volumes were counted as a total for each direction during the 15-minute noise monitoring periods and extrapolated to hourly volumes by multiplying the volumes by 4, to estimate the hourly traffic. This procedure is accepted by the FHWA as a representative noise monitoring method.

3.1.2 Traffic Composition

Five types of vehicles were counted: cars, medium trucks, heavy trucks, buses, and motorcycles. The percentage of automobiles counted on I-94 was approximately 93% of all vehicles. Medium trucks accounted for 2.3% of all vehicles, with heavy trucks accounting for 4% of traffic volume at each receptor where noise was monitored. Buses and motorcycles accounted for less than 1% of all vehicles counted. These percentages are consistent with the 2019 weekday length-based classification data for I-94 mainline sites.

3.1.3 Speed Conditions

The existing posted speed limit is 50 miles per hour (mph) at Field Sites 1 and 2 and 55 mph at sites 3 – 6 for I-94. Clybourn Street speed limit is 30 mph. Noise measurements were taken during free-flow conditions with all vehicles traveling at or above the posted speed limit.

3.1.4 Time and Day for Measurements

Noise-level measurements and concurrent traffic counts were conducted on September 29, 2021, between 8:00 a.m. and 2:00 p.m. The noise-monitoring locations were selected based on a review of aerials to determine the locations of noise-sensitive land uses in the project area.

3.1.5 Weather Conditions

Weather conditions have some effect on the noise-measurement readings. Noise measurements should not be taken if the wind speed exceeds 12 miles per hour (mph). A wind screen was used at all measurements to reduce wind noise. The conditions during the monitoring are summarized in **Table 3-1**.



TABLE 3-1
Weather Conditions During Noise Monitoring

Condition	Required	Actual
Pavement	Dry	Dry
Humidity	Less than 90%	50-88%
Temperature	14 to 112 degrees Fahrenheit	53-75 degrees Fahrenheit
Wind Speed	Less than 12 mph	0-9 mph

The weather conditions during the noise monitoring were within the recommended ranges for all parameters listed above.

3.1.6 Instrumentation

The measurements were made in accordance with FHWA guidelines using an integrating sound level analyzer meeting American National Standards Institute and International Electrical Commission Type 1 specifications. A Sound Level MeterSoundPro DL sound-level meter was used to monitor the actual noise level. The Leq was recorded for the "A"-weighted scale. The instrument was calibrated prior to use. The instrument was set up approximately 5 feet from the ground, and the measurement was conducted for 15 minutes.

3.2 Field Noise Monitoring Results

Noise monitoring was conducted at seven noise sensitive sites representative of the entire project area. **Table 3-2** describes the selected field sites and the measured existing noise levels.

TABLE 3-2
Measured Existing Noise Levels

Field Site	Site Description and Distance from Road	Noise Level dBA Leq (1h)
1	Residence, 125 feet from westbound I-94 centerline and five feet west of 63rd Street	60.2
2	Spring Hill Cemetery, 123 feet from eastbound I-94 centerline and 73 feet southeast of the mausoleum	69.2
3	Bike Path, 145 feet west of Yount Drive and 82 feet from westbound I-94 centerline	72.7
4	Open Space/Indian Hill Sled Run, 249 feet from westbound I-94 centerline and 302 feet from intersection of N 41st Street and W. Mt. Vernon Avenue	57.4
5	Residence, corner of W. Park Hill Ave and N. 31st Street; 79 feet from westbound I-94 centerline	71.4
6	Sav-On Foods parking lot, Clybourn Street; 215 feet from WB I-94 centerline	67.0
7	807 S 60th St West Allis (for the Washington Street extension)	60.9

3.2.1 Comparison of Field Data Versus Modeled Noise Levels

Traffic data counted during the field noise measurements was used to model the noise level from six field measurement locations using the FHWA Traffic Noise Model (TNM) Version 2.5.² The FHWA

² Traffic counts were not taken at Washington Street because it currently does not connect between 70th Street and Hawley Road.



TNM is a computer program used for predicting noise impacts in the vicinity of highways. TNM 2.5 is a nationally accepted model that is required by FHWA to be used on all federal-aid highway projects.

The purpose of the field noise measurements was to validate the accuracy of FHWA’s TNM 2.5 for predicting traffic noise exposure within the study area (FHWA 2004). The project area was inspected to gather input data that would allow accurate modeling of roadway and receptor locations. The locations of the measurement sites, and existing roadway geometry, vehicle counts, and estimated speeds obtained during the noise measurement periods, were input into TNM 2.5.

Field measurements were then compared to the output from TNM to confirm the applicability of the computer model to the specific conditions in the I-94 study area. The traffic data from the six sites were used in the TNM to model the field data. The modeled noise levels at the six sites with concurrent traffic counts all compared within ± 3 dB of the field measured levels. This represents reasonable correlation because the human ear can barely distinguish a 3 dB change in the $Leq(1h)$ noise level in the urban environment.

Table 3-3 summarizes the noise monitoring results and compares noise levels obtained during the traffic noise measurements with the levels predicted by the noise model. Measured noise levels ranged from 57 to 73 dBA. Agreement between the noise levels measured in the field and noise levels calculated by the noise model serves to validate the model, as represented in the “Difference” column in **Table 3-3**. A positive difference indicates that noise levels measured in the field are lower than those predicted by the computer model. A negative difference shows that measured noise levels are greater than predicted noise levels.

As shown in **Table 3-3**, all the receivers are within 3 dBA of those measured. Such differences show agreement between measured and modeled/calculated noise levels and indicate that the TNM 2.5 may be used to accurately calculate noise exposure in the corridor. Since the TNM 2.5 modeled field data were within ± 3 dB of the measured noise levels, the model is assumed to be valid for this study. At this point in the environmental analysis, the field measurements and the modeled noise levels using the traffic counts taken during the field noise measurements are set aside for the remainder of the noise analysis.

TABLE 3-3

Comparison of Measured and Modeled Noise Levels

Field Site	Noise Level, dBA Leq		Difference in Noise Level, dBA Leq Modeled Noise Level Minus Measured Noise Level
	Measured	Modeled	
1	60.2	62.6	2.4
2	69.2	71.5	2.3
3	72.7	74.8	2.1
4	57.4	59	1.6
5	71.4	74.3	2.9
6	67	67.1	0.1

Noise Analysis Methodology

FHWA's TNM 2.5 was used to model existing (2019) and future (2050) noise levels for each of the alternatives under consideration. Noise levels were calculated based on traffic volumes in Southeastern Wisconsin Regional Planning Commission's (SEWRPC) traffic model. SEWRPC's traffic model is used because it averages traffic counts from throughout the year. FHWA's TNM 2.5 model is based upon reference energy emission levels for automobiles, medium trucks (two axles), and heavy trucks (three or more axles) with consideration given to vehicle volume, speed, roadway configuration, distance to the receptor, terrain features, atmospheric conditions, and the acoustical characteristics of the site. Refer to **Exhibit 4-1** in **Appendix A** for representative receptor locations.

Prediction of noise levels is one step in assessing potential traffic noise impacts and abatement strategies. Noise impacts were measured by calculating the difference between the modeled existing condition and the modeled future condition during the design hour. The design hour is the hour before or after the morning or afternoon peak periods, when traffic is generally at its loudest. The TNM 2.5 output for the existing noise level is used instead of the field noise level measurement because the TNM 2.5 noise level is a more accurate representation of the average noise level at a specific location at the loudest hour of the day. During the field measurement, several factors could influence the noise measurement that are not present daily. Noises that are extraneous from traffic (birds, people, machinery, etc.) could influence the noise measurement reading during the 15-minute period. Additionally, the field measurement is not necessarily taken during the loudest time of the day. However, the study team needs to know the noise level during the loudest time of the day to determine if the predicted noise levels exceed or approach the noise level criteria for considering noise barriers.

The following parameters were used in FHWA's TNM 2.5 model to calculate an hourly $L_{eq}(1h)$ at a specific receiver location:

- Distance between roadway and receiver
- Relative elevations of roadway and receiver (all receivers are assumed to be 5 feet off the ground)
- Hourly traffic volume in light-duty (two axles, four tires), medium-duty (two axles, six tires), and heavy-duty (three or more axles) vehicles
- Vehicle speed
- Roadway grade
- Topographic features, including retaining walls and berms
- Noise source height of vehicles

Exhibit 4-1 shows 175 representative receiver locations numbered R1 to R9, N1 through N123, and NR1-NR26, plus the noise measurement locations FS-1 through FS-17. Representative receivers are sites typical of the applicable land use category near the existing or proposed highway route that may be used to represent the sound levels at similar land uses along the route. These receivers were selected to model the representative noise impacts at outdoor areas of frequent human use at 158 residential receivers representing 670 residences (including apartments), one active sports area, one recreation facility, one educational facility, four cemeteries, one day care center, one park, one restaurant, one dentist, and one hospital.

Information sources used in the TNM 2.5 analysis are briefly described in the following subsections.

4.1 Traffic Volumes

Traffic noise levels for the receptor sites for existing (2019) conditions, as well as no-build and build (both 2050) conditions for each of the alternatives under consideration, were predicted using existing (2019) and build (2050) peak hour traffic volumes provided by SEWRPC. The peak-hour traffic was used as a worst-case noise scenario as traffic is the dominant noise source for a majority of receptors.

4.2 Traffic Composition

Five types of vehicles, including cars, medium trucks (two axles), heavy trucks (three or more axles), buses, and motorcycles were input into TNM. Truck composition for project area roads was determined based on the traffic data provided by SEWRPC. The percentage of automobiles was 92.5% of all vehicles, medium trucks 2.8%, heavy trucks 2.4%, motorcycles 1.6%, and buses 0.7% of all vehicles.

4.3 Speed Conditions

The average speed during free flow traffic conditions was used for the noise analysis and was input into the model as the posted speed limit. The existing speed limit ranges from 50 – 55 mph for I-94 and is not expected to change with the proposed action. Speeds ranged from 20 – 35 mph on local roads and ramps.

4.4 Receptor Distance/Elevation

Most noise-sensitive locations in the analysis area are immediately adjacent to I-94. Front row receptors are primarily residential to the north and south of the mainline. There are several cemeteries and parks in the analysis area. The selected representative receptors include residential land and apartments, a day-care center, an educational facility, various cemeteries, a park, a dentist, a hospital and recreational and sports facilities. The distance and elevation of each receptor directly affects the predicted traffic noise level. Typically, receptors within 500 feet of the proposed roadway edge of pavement are studied for potential traffic noise impacts, as noise impacts typically do not occur at distances greater than 500 feet. The receptors studied for potential traffic noise impacts range from 18 – 671 feet from the I-94 centerline. **Table 4-1** lists the distances from each receptor to the centerline of the nearest lane.

TABLE 4-1
Distances from each Receptor to the Centerline of Near Lane

Receptor	Distance from centerline of near lane to receptor in feet	Receptor	Distance from centerline of near lane to receptor in feet	Receptor	Distance from centerline of near lane to receptor in feet	Receptor	Distance from centerline of near lane to receptor in feet	Receptor	Distance from centerline of near lane to receptor in feet
R1	157	N30	116	N68	182	N106	210	NR4	64
R2	177	N31	227	N69	118	N107	209	NR5	99
R3	182	N32	106	N70	87	N108	209	NR6	29
R4	128	N33	250	N71	270	N109	213	NR7	48
R5	143	N34	68	N72	380	N110	213	NR8	40
R6	210	N35	163	N73	202	N111	187	NR9	148
R7	340	N36	94	N74	281	N112	45	NR10	205
R8	210	N37	190	N75	262	N113	69	NR11	252
R9	301	N38	169	N76	184	N114	347	NR12	235
N1	436	N39	133	N77	504	N115	85	NR13	190
N2	400	N40	207	N78	352	N116	34	NR14	188
N3	384	N41	309	N79	385	N117	24	NR15	155
N4	262	N42	159	N80	301	N118	31	NR16	190
N5	257	N43	225	N81	168	N119	34	NR17	194
N6	235	N44	303	N82	250	N120	18	NR18	188
N7	227	N45	208	N83	181	N121	288	NR19	184
N8	212	N46	160	N84	243	N122	234	NR20	187
N9	420	N47	309	N85	181	N123	239	NR21	439
N10	190	N48	492	N86	164	FS-1	113	NR22	450
N11	190	N49	276	N87	236	FS-2	195	NR23	393
N12	212	N50	75	N88	152	FS-3	467	NR24	390
N13	206	N51	97	N89	391	FS-4	475	NR25	356
N14	227	N52	309	N90	186	FS-5	289	NR26	274
N15	207	N53	547	N91	232	FS-6	150		
N16	359	N54	671	N92	555	FS-7	184		
N17	188	N55	518	N93	239	FS-8	495		
N18	267	N56	312	N94	382	FS-9	427		
N19	111	N57	369	N95	153	FS-10	117		
N20	540	N58	193	N96	197	FS-11	126		
N21	485	N59	434	N97	389	FS-12	517		
N22	583	N60	182	N98	255	FS-13	487		
N23	254	N61	249	N99	111	FS-14	110		
N24	463	N62	299	N100	183	FS-15	147		
N25	224	N63	289	N101	186	FS-16	440		
N26	355	N64	295	N102	160	FS-17	188		
N27	254	N65	296	N103	112	NR1	331		
N28	151	N66	329	N104	105	NR2	63		
N29	338	N67	369	N105	172	NR3	53		

Section 5

Traffic Noise Model (TNM) Results

The noise analysis presents the modeled existing and future noise levels at various locations in the study area. The determination of noise abatement measures and locations is within the framework of WisDOT’s *Facilities Development Manual, Chapter 23, Noise*, effective November 15, 2021, which is WisDOT’s FHWA-approved noise policy pursuant to 23 CFR Part 772. **Table 2-2** presents the noise level criteria for considering barriers abutting various land uses. The noise level descriptor used is the equivalent sound level, $L_{eq}(1h)$, defined as the steady state sound level, which in a stated time period (usually 1 hour) contains the same sound energy as the actual time-varying sound.

Noise abatement measures will be considered when the predicted noise levels approach or exceed those values identified for the appropriate activity category in **Table 2-2**, or when the predicted traffic noise levels substantially exceed the existing noise levels. “Approach” is defined as being within 1 dBA less than the noise levels shown in **Table 2-2**. WisDOT has defined an increase over existing noise levels of 15 decibels or more as being a noise impact.

5.1 Existing Noise Levels

Existing peak-hour traffic noise levels range from 26 dBA at NR1 to 77 dBA at N34 and N50. **Table 5-1** summarizes calculated peak-hour noise levels at the selected representative receptor locations.

TABLE 5-1
Peak Hour Noise Levels at Selected Representative Receptor Locations

Receptor	Existing Sound Level (dBA)	Receptor	Existing Sound Level (dBA)	Receptor	Existing Sound Level (dBA)	Receptor	Existing Sound Level (dBA)	Receptor	Existing Sound Level (dBA)	Receptor	Existing Sound Level (dBA)
R1	61	N17	67	N42	68	N67	62	N92	61	N117	66
R2	65	N18	63	N43	65	N68	67	N93	69	N118	66
R3	67	N19	67	N44	63	N69	69	N94	65	N119	65
R4	64	N20	66	N45	66	N70	69	N95	68	N120	66
R5	65	N21	68	N46	70	N71	64	N96	70	N121	41
R6	66	N22	65	N47	64	N72	61	N97	62	N122	44
R7	66	N23	68	N48	65	N73	66	N98	67	N123	53
R8	46	N24	67	N49	69	N74	64	N99	74	FS-1	69
R9	42	N25	68	N50	77	N75	63	N100	65	FS-2	64
N1	63	N26	67	N51	68	N76	62	N101	60	FS-3	61
N2	62	N27	68	N52	64	N77	56	N102	65	FS-4	61
N3	63	N28	70	N53	64	N78	61	N103	75	FS-5	68
N4	63	N29	67	N54	62	N79	57	N104	62	FS-6	72
N5	63	N30	72	N55	64	N80	59	N105	73	FS-7	67
N6	62	N31	69	N56	68	N81	66	N106	65	FS-8	62
N7	62	N32	73	N57	66	N82	60	N107	64	FS-9	60
N8	62	N33	69	N58	69	N83	66	N108	64	FS-10	69
N9	64	N34	77	N59	63	N84	63	N109	65	FS-11	74
N10	65	N35	73	N60	66	N85	67	N110	69	FS-12	59
N11	64	N36	70	N61	66	N86	68	N111	62	FS-13	62
N12	65	N37	67	N62	65	N87	66	N112	62	FS-14	74
N13	71	N38	67	N63	64	N88	71	N113	60	FS-15	41
N14	72	N39	74	N64	63	N89	63	N114	40	FS-16	38
N15	65	N40	70	N65	62	N90	68	N115	62	FS-17	50
N16	62	N41	64	N66	61	N91	68	N116	65		



TABLE 5-1

Peak Hour Noise Levels at Selected Representative Receptor Locations

Receptor	Existing Sound Level (dBA)	Receptor	Existing Sound Level (dBA)	Receptor	Existing Sound Level (dBA)	Receptor	Existing Sound Level (dBA)	Receptor	Existing Sound Level (dBA)	Receptor	Existing Sound Level (dBA)
NR1	26	NR6	68	NR11	60	NR15	60	NR19	56	NR23	53
NR2	64	NR7	40	NR12	58	NR16	56	NR20	56	NR24	53
NR3	65	NR8	66	NR13	58	NR17	56	NR21	49	NR25	57
NR4	63	NR9	64	NR14	58	NR18	56	NR22	49	NR26	59
NR5	61	NR10	62								

5.2 No-Build Noise Levels

No-build (2050) peak-hour traffic noise levels range from 26 dBA at NR1 to 78 dBA at N34. **Tables 5-2** and **5-3** summarize calculated peak-hour noise levels at the selected representative receptor locations. Generally, noise levels stay the same or increase 1 dBA from the existing scenario to the no-build scenario. Any increases in traffic noise levels from the existing to the no-build scenarios are due to an increase in traffic volumes.

5.3 Build Noise Levels

The following alternatives retained for detailed study in the Draft Supplemental Environmental Impact Statement (EIS) were modeled to determine future (2050) noise levels:

- Eight-lane Hybrid Stadium Interchange (Hybrid Interchange)
- Eight-lane Diverging Diamond Stadium Interchange (DDI)
- Six-lane Hybrid Interchange with Half-Hawley
- Six-lane Hybrid Interchange with Full-Hawley
- Six-lane DDI with Half-Hawley
- Six-lane DDI with Full-Hawley
- Washington Street Extension

5.3.1 Eight-lane Hybrid Interchange Alternative

The results of the noise analysis indicate that peak-period noise levels at exterior activity areas under the eight-lane hybrid interchange 2050 build condition range from 43 dBA at R9 to 78 dBA at N50. The difference between build noise levels and existing noise levels ranges from a reduction of 4 dBA to a 4 dBA increase. Such increases are below WisDOT's definition of substantial increase of 15 dBA. **Table 5-2** lists the calculated peak-hour traffic noise levels. Seventy-two (72) of the 134 receptors approach, meet, or exceed the WisDOT Noise Level Criteria (NLC) under the eight-lane hybrid interchange build alternative. They are identified in bold in **Table 5-2**. These same 72 receptor locations would be impacted under the eight-lane hybrid interchange alternative. Traffic noise levels varied, depending on the receptor's proximity to the proposed eight-lane hybrid interchange alternative. Most traffic noise level changes from the existing condition to the build scenario are due to predicted future traffic volume increases.

TABLE 5-2
Noise Impact Summary – TNM Modeling Results for the Eight-lane Hybrid Interchange Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	8-lane alternative (dBA)	Build (8-lane) increase above existing (dBA)	Build (8-lane) increase above No Build (dBA)	Build (8-lane) increase above NLC (dBA)
R1	67	61	61	61	0	0	-6
R2	67	65	65	65	0	0	-2
R3	67	67	67	67	0	0	0
R4	67	64	64	65	1	1	-2
R5	67	65	65	65	0	0	-2
R6	67	66	67	67	1	0	0
R7	67	66	66	67	1	1	0
R8	52	46	46	46	0	0	-6
R9	52	42	43	43	1	0	-9
N1	67	63	63	65	2	2	-2
N2	67	62	63	65	3	2	-2
N3	67	63	64	65	2	1	-2
N4	67	63	64	67	4	3	0
N5	67	63	63	66	3	3	-1
N6	67	62	63	66	4	3	-1
N7	67	62	62	65	3	3	-2
N8	67	62	62	64	2	2	-3
N9	67	64	64	66	2	2	-1
N10	67	65	65	67	2	2	0
N11	67	64	65	67	3	2	0
N12	67	65	65	68	3	3	1
N13	67	71	72	74	3	2	7
N14	67	72	72	73	1	1	6
N15	67	65	65	68	3	3	1
N16	67	62	62	65	3	3	-2
N17	67	67	67	70	3	3	3
N18	67	63	64	66	3	2	-1
N19	67	67	68	69	2	1	2
N20	67	66	66	68	2	2	1
N21	67	68	68	69	1	1	2
N22	67	65	66	67	2	1	0
N23	67	68	69	69	1	0	2
N24	67	67	67	67	0	0	0
N25	67	68	69	69	1	0	2
N26	67	67	68	68	1	0	1
N27	67	68	68	68	0	0	1
N28	67	70	70	70	0	0	3
N29	67	67	67	68	1	1	1



TABLE 5-2
Noise Impact Summary – TNM Modeling Results for the Eight-lane Hybrid Interchange Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	8-lane alternative (dBA)	Build (8-lane) increase above existing (dBA)	Build (8-lane) increase above No Build (dBA)	Build (8-lane) increase above NLC (dBA)
N30	67	72	72	71	-1	-1	4
N31	67	69	69	68	-1	-1	1
N32	67	73	74	72	-1	-2	5
N33	67	69	70	67	-2	-3	0
N34	67	77	78	77	0	-1	10
N35	67	73	74	73	0	-1	6
N36	67	70	70	69	-1	-1	2
N37	67	67	68	68	1	0	1
N38	67	67	68	68	1	0	1
N39	67	74	74	73	-1	-1	6
N40	67	70	71	69	-1	-2	2
N41	67	64	64	64	0	0	-3
N42	67	68	69	67	-1	-2	0
N43	67	65	65	65	0	0	-2
N44	67	63	63	64	1	1	-3
N45	67	66	67	65	-1	-2	-2
N46	67	70	71	70	0	-1	3
N47	67	64	65	66	2	1	-1
N48	67	65	65	65	0	0	-2
N49	67	69	69	70	1	1	3
N50	67	77	77	78	1	1	11
N51	67	68	68	69	1	1	2
N52	67	64	64	65	1	1	-2
N53	67	64	64	64	0	0	-3
N54	67	62	63	62	0	-1	-5
N55	67	64	64	64	0	0	-3
N56	67	68	69	68	0	-1	1
N57	67	66	66	66	0	0	-1
N58	67	69	70	69	0	-1	2
N59	67	63	63	64	1	1	-3
N60	67	66	67	68	2	1	1
N61	67	66	66	67	1	1	0
N62	67	65	65	66	1	1	-1
N63	67	64	64	64	0	0	-3
N64	67	63	64	64	1	0	-3
N65	67	62	62	63	1	1	-4
N66	67	61	62	62	1	0	-5
N67	67	58	58	58	0	0	-9
N68	67	62	62	62	0	0	-5

TABLE 5-2
Noise Impact Summary – TNM Modeling Results for the Eight-lane Hybrid Interchange Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	8-lane alternative (dBA)	Build (8-lane) increase above existing (dBA)	Build (8-lane) increase above No Build (dBA)	Build (8-lane) increase above NLC (dBA)
N69	67	65	65	65	0	0	-2
N70	67	69	69	68	-1	-1	1
N71	67	59	59	60	1	1	-7
N72	67	58	59	59	1	0	-8
N73	67	64	65	64	0	-1	-3
N74	67	63	63	62	-1	-1	-5
N75	67	63	63	62	-1	-1	-5
N76	67	62	63	58	-4	-5	-9
N77	67	56	57	56	0	-1	-11
N78	67	61	62	61	0	-1	-6
N79	67	57	57	57	0	0	-10
N80	67	59	59	61	2	2	-6
N81	67	66	67	69	3	2	2
N82	67	60	61	61	1	0	-6
N83	67	66	66	65	-1	-1	-2
N84	67	63	63	62	-1	-1	-5
N85	67	67	67	63	-4	-4	-4
N86	67	68	68	65	-3	-3	-2
N87	67	66	66	67	1	1	0
N88	67	71	71	69	-2	-2	2
N89	67	63	63	64	1	1	-3
N90	67	68	68	69	1	1	2
N91	67	68	68	69	1	1	2
N92	67	61	61	62	1	1	-5
N93	67	69	69	69	0	0	2
N94	67	65	65	66	1	1	-1
N95	67	68	69	68	0	-1	1
N96	67	70	70	70	0	0	3
N97	67	62	62	63	1	1	-4
N98	67	67	67	67	0	0	0
N99	67	74	74	72	-2	-2	5
N100	67	65	65	66	1	1	-1
N101	67	60	61	61	1	0	-6
N102	67	65	66	65	0	-1	-2
N103	67	75	75	72	-3	-3	5
N104	67	62	63	64	2	1	-3
N105	67	73	73	72	-1	-1	5
N106	67	65	65	63	-2	-2	-4
N107	67	64	64	62	-2	-2	-5



TABLE 5-2
Noise Impact Summary – TNM Modeling Results for the Eight-lane Hybrid Interchange Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	8-lane alternative (dBA)	Build (8-lane) increase above existing (dBA)	Build (8-lane) increase above No Build (dBA)	Build (8-lane) increase above NLC (dBA)
N108	67	64	64	63	-1	-1	-4
N109	67	65	66	64	-1	-2	-3
N110	67	69	69	69	0	0	2
N111	72	62	62	62	0	0	-10
FS-1	67	69	69	68	-1	-1	1
FS-2	67	64	65	67	3	2	0
FS-3	67	61	61	63	2	2	-4
FS-4	67	61	61	63	2	2	-4
FS-5	67	68	69	68	0	-1	1
FS-6	67	72	72	71	-1	-1	4
FS-7	67	67	68	69	2	1	2
FS-8	67	62	62	63	1	1	-4
FS-9	67	60	60	61	1	1	-6
FS-10	67	66	66	65	-1	-1	-2
FS-11	67	74	75	73	-1	-2	6
FS-12	67	59	59	58	-1	-1	-9
FS-13	67	62	62	63	1	1	-4
FS-14	67	74	74	73	-1	-1	6

5.3.2 Eight-lane DDI Alternative

The results of the noise analysis indicate that peak-period noise levels at exterior activity areas under the eight-lane diverging diamond 2050 build condition range from 26 dBA at NR1 to 78 dBA at N50. The difference between build noise levels and existing noise levels ranges from a reduction of 3 dBA to a 12 dBA increase. Such increases are below WisDOT's definition of substantial increase of 15 dBA. **Table 5-3** lists the calculated peak-hour traffic noise levels. Eighty (80) of the 160 receptors approach, meet, or exceed the WisDOT Noise Level Criteria (NLC) under the eight-lane diverging diamond build alternative. They are identified in bold in **Table 5-3**. These same 80 receptor locations would be impacted under the eight-lane diverging diamond alternative. Traffic noise levels varied, depending on the receptor's proximity to the proposed eight-lane diverging diamond alternative. Most traffic noise level changes from the existing condition to the build scenario are due to predicted future traffic volume increases.

TABLE 5-3
Noise Impact Summary – TNM Modeling Results for the Eight-lane DDI Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	8-lane alternative (dBA)	Build (8-lane) increase above existing (dBA)	Build (8-lane) increase above No Build (dBA)	Build (8-lane) increase above NLC (dBA)
R1	67	61	61	61	0	0	-6
R2	67	65	65	65	0	0	-2
R3	67	67	67	67	0	0	0
R4	67	64	64	65	1	1	-2
R5	67	65	65	65	0	0	-2
R6	67	66	67	67	1	0	0
R7	67	66	66	67	1	1	0
R8	52	46	46	46	0	0	-6
R9	52	42	43	43	1	0	-9
N1	67	63	63	65	2	2	-2
N2	67	62	63	65	3	2	-2
N3	67	63	64	65	2	1	-2
N4	67	63	64	67	4	3	0
N5	67	63	63	66	3	3	-1
N6	67	62	63	66	4	3	-1
N7	67	62	62	65	3	3	-2
N8	67	62	62	64	2	2	-3
N9	67	64	64	66	2	2	-1
N10	67	65	65	67	2	2	0
N11	67	64	65	67	3	2	0
N12	67	65	65	68	3	3	1
N13	67	71	72	74	3	2	7
N14	67	72	72	73	1	1	6
N15	67	65	65	68	3	3	1
N16	67	62	62	65	3	3	-2
N17	67	67	67	70	3	3	3
N18	67	63	64	66	3	2	-1
N19	67	67	68	69	2	1	2
N20	67	66	66	68	2	2	1
N21	67	68	68	69	1	1	2
N22	67	65	66	67	2	1	0
N23	67	68	69	69	1	0	2
N24	67	67	67	67	0	0	0
N25	67	68	69	69	1	0	2
N26	67	67	68	67	0	-1	0
N27	67	68	68	68	0	0	1
N28	67	70	70	70	0	0	3
N29	67	67	67	68	1	1	1



TABLE 5-3
Noise Impact Summary – TNM Modeling Results for the Eight-lane DDI Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	8-lane alternative (dBA)	Build (8-lane) increase above existing (dBA)	Build (8-lane) increase above No Build (dBA)	Build (8-lane) increase above NLC (dBA)
N30	67	72	72	71	-1	-1	4
N31	67	69	69	68	-1	-1	1
N32	67	73	74	72	-1	-2	5
N33	67	69	70	67	-2	-3	0
N34	67	77	78	77	0	-1	10
N35	67	73	74	73	0	-1	6
N36	67	70	70	69	-1	-1	2
N37	67	67	68	68	1	0	1
N38	67	67	68	68	1	0	1
N39	67	74	74	73	-1	-1	6
N40	67	70	71	69	-1	-2	2
N41	67	64	64	64	0	0	-3
N42	67	68	69	67	-1	-2	0
N43	67	65	65	65	0	0	-2
N44	67	63	63	64	1	1	-3
N45	67	66	67	65	-1	-2	-2
N46	67	70	71	70	0	-1	3
N47	67	64	65	66	2	1	-1
N48	67	65	65	66	1	1	-1
N49	67	69	69	70	1	1	3
N50	67	77	77	78	1	1	11
N51	67	68	68	69	1	1	2
N52	67	64	64	65	1	1	-2
N53	67	64	64	64	0	0	-3
N54	67	62	63	63	1	0	-4
N55	67	64	64	65	1	1	-2
N56	67	68	69	68	0	-1	1
N57	67	66	66	66	0	0	-1
N58	67	69	70	70	1	0	3
N59	67	63	63	65	2	2	-2
N60	67	66	67	70	4	3	3
N61	67	66	66	69	3	3	2
N62	67	65	65	67	2	2	0
N63	67	64	64	66	2	2	-1
N64	67	63	64	65	2	1	-2
N65	67	62	62	65	3	3	-2
N66	67	61	62	64	3	2	-3
N67	67	58	58	60	2	2	-7
N68	67	62	62	63	1	1	-4

TABLE 5-3
Noise Impact Summary – TNM Modeling Results for the Eight-lane DDI Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	8-lane alternative (dBA)	Build (8-lane) increase above existing (dBA)	Build (8-lane) increase above No Build (dBA)	Build (8-lane) increase above NLC (dBA)
N69	67	65	65	65	0	0	-2
N70	67	69	69	70	1	1	3
N71	67	59	59	60	1	1	-7
N72	67	58	59	60	2	1	-7
N73	67	64	65	65	1	0	-2
N74	67	63	63	64	1	1	-3
N75	67	63	63	64	1	1	-3
N76	67	62	63	62	0	-1	-5
N77	67	56	57	59	3	2	-8
N78	67	61	62	62	1	0	-5
N79	67	57	57	57	0	0	-10
N80	67	59	59	61	2	2	-6
N81	67	66	67	69	3	2	2
N82	67	60	61	61	1	0	-6
N83	67	66	66	67	1	1	0
N84	67	63	63	63	0	0	-4
N85	67	67	67	66	-1	-1	-1
N86	67	68	68	67	-1	-1	0
N87	67	66	66	68	2	2	1
N88	67	71	71	70	-1	-1	3
N89	67	63	63	65	2	2	-2
N90	67	68	68	70	2	2	3
N91	67	68	68	70	2	2	3
N92	67	61	61	63	2	2	-4
N93	67	69	69	69	0	0	2
N94	67	65	65	66	1	1	-1
N95	67	68	69	68	0	-1	1
N96	67	70	70	70	0	0	3
N97	67	62	62	63	1	1	-4
N98	67	67	67	67	0	0	0
N99	67	74	74	72	-2	-2	5
N100	67	65	65	66	1	1	-1
N101	67	60	61	61	1	0	-6
N102	67	65	66	64	-1	-2	-3
N103	67	75	75	72	-3	-3	5
N104	67	62	63	64	2	1	-3
N105	67	73	73	72	-1	-1	5
N106	67	65	65	63	-2	-2	-4
N107	67	64	64	62	-2	-2	-5



TABLE 5-3
Noise Impact Summary – TNM Modeling Results for the Eight-lane DDI Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	8-lane alternative (dBA)	Build (8-lane) increase above existing (dBA)	Build (8-lane) increase above No Build (dBA)	Build (8-lane) increase above NLC (dBA)
N108	67	64	64	63	-1	-1	-4
N109	67	65	66	64	-1	-2	-3
N110	67	69	69	69	0	0	2
N111	72	62	62	62	0	0	-10
FS-1	67	69	69	68	-1	-1	1
FS-2	67	64	65	67	3	2	0
FS-3	67	61	61	62	1	1	-5
FS-4	67	61	61	63	2	2	-4
FS-5	67	68	69	69	1	0	2
FS-6	67	72	72	72	0	0	5
FS-7	67	67	68	70	3	2	3
FS-8	67	62	62	64	2	2	-3
FS-9	67	60	60	62	2	2	-5
FS-10	67	66	66	66	0	0	-1
FS-11	67	74	75	73	-1	-2	6
FS-12	67	59	59	59	0	0	-8
FS-13	67	62	62	63	1	1	-4
FS-14	67	74	74	73	-1	-1	6
NR1	52	26	26	26	0	0	-26
NR2	67	64	64	64	0	0	-3
NR3	67	65	65	65	0	0	-2
NR4	67	64	64	63	-1	-1	-4
NR5	67	61	62	61	0	-1	-6
NR6	67	68	68	68	0	0	1
NR7	52	40	41	40	0	-1	-12
NR8	67	66	66	66	0	0	-1
NR9	67	65	65	64	-1	-1	-3
NR10	67	62	62	62	0	0	-5
NR11	67	60	61	60	0	-1	-7
NR12	67	59	59	58	-1	-1	-9
NR13	67	58	58	58	0	0	-9
NR14	67	58	58	58	0	0	-9
NR15	67	60	60	60	0	0	-7
NR16	67	56	56	56	0	0	-11
NR17	67	56	56	56	0	0	-11
NR18	67	56	56	56	0	0	-11
NR19	67	56	56	56	0	0	-11
NR20	67	55	56	56	1	0	-11
NR21	67	49	49	49	0	0	-18

TABLE 5-3
Noise Impact Summary – TNM Modeling Results for the Eight-lane DDI Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	8-lane alternative (dBA)	Build (8-lane) increase above existing (dBA)	Build (8-lane) increase above No Build (dBA)	Build (8-lane) increase above NLC (dBA)
NR22	67	49	49	49	0	0	-18
NR23	67	52	53	53	1	0	-14
NR24	67	54	54	53	-1	-1	-14
NR25	67	57	57	57	0	0	-10
NR26	67	59	59	59	0	0	-8

5.3.3 Six-lane Hybrid Interchange with Half-Hawley Alternative

The results of the noise analysis indicate that peak-hour noise levels at exterior activity areas under the 2050 build condition range from 43 dBA at R9 to 77 dBA at N34 and N50. The difference between the six-lane with Half-Hawley Interchange build noise levels and existing noise levels range from a reduction of 4 dBA to a 3 dBA increase. Such increases are below WisDOT’s definition of substantial increase of 15 dBA. **Table 5-4** lists the calculated peak-hour traffic noise levels. Sixty-six of the 134 receptors approach, meet, or exceed the WisDOT NLC under the six-lane hybrid interchange with Half-Hawley Build alternative. They are identified in bold in **Table 5-4**. These 66 receptor locations would be impacted under the six-lane hybrid interchange with Half-Hawley alternative. Traffic noise levels varied, depending on the receptor’s proximity to the proposed six-lane alternative. Most traffic noise level changes from the existing condition to the six-lane hybrid interchange with Half-Hawley build alternative scenario are due to predicted future traffic volume increases.

TABLE 5-4
Noise Impact Summary – TNM Modeling Results for the Six-lane Hybrid Interchange with Half-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing (dBA)	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
R1	67	61	61	61	0	0	-6
R2	67	65	65	65	0	0	-2
R3	67	67	67	67	0	0	0
R4	67	64	64	65	1	1	-2
R5	67	65	65	65	0	0	-2
R6	67	66	67	67	1	0	0
R7	67	66	66	66	0	0	-1
R8	52	46	46	46	0	0	-6
R9	52	42	43	43	1	0	-9
N1	67	63	63	64	1	1	-3
N2	67	62	63	64	2	1	-3
N3	67	63	64	64	1	0	-3
N4	67	63	64	66	3	2	-1



TABLE 5-4
Noise Impact Summary – TNM Modeling Results for the Six-lane Hybrid Interchange with Half-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N5	67	63	63	66	3	3	-1
N6	67	62	63	65	3	2	-2
N7	67	62	62	64	2	2	-3
N9	67	64	64	65	1	1	-2
N8	67	62	62	64	2	2	-3
N10	67	65	65	66	1	1	-1
N11	67	64	65	66	2	1	-1
N12	67	65	65	68	3	3	1
N13	67	71	72	73	2	1	6
N14	67	72	72	73	1	1	6
N15	67	65	65	67	2	2	0
N16	67	62	62	65	3	3	-2
N17	67	67	67	70	3	3	3
N18	67	63	64	65	2	1	-2
N19	67	67	68	69	2	1	2
N20	67	66	66	67	1	1	0
N21	67	68	68	69	1	1	2
N22	67	65	66	67	2	1	0
N23	67	68	69	69	1	0	2
N24	67	67	67	66	-1	-1	-1
N25	67	68	69	69	1	0	2
N26	67	67	68	67	0	-1	0
N27	67	68	68	68	0	0	1
N28	67	70	70	70	0	0	3
N29	67	67	67	67	0	0	0
N30	67	72	72	71	-1	-1	4
N31	67	69	69	68	-1	-1	1
N32	67	73	74	72	-1	-2	5
N33	67	69	70	67	-2	-3	0
N34	67	77	78	77	0	-1	10
N35	67	73	74	73	0	-1	6
N36	67	70	70	69	-1	-1	2
N37	67	67	68	67	0	-1	0
N38	67	67	68	68	1	0	1
N39	67	74	74	73	-1	-1	6
N40	67	70	71	69	-1	-2	2
N41	67	64	64	64	0	0	-3
N42	67	68	69	67	-1	-2	0

**TABLE 5-4
Noise Impact Summary – TNM Modeling Results for the Six-lane Hybrid Interchange with Half-Hawley Alternative**

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N43	67	65	65	64	-1	-1	-3
N44	67	63	63	63	0	0	-4
N45	67	66	67	66	0	-1	-1
N46	67	70	71	70	0	-1	3
N47	67	64	65	65	1	0	-2
N48	67	65	65	65	0	0	-2
N49	67	69	69	69	0	0	2
N50	67	77	77	77	0	0	10
N51	67	68	68	68	0	0	1
N52	67	64	64	65	1	1	-2
N53	67	64	64	63	-1	-1	-4
N54	67	62	63	62	0	-1	-5
N55	67	64	64	64	0	0	-3
N56	67	68	69	67	-1	-2	0
N57	67	66	66	66	0	0	-1
N58	67	69	70	69	0	-1	2
N59	67	63	63	64	1	1	-3
N60	67	66	67	68	2	1	1
N61	67	66	66	67	1	1	0
N62	67	65	65	65	0	0	-2
N63	67	64	64	64	0	0	-3
N64	67	63	64	63	0	-1	-4
N65	67	62	62	62	0	0	-5
N66	67	61	62	62	1	0	-5
N67	67	58	58	58	0	0	-9
N68	67	62	62	62	0	0	-5
N69	67	65	65	64	-1	-1	-3
N70	67	69	69	68	-1	-1	1
N71	67	59	59	59	0	0	-8
N72	67	58	59	58	0	-1	-9
N73	67	64	65	64	0	-1	-3
N74	67	63	63	62	-1	-1	-5
N75	67	63	63	62	-1	-1	-5
N76	67	62	63	58	-4	-5	-9
N77	67	56	57	56	0	-1	-11
N78	67	61	62	60	-1	-2	-7
N79	67	57	57	57	0	0	-10
N80	67	59	59	61	2	2	-6



TABLE 5-4
Noise Impact Summary – TNM Modeling Results for the Six-lane Hybrid Interchange with Half-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N81	67	66	67	69	3	2	2
N82	67	60	61	61	1	0	-6
N83	67	66	66	65	-1	-1	-2
N84	67	63	63	62	-1	-1	-5
N85	67	67	67	63	-4	-4	-4
N86	67	68	68	65	-3	-3	-2
N87	67	66	66	66	0	0	-1
N88	67	71	71	69	-2	-2	2
N89	67	63	63	64	1	1	-3
N90	67	68	68	69	1	1	2
N91	67	68	68	69	1	1	2
N92	67	61	61	62	1	1	-5
N93	67	69	69	68	-1	-1	1
N94	67	65	65	65	0	0	-2
N95	67	68	69	67	-1	-2	0
N96	67	70	70	69	-1	-1	2
N97	67	62	62	63	1	1	-4
N98	67	67	67	67	0	0	0
N99	67	74	74	72	-2	-2	5
N100	67	65	65	65	0	0	-2
N101	67	60	61	61	1	0	-6
N102	67	65	66	65	0	-1	-2
N103	67	75	75	72	-3	-3	5
N104	67	62	63	64	2	1	-3
N105	67	73	73	71	-2	-2	4
N106	67	65	65	63	-2	-2	-4
N107	67	64	64	62	-2	-2	-5
N108	67	64	64	62	-2	-2	-5
N109	67	65	66	64	-1	-2	-3
N110	67	69	69	69	0	0	2
N111	72	62	62	62	0	0	-10
FS-1	67	69	69	69	0	0	2
FS-2	67	64	65	66	2	1	-1
FS-3	67	61	61	62	1	1	-5
FS-4	67	61	61	63	2	2	-4
FS-5	67	68	69	68	0	-1	1
FS-6	67	72	72	71	-1	-1	4
FS-7	67	67	68	68	1	0	1

TABLE 5-4
Noise Impact Summary – TNM Modeling Results for the Six-lane Hybrid Interchange with Half-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
FS-8	67	62	62	62	0	0	-5
FS-9	67	60	60	61	1	1	-6
FS-10	67	66	66	65	-1	-1	-2
FS-11	67	74	75	73	-1	-2	6
FS-12	67	59	59	58	-1	-1	-9
FS-13	67	62	62	63	1	1	-4
FS-14	67	74	74	72	-2	-2	5

5.3.4 Six-lane Hybrid Interchange with Full-Hawley Alternative

The results of the noise analysis indicate that peak-hour noise levels at exterior activity areas under the 2050 build condition range from 43 dBA at R9 to 77 dBA at N50. The difference between the six-lane hybrid interchange with Full-Hawley alternative build noise levels and existing noise levels range from a reduction of 4 dBA to a 3 dBA increase. Such increases are below WisDOT’s definition of substantial increase of 15 dBA. **Table 5-5** lists the calculated peak-hour traffic noise levels. Sixty-five of the 134 receptors approach, meet, or exceed the WisDOT NLC under the six-lane hybrid interchange with Full-Hawley Build alternative. They are identified in bold in **Table 5-5**. These 65 receptor locations would be impacted under the six-lane hybrid interchange with Full-Hawley alternative. Traffic noise levels varied, depending on the receptor’s proximity to the proposed six-lane alternative. Most traffic noise level changes from the existing condition to the six-lane hybrid interchange with Full-Hawley build alternative scenario are due to predicted future traffic volume increases.

TABLE 5-5
Noise Impact Summary – TNM Modeling Results for the Six-lane Hybrid Interchange with Full-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
R1	67	61	61	61	0	0	-6
R2	67	65	65	65	0	0	-2
R3	67	67	67	67	0	0	0
R4	67	64	64	65	1	1	-2
R5	67	65	65	65	0	0	-2
R6	67	66	67	67	1	0	0
R7	67	66	66	66	0	0	-1
R8	52	46	46	46	0	0	-6
R9	52	42	43	43	1	0	-9
N1	67	63	63	64	1	1	-3
N2	67	62	63	64	2	1	-3



TABLE 5-5
Noise Impact Summary – TNM Modeling Results for the Six-lane Hybrid Interchange with Full-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N3	67	63	64	64	1	0	-3
N4	67	63	64	66	3	2	-1
N5	67	63	63	65	2	2	-2
N6	67	62	63	65	3	2	-2
N7	67	62	62	64	2	2	-3
N9	67	62	62	64	2	2	-3
N8	67	64	64	65	1	1	-2
N10	67	65	65	66	1	1	-1
N11	67	64	65	66	2	1	-1
N12	67	65	65	68	3	3	1
N13	67	71	72	73	2	1	6
N14	67	72	72	73	1	1	6
N15	67	65	65	67	2	2	0
N16	67	62	62	65	3	3	-2
N17	67	67	67	70	3	3	3
N18	67	63	64	65	2	1	-2
N19	67	67	68	69	2	1	2
N20	67	66	66	67	1	1	0
N21	67	68	68	69	1	1	2
N22	67	65	66	67	2	1	0
N23	67	68	69	69	1	0	2
N24	67	67	67	66	-1	-1	-1
N25	67	68	69	68	0	-1	1
N26	67	67	68	67	0	-1	0
N27	67	68	68	68	0	0	1
N28	67	70	70	69	-1	-1	2
N29	67	67	67	67	0	0	0
N30	67	72	72	71	-1	-1	4
N31	67	69	69	68	-1	-1	1
N32	67	73	74	71	-2	-3	4
N33	67	69	70	67	-2	-3	0
N34	67	77	78	76	-1	-2	9
N35	67	73	74	73	0	-1	6
N36	67	70	70	69	-1	-1	2
N37	67	67	68	67	0	-1	0
N38	67	67	68	67	0	-1	0
N39	67	74	74	72	-2	-2	5
N40	67	70	71	69	-1	-2	2

**TABLE 5-5
Noise Impact Summary – TNM Modeling Results for the Six-lane Hybrid Interchange with Full-Hawley Alternative**

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N41	67	64	64	64	0	0	-3
N42	67	68	69	67	-1	-2	0
N43	67	65	65	64	-1	-1	-3
N44	67	63	63	63	0	0	-4
N45	67	66	67	66	0	-1	-1
N46	67	70	71	70	0	-1	3
N47	67	64	65	65	1	0	-2
N48	67	65	65	65	0	0	-2
N49	67	69	69	70	1	1	3
N50	67	77	77	77	0	0	10
N51	67	68	68	68	0	0	1
N52	67	64	64	65	1	1	-2
N53	67	64	64	63	-1	-1	-4
N54	67	62	63	62	0	-1	-5
N55	67	64	64	64	0	0	-3
N56	67	68	69	67	-1	-2	0
N57	67	66	66	66	0	0	-1
N58	67	69	70	69	0	-1	2
N59	67	63	63	64	1	1	-3
N60	67	66	67	68	2	1	1
N61	67	66	66	67	1	1	0
N62	67	65	65	65	0	0	-2
N63	67	64	64	64	0	0	-3
N64	67	63	64	63	0	-1	-4
N65	67	62	62	62	0	0	-5
N66	67	61	62	62	1	0	-5
N67	67	58	58	58	0	0	-9
N68	67	62	62	62	0	0	-5
N69	67	65	65	64	-1	-1	-3
N70	67	69	69	68	-1	-1	1
N71	67	59	59	59	0	0	-8
N72	67	58	59	58	0	-1	-9
N73	67	64	65	64	0	-1	-3
N74	67	63	63	62	-1	-1	-5
N75	67	63	63	62	-1	-1	-5
N76	67	62	63	58	-4	-5	-9
N77	67	56	57	56	0	-1	-11
N78	67	61	62	60	-1	-2	-7



TABLE 5-5
Noise Impact Summary – TNM Modeling Results for the Six-lane Hybrid Interchange with Full-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N79	67	57	57	57	0	0	-10
N80	67	59	59	61	2	2	-6
N81	67	66	67	69	3	2	2
N82	67	60	61	61	1	0	-6
N83	67	66	66	65	-1	-1	-2
N84	67	63	63	62	-1	-1	-5
N85	67	67	67	63	-4	-4	-4
N86	67	68	68	65	-3	-3	-2
N87	67	66	66	66	0	0	-1
N88	67	71	71	69	-2	-2	2
N89	67	63	63	64	1	1	-3
N90	67	68	68	69	1	1	2
N91	67	68	68	69	1	1	2
N92	67	61	61	62	1	1	-5
N93	67	69	69	68	-1	-1	1
N94	67	65	65	65	0	0	-2
N95	67	68	69	67	-1	-2	0
N96	67	70	70	69	-1	-1	2
N97	67	62	62	63	1	1	-4
N98	67	67	67	67	0	0	0
N99	67	74	74	72	-2	-2	5
N100	67	65	65	65	0	0	-2
N101	67	60	61	61	1	0	-6
N102	67	65	66	65	0	-1	-2
N103	67	75	75	72	-3	-3	5
N104	67	62	63	64	2	1	-3
N105	67	73	73	71	-2	-2	4
N106	67	65	65	63	-2	-2	-4
N107	67	64	64	62	-2	-2	-5
N108	67	64	64	63	-1	-1	-4
N109	67	65	66	64	-1	-2	-3
N110	67	69	69	69	0	0	2
N111	72	62	62	62	0	0	-10
FS-1	67	69	69	69	0	0	2
FS-2	67	64	65	66	2	1	-1
FS-3	67	61	61	62	1	1	-5
FS-4	67	61	61	63	2	2	-4
FS-5	67	68	69	68	0	-1	1

TABLE 5-5
Noise Impact Summary – TNM Modeling Results for the Six-lane Hybrid Interchange with Full-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
FS-6	67	72	72	71	-1	-1	4
FS-7	67	67	68	68	1	0	1
FS-8	67	62	62	62	0	0	-5
FS-9	67	60	60	61	1	1	-6
FS-10	67	66	66	65	-1	-1	-2
FS-11	67	74	75	73	-1	-2	6
FS-12	67	59	59	58	-1	-1	-9
FS-13	67	62	62	63	1	1	-4
FS-14	67	74	74	72	-2	-2	5

5.3.5 Six-lane DDI with Half-Hawley Alternative

The results of the noise analysis indicate that peak-hour noise levels at exterior activity areas under the 2050 build condition range from 43 dBA at R9 to 77 dBA at N50. The difference between the six-lane DDI with half-Hawley alternative build noise levels and existing noise levels range from a reduction of 4 dBA to a 3 dBA increase. Such increases are below WisDOT’s definition of substantial increase of 15 dBA. **Table 5-6** lists the calculated peak-hour traffic noise levels. Seventy-two of the 134 receptors approach, meet, or exceed the WisDOT NLC under the six-lane DDI with half-Hawley Build alternative. They are identified in bold in **Table 5-6**. These 72 receptor locations would be impacted under the six-lane DDI with half-Hawley alternative. Traffic noise levels varied, depending on the receptor’s proximity to the proposed six-lane alternative. Most traffic noise level changes from the existing condition to the six-lane DDI with half-Hawley build alternative scenario are due to predicted future traffic volume increases.

TABLE 5-6
Noise Impact Summary – TNM Modeling Results for the Six-lane DDI with Half-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
R1	67	61	61	61	0	0	-6
R2	67	65	65	65	0	0	-2
R3	67	67	67	67	0	0	0
R4	67	64	64	65	1	1	-2
R5	67	65	65	65	0	0	-2
R6	67	66	67	67	1	0	0
R7	67	66	66	66	0	0	-1
R8	52	46	46	46	0	0	-6
R9	52	42	43	43	1	0	-9
N1	67	63	63	64	1	1	-3
N2	67	62	63	64	2	1	-3



TABLE 5-6
Noise Impact Summary – TNM Modeling Results for the Six-lane DDI with Half-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N3	67	63	64	64	1	0	-3
N4	67	63	64	66	3	2	-1
N5	67	63	63	65	2	2	-2
N6	67	62	63	65	3	2	-2
N7	67	62	62	64	2	2	-3
N8	67	62	62	64	2	2	-3
N9	67	64	64	65	1	1	-2
N10	67	65	65	66	1	1	-1
N11	67	64	65	66	2	1	-1
N12	67	65	65	68	3	3	1
N13	67	71	72	73	2	1	6
N14	67	72	72	73	1	1	6
N15	67	65	65	67	2	2	0
N16	67	62	62	65	3	3	-2
N17	67	67	67	70	3	3	3
N18	67	63	64	65	2	1	-2
N19	67	67	68	68	1	0	1
N20	67	66	66	67	1	1	0
N21	67	68	68	69	1	1	2
N22	67	65	66	67	2	1	0
N23	67	68	69	69	1	0	2
N24	67	67	67	66	-1	-1	-1
N25	67	68	69	69	1	0	2
N26	67	67	68	67	0	-1	0
N27	67	68	68	68	0	0	1
N28	67	70	70	70	0	0	3
N29	67	67	67	67	0	0	0
N30	67	72	72	71	-1	-1	4
N31	67	69	69	68	-1	-1	1
N32	67	73	74	72	-1	-2	5
N33	67	69	70	67	-2	-3	0
N34	67	77	78	77	0	-1	10
N35	67	73	74	73	0	-1	6
N36	67	70	70	69	-1	-1	2
N37	67	67	68	67	0	-1	0
N38	67	67	68	68	1	0	1
N39	67	74	74	73	-1	-1	6
N40	67	70	71	69	-1	-2	2
N41	67	64	64	64	0	0	-3

TABLE 5-6
Noise Impact Summary – TNM Modeling Results for the Six-lane DDI with Half-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N42	67	68	69	67	-1	-2	0
N43	67	65	65	64	-1	-1	-3
N44	67	63	63	63	0	0	-4
N45	67	66	67	66	0	-1	-1
N46	67	70	71	70	0	-1	3
N47	67	64	65	65	1	0	-2
N48	67	65	65	65	0	0	-2
N49	67	69	69	70	1	1	3
N50	67	77	77	77	0	0	10
N51	67	68	68	68	0	0	1
N52	67	64	64	65	1	1	-2
N53	67	64	64	63	-1	-1	-4
N54	67	62	63	62	0	-1	-5
N55	67	64	64	64	0	0	-3
N56	67	68	69	67	-1	-2	0
N57	67	66	66	66	0	0	-1
N58	67	69	70	70	1	0	3
N59	67	63	63	65	2	2	-2
N60	67	66	67	69	3	2	2
N61	67	66	66	68	2	2	1
N62	67	65	65	67	2	2	0
N63	67	64	64	66	2	2	-1
N64	67	63	64	65	2	1	-2
N65	67	62	62	64	2	2	-3
N66	67	61	62	63	2	1	-4
N67	67	58	58	59	1	1	-8
N68	67	62	62	62	0	0	-5
N69	67	65	65	65	0	0	-2
N70	67	69	69	70	1	1	3
N71	67	59	59	60	1	1	-7
N72	67	58	59	60	2	1	-7
N73	67	64	65	65	1	0	-2
N74	67	63	63	64	1	1	-3
N75	67	63	63	64	1	1	-3
N76	67	62	63	63	1	0	-4
N77	67	56	57	58	2	1	-9
N78	67	61	62	62	1	0	-5
N79	67	57	57	56	-1	-1	-11
N80	67	59	59	61	2	2	-6



TABLE 5-6
Noise Impact Summary – TNM Modeling Results for the Six-lane DDI with Half-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N81	67	66	67	69	3	2	2
N82	67	60	61	61	1	0	-6
N83	67	66	66	67	1	1	0
N84	67	63	63	63	0	0	-4
N85	67	67	67	66	-1	-1	-1
N86	67	68	68	67	-1	-1	0
N87	67	66	66	67	1	1	0
N88	67	71	71	70	-1	-1	3
N89	67	63	63	64	1	1	-3
N90	67	68	68	70	2	2	3
N91	67	68	68	69	1	1	2
N92	67	61	61	62	1	1	-5
N93	67	69	69	69	0	0	2
N94	67	65	65	66	1	1	-1
N95	67	68	69	67	-1	-2	0
N96	67	70	70	69	-1	-1	2
N97	67	62	62	62	0	0	-5
N98	67	67	67	66	-1	-1	-1
N99	67	74	74	71	-3	-3	4
N100	67	65	65	64	-1	-1	-3
N101	67	60	61	61	1	0	-6
N102	67	65	66	64	-1	-2	-3
N103	67	75	75	71	-4	-4	4
N104	67	62	63	64	2	1	-3
N105	67	73	73	71	-2	-2	4
N106	67	65	65	63	-2	-2	-4
N107	67	64	64	62	-2	-2	-5
N108	67	64	64	62	-2	-2	-5
N109	67	65	66	64	-1	-2	-3
N110	67	69	69	69	0	0	2
N111	72	62	62	62	0	0	-10
FS-1	67	69	69	69	0	0	2
FS-2	67	64	65	66	2	1	-1
FS-3	67	61	61	62	1	1	-5
FS-4	67	61	61	63	2	2	-4
FS-5	67	68	69	68	0	-1	1
FS-6	67	72	72	71	-1	-1	4
FS-7	67	67	68	69	2	1	2
FS-8	67	62	62	64	2	2	-3

TABLE 5-6

Noise Impact Summary – TNM Modeling Results for the Six-lane DDI with Half-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
FS-9	67	60	60	62	2	2	-5
FS-10	67	66	66	66	0	0	-1
FS-11	67	74	75	73	-1	-2	6
FS-12	67	59	59	58	-1	-1	-9
FS-13	67	62	62	63	1	1	-4
FS-14	67	74	74	72	-2	-2	5

5.3.6 Six-lane DDI with Full-Hawley Alternative

The results of the noise analysis indicate that peak-hour noise levels at exterior activity areas under the 2050 build condition range from 43 dBA at R9 to 77 dBA at N50. The difference between the six-lane DDI with Full-Hawley alternative build noise levels and existing noise levels range from a reduction of 4 dBA to a 3 dBA increase. Such increases are below WisDOT's definition of substantial increase of 15 dBA. **Table 5-7** lists the calculated peak-hour traffic noise levels. Seventy-two of the 134 receptors approach, meet, or exceed the WisDOT NLC under the six-lane DDI with Full-Hawley Build alternative. They are identified in bold in **Table 5-7**. These 72 receptor locations would be impacted under the six-lane DDI with Full-Hawley alternative. Traffic noise levels varied, depending on the receptor's proximity to the proposed six-lane alternative. Most traffic noise level changes from the existing condition to the six-lane DDI with Full-Hawley build alternative scenario are due to predicted future traffic volume increases.

TABLE 5-7

Noise Impact Summary – TNM Modeling Results for the Six-lane DDI with Full-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
R1	67	61	61	61	0	0	-6
R2	67	65	65	65	0	0	-2
R3	67	67	67	67	0	0	0
R4	67	65	64	64	1	1	-2
R5	67	65	65	65	0	0	-2
R6	67	67	66	67	1	0	0
R7	67	66	66	66	0	0	-1
R8	52	46	46	46	0	0	-6
R9	52	43	42	43	1	0	-9
FS-1	67	69	69	69	0	0	2
FS-2	67	66	64	65	2	1	-1
FS-3	67	62	61	61	1	1	-5
FS-4	67	63	61	61	2	2	-4
FS-5	67	69	68	69	1	0	2
FS-6	67	71	72	72	-1	-1	4

TABLE 5-7
Noise Impact Summary – TNM Modeling Results for the Six-lane DDI with Full-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
FS-7	67	69	67	68	2	1	2
FS-8	67	64	62	62	2	2	-3
FS-9	67	62	60	60	2	2	-5
FS-10	67	66	66	66	0	0	-1
FS-11	67	73	74	75	-1	-2	6
FS-12	67	58	59	59	-1	-1	-9
FS-13	67	63	62	62	1	1	-4
FS-14	67	72	74	74	-2	-2	5
N1	67	64	63	63	1	1	-3
N2	67	64	62	63	2	1	-3
N3	67	64	63	64	1	0	-3
N4	67	66	63	64	3	2	-1
N5	67	65	63	63	2	2	-2
N6	67	65	62	63	3	2	-2
N7	67	64	62	62	2	2	-3
N8	67	64	62	62	2	2	-3
N9	67	65	64	64	1	1	-2
N10	67	66	65	65	1	1	-1
N11	67	66	64	65	2	1	-1
N12	67	67	65	65	2	2	0
N13	67	73	71	72	2	1	6
N14	67	73	72	72	1	1	6
N15	67	67	65	65	2	2	0
N16	67	65	62	62	3	3	-2
N17	67	70	67	67	3	3	3
N18	67	65	63	64	2	1	-2
N19	67	69	67	68	2	1	2
N20	67	67	66	66	1	1	0
N21	67	69	68	68	1	1	2
N22	67	67	65	66	2	1	0
N23	67	69	68	69	1	0	2
N24	67	66	67	67	-1	-1	-1
N25	67	68	68	69	0	-1	1
N26	67	67	67	68	0	-1	0
N27	67	68	68	68	0	0	1
N28	67	69	70	70	-1	-1	2
N29	67	67	67	67	0	0	0
N30	67	71	72	72	-1	-1	4
N31	67	68	69	69	-1	-1	1

**TABLE 5-7
Noise Impact Summary – TNM Modeling Results for the Six-lane DDI with Full-Hawley Alternative**

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N32	67	71	73	74	-2	-3	4
N33	67	67	69	70	-2	-3	0
N34	67	76	77	78	-1	-2	9
N35	67	73	73	74	0	-1	6
N36	67	69	70	70	-1	-1	2
N37	67	67	67	68	0	-1	0
N38	67	67	67	68	0	-1	0
N39	67	72	74	74	-2	-2	5
N40	67	69	70	71	-1	-2	2
N41	67	64	64	64	0	0	-3
N42	67	66	68	69	-2	-3	-1
N43	67	64	65	65	-1	-1	-3
N44	67	63	63	63	0	0	-4
N45	67	66	66	67	0	-1	-1
N46	67	70	70	71	0	-1	3
N47	67	65	64	65	1	0	-2
N48	67	65	65	65	0	0	-2
N49	67	70	69	69	1	1	3
N50	67	77	77	77	0	0	10
N51	67	68	68	68	0	0	1
N52	67	65	64	64	1	1	-2
N53	67	63	64	64	-1	-1	-4
N54	67	62	62	63	0	-1	-5
N55	67	64	64	64	0	0	-3
N56	67	67	68	69	-1	-2	0
N57	67	66	66	66	0	0	-1
N58	67	70	69	70	1	0	3
N59	67	65	63	63	2	2	-2
N60	67	69	66	67	3	2	2
N61	67	68	66	66	2	2	1
N62	67	67	65	65	2	2	0
N63	67	66	64	64	2	2	-1
N64	67	65	63	64	2	1	-2
N65	67	64	62	62	2	2	-3
N66	67	64	61	62	3	2	-3
N67	67	59	58	58	1	1	-8
N68	67	62	62	62	0	0	-5
N69	67	65	65	65	0	0	-2
N70	67	70	69	69	1	1	3



TABLE 5-7
Noise Impact Summary – TNM Modeling Results for the Six-lane DDI with Full-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N71	67	60	59	59	1	1	-7
N72	67	60	58	59	2	1	-7
N73	67	65	64	65	1	0	-2
N74	67	64	63	63	1	1	-3
N75	67	64	63	63	1	1	-3
N76	67	63	62	63	1	0	-4
N77	67	58	56	57	2	1	-9
N78	67	62	61	62	1	0	-5
N79	67	56	57	57	-1	-1	-11
N80	67	61	59	59	2	2	-6
N81	67	69	66	67	3	2	2
N82	67	61	60	61	1	0	-6
N83	67	67	66	66	1	1	0
N84	67	63	63	63	0	0	-4
N85	67	66	67	67	-1	-1	-1
N86	67	67	68	68	-1	-1	0
N87	67	67	66	66	1	1	0
N88	67	70	71	71	-1	-1	3
N89	67	64	63	63	1	1	-3
N90	67	70	68	68	2	2	3
N91	67	69	68	68	1	1	2
N92	67	63	61	61	2	2	-4
N93	67	69	69	69	0	0	2
N94	67	66	65	65	1	1	-1
N95	67	67	68	69	-1	-2	0
N96	67	69	70	70	-1	-1	2
N97	67	62	62	62	0	0	-5
N98	67	66	67	67	-1	-1	-1
N99	67	72	74	74	-2	-2	5
N100	67	64	65	65	-1	-1	-3
N101	67	61	60	61	1	0	-6
N102	67	64	65	66	-1	-2	-3
N103	67	71	75	75	-4	-4	4
N104	67	64	62	63	2	1	-3
N105	67	71	73	73	-2	-2	4
N106	67	63	65	65	-2	-2	-4
N107	67	62	64	64	-2	-2	-5
N108	67	62	64	64	-2	-2	-5
N109	67	64	65	66	-1	-2	-3

TABLE 5-7
Noise Impact Summary – TNM Modeling Results for the Six-lane DDI with Full-Hawley Alternative

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	6-lane alternative (dBA)	Build (6-lane) increase above existing	Build (6-lane) increase above No Build (dBA)	Build (6-lane) increase above NLC (dBA)
N110	67	69	69	69	0	0	2
N111	72	62	62	62	0	0	-10

5.3.7 Washington Street Extension

An additional noise level field measurement was taken for the Washington Street Extension see Exhibit 1-2. It showed existing noise of 60 dBA. Traffic counts were not taken at this location since the field measurement was to determine existing conditions. There is currently no traffic on the Washington Street Extension since the extension would be a new roadway.

The results of the noise analysis indicate that peak-hour noise levels at exterior activity areas under the 2050 build condition for the Washington Street Extension range from 43 dBA at N121 to 65 dBA at N117 to N120. The difference between build noise levels and existing noise levels ranges from a reduction of 1 dBA to a 12 dBA increase. Such increases are below WisDOT’s definition of substantial increase of 15 dBA. **Table 5-8** lists the calculated peak-hour traffic noise levels. None of the 15 receptors approach or exceed the WisDOT NLC for the Washington Street Extension. Traffic noise levels varied, depending on the receptor’s proximity to the proposed Washington Street Extension. The largest change takes place at FS-15, since there is a new road introduced in an area where there is currently no road.

None of the 15 receptor locations would be impacted.

TABLE 5-8
Noise Impact Summary – TNM Modelling Results for the Washington Street Extension

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	Washington Street Extension (dBA)	Build (Washington Street Extension) increase above existing (dBA)	Build (Washington Street Extension) increase above No Build (dBA)	Build (Washington Street Extension) increase above NLC (dBA)
N112	67	62	62	63	1	1	-4
N113	67	60	60	61	1	1	-6
N114	67	40	41	48	8	7	-19
N115	67	62	62	61	-1	-1	-6
N116	67	65	66	64	-1	-2	-3
N117	67	66	67	65	-1	-2	-2
N118	67	66	66	65	-1	-1	-2
N119	67	65	65	64	-1	-1	-3
N120	67	66	66	65	-1	-1	-2
N121	67	41	41	43	2	2	-24
N122	67	44	44	46	2	2	-21



TABLE 5-8
Noise Impact Summary – TNM Modelling Results for the Washington Street Extension

Receptor	NLC (dBA)	Existing (dBA)	No build (dBA)	Washington Street Extension (dBA)	Build (Washington Street Extension) increase above existing (dBA)	Build (Washington Street Extension) increase above No Build (dBA)	Build (Washington Street Extension) increase above NLC (dBA)
N123	67	53	53	55	2	2	-12
FS-15	67	41	41	53	12	12	-14
FS-16	67	38	38	46	8	8	-21
FS-17	67	50	50	54	4	4	-13

5.3.8 Noise Impacts Summary

The results of the computer modeling by alternative are presented in **Appendix B, Traffic Noise Impact Summary**. The noise levels for each alternative are independent of the Washington Extension noise levels. Therefore, the data presented in **Appendix B** are appropriate for any alternative combined with the Washington Street Extension.

The noise levels in **Appendix B** are the modeled noise levels based on SEWRPC's existing and future design year traffic model and existing I-94 geometric conditions and the proposed geometrics of the build alternatives. Noise impacts are determined based on the findings of the SEWRPC traffic model. SEWRPC's traffic model uses traffic counts from throughout the year and averages them, producing more accurate results than one 15-minute traffic count at a specific point in time. See **Section 3.2.1** for more information on the comparison of field data and modeled noise levels.

The projected changes in the study area are summarized by alternative in **Table 5-9**. Note that projected noise levels would differ in the other segments due to different traffic volumes as a result of the design through the cemetery area. The projected number of properties that would be exposed to design-year noise levels that approach or exceed the levels in **Table 2-3** are presented in **Table 6-1**.

TABLE 5-9
Change in Design Hour Noise Levels by Alternative

Alternative	Change in Noise Level, dBA Leq
Eight-lane hybrid interchange alternative	-4 to +4
Eight-lane DDI alternative	-3 to +4
Six-lane Hybrid Interchange with Half-Hawley alternative	-4 to +3
Six-lane Hybrid Interchange with Full-Hawley alternative	-4 to +3
Six-lane DDI with Half-Hawley alternative	-4 to +3
Six-lane DDI with Full-Hawley alternative	-4 to +3
Washington Street Extension	-1 to +12



In addition to the I-94 improvements, spot improvements are being proposed near three intersections: National Avenue/Miller Park Way/General Mitchell Boulevard, National Avenue/Greenfield Avenue/62nd Street, and Greenfield Avenue/70th Street. The proposed improvements include restriping of existing pavement to add turn lanes or increase the lengths of existing turn lanes, and the addition of a proposed right-turn lane to improve access to the Milwaukee VA Medical Center. All the proposed improvements are designed to improve traffic operations. Traffic noise impacts are associated with National Avenue/Brewers Boulevard intersection improvements for the 8-lane alternative with diverging diamond interchange (see Section 5.3.2).³

³ Traffic noise impacts of the National Avenue/Brewers Boulevard intersection improvements were only analyzed for the 8-lane alternative with diverging diamond interchange (preferred alternative).

Noise Abatement Analysis

Based upon the requirements of 23 CFR 772 and within the framework of *Facilities Development Manual 23, Noise*, various methods were reviewed to mitigate the noise impact of the proposed improvements. Among those considered were restricting truck traffic to specific times of the day, prohibiting trucks, altering horizontal and vertical alignments, property acquisition for construction of noise barriers or berms, property acquisition to create buffer zones to prevent development that could be adversely impacted, soundproofing public use or nonprofit institutional buildings (Land Use Activity Category D only), berms, and sound barriers.

Restricting or prohibiting trucks is counter to the project's purpose and need. Design criteria and recommended termini for the proposed project preclude substantial horizontal and vertical alignment shifts that would produce noticeable changes in the projected acoustical environment. Due to right-of-way limitation, the construction of noise berms is neither feasible nor reasonable. Soundproofing was not considered because there are reasonable and feasible exterior measures. Therefore, only the construction of noise barriers was reviewed. Abatement is recommended only when it is feasible and reasonable to construct a noise barrier.

The projected number of properties that would be exposed to design-year noise levels that approach or exceed the levels in **Table 2-3** are presented in **Table 6-1**.

TABLE 6-1

Impacted Noise Receptors Summary

	Eight-lane Hybrid Interchange Alternative	Eight-lane DDI Interchange Alternative	Six-lane Hybrid Interchange with Half-Hawley Alternative	Six-lane Hybrid with Interchange Full-Hawley Alternative	Six-lane DDI with Half-Hawley Alternative	Six-lane DDI with Full-Hawley Alternative	Washington Street Extension
Residences	66 (239)*	73 (238)	60 (208)	59 (202)	66 (220)	66 (220)	0
Active sports areas	0	0	0	0	0	0	0
Recreation facilities	0	0	0	0	0	0	0
Educational facilities	0	0	0	0	0	0	0
Cemeteries	5 (4)	6 (4)	5 (4)	5 (4)	5 (4)	5 (4)	0
Day care center	1	1	1	1	1	1	0
Park	0	0	0	0	0	0	0
Restaurant	0	0	0	0	0	0	0

*(#) represent number of unique properties represented by receptors

6.1 Abatement Alternatives

Future traffic noise levels in the analysis area will approach, meet, or exceed the NLC at 72 locations for the eight-lane hybrid interchange alternative, 80 locations for the eight-lane DDI alternative, 65 or 66 locations for the six-lane hybrid interchange alternatives, 72 locations for the six-lane DDI alternatives,

and no locations for the Washington Street Extension. The locations that approach, meet, or exceed the NLC will require noise abatement consideration. Traffic noise abatement strategies considered for mitigating roadway noise as identified in *WisDOT's Facilities Development Manual (2021)* include the following:

- Traffic control measures
- Acquisition of undeveloped land for buffer zones
- Constructing noise barriers
- Soundproofing (only for activity Category D)

Typically, the most effective noise abatement strategy is the implementation of noise barriers. It should be noted that noise barriers can have their own negative impacts. Barriers may interfere with the passage of air, interrupt scenic views, or create objectionable shadows and visual impacts, especially in a rural setting. They could also create maintenance access problems, make it difficult to maintain landscaping, create drainage problems, or provide pockets for wind-borne trash and garbage to accumulate.

6.2 Wisconsin Noise Abatement Guidelines

Determining feasibility and reasonableness of noise abatement involves professional judgment to balance overall benefits against any adverse social, economic, and environmental impacts of noise abatement. The factors include the following: amount of noise reduction expected, number of benefited receptors, cost of noise abatement, opinions of affected receptors, absolute noise levels, change in noise levels, timing of development adjacent to the highway versus the time of initial highway construction, and differences between the existing, no-build, and build noise levels.

WisDOT has established specific requirements for highway noise abatement, as described in the *Facilities Development Manual (2022)*. The following is a summary of pertinent guidelines for WisDOT.

Facilities Development Manual Chapter 23, Noise, has established criteria for determining feasibility and reasonableness, as follows:

- For a noise barrier to be reasonable, the total cost may not exceed \$50,000 per benefited receptor. The department may annually adjust this \$50,000 maximum figure up or down based on the last 3 years of available noise barrier construction cost data. This review will take place on an annual basis.
- To make a reasonableness determination, a noise barrier will be designed (horizontal and vertical location) such that a minimum of one receptor or common use area achieves the department's noise reduction design goal of 9 dB.
- A noise barrier shall reduce noise levels by a minimum of 8 dB for a receptor or common use area to be considered as benefited for the purposes of determining reasonableness.

6.2.1 Feasibility

The feasibility decision should be based on whether the measures proposed are compatible with the project purpose and need, meet design criteria and guidance, or result in other impacts that would offset noise reduction benefits.

Other factors that must be considered based on the various noise abatement measures being evaluated include safety, barrier height, topography, drainage, utilities, maintenance of the abatement measure, maintenance access to adjacent properties, and access to adjacent properties.

For a noise abatement measure to be feasible, a minimum of one impacted receptor or common use area shall achieve a 5-dBA noise reduction.

6.2.2 Reasonableness

If the noise barrier cost per benefited receptor is equal to or less than \$50,000, the noise barrier is considered reasonable and a determination of whether or not the barrier will be incorporated into the project is made.

If the noise barrier cost per benefited receptor is greater than \$50,000, the noise barrier is considered not reasonable, and the process ends with inclusion of this finding in the environmental document.

If a common noise environment exists within the project termini, cost-averaging of multiple barriers within the common noise environment may occur as part of the reasonableness determination.

Noise barriers exceeding \$100,000 per benefited receptor cannot be included in the cost averaging. The order of cost averaging of eligible multiple barriers will start with the most cost-effective noise barrier increasing to the second most cost-effective barrier to the third, etc., until the average cost approaches or equals but does not exceed \$50,000 per benefited receptor. The noise barriers included in the cost averaging may be carried forward for a determination of whether they will be incorporated into the project. The department must receive a vote of support for the project from a simple majority of all votes cast by the owners or residents of the benefitted receptors.

6.3 Noise Abatement Evaluation

Noise abatement measures, specifically noise barriers, were considered as part of the analysis. The area surrounding the I-94 E-W project corridor is primarily residential, with cemeteries and commercial/industrial facilities mixed in.

- Seventy-two (72) receptors are predicted to be impacted by the eight-lane hybrid interchange alternative
- Eighty (80) receptors are predicted to be impacted by the eight-lane DDI alternative
- Sixty-six (66) receptors are predicted to be impacted by the six-lane hybrid interchange with Half-Hawley alternative.
- Sixty-five (65) receptors are predicted to be impacted by the six-lane hybrid interchange with Full-Hawley alternative.
- Seventy-two (72) receptors are predicted to be impacted by the six-lane DDI with Half-Hawley alternative.
- Seventy-two (72) receptors are predicted to be impacted by the six-lane DDI with Full-Hawley alternative
- No impacts were predicted for the Washington Street Extension.

A total of 15 noise barriers were analyzed for eight residential areas and three cemeteries abutting the corridor that would be exposed to noise levels that approach or exceed the noise level criteria for considering barriers for both eight-lane and all four of the six-lane alternatives.

6.3.1 ATC Powerline Avoidance Options

Options to avoid impacts to overhead powerlines and other utilities located north of I-94 between 68th Street and Hawley Road that would result with Barrier 4 were evaluated. These options included shifting I-94 roadway south, locating the noise barrier north of the ATC towers, or reducing the height of the barrier to avoid impacts to the overheard utilities. Shifting the roadway to the south or moving the barrier to the north of the ATC towers were eliminated as options from consideration due to right-of-way impacts and additional costs. Barrier 4A, a reduced height barrier, was found to be reasonable and feasible with its reduced height that avoids the additional cost of relocating ATC towers that would be required by Barrier 4 for both the eight-lane and all four 6-lane alternatives.



6.3.2 Eight-lane Hybrid Interchange Alternative

A total of 12 noise barriers were analyzed for areas abutting the corridor that would be exposed to noise levels that approach, meet, or exceed the NLC for considering barriers for the eight-lane hybrid interchange alternative. See **Exhibit 4-1, Proposed Noise Barriers Eight-Lane Hybrid Interchange Alternative**. Five of these barriers were considered both reasonable and feasible independent of cost averaging (Barriers 1, 4A, 7, 9, and 10). A summary of the noise barrier analysis for the eight-lane hybrid interchange alternative is presented in **Table 6-2**.

6.3.3 Eight-lane DDI Alternative

A total of 15 noise barriers were analyzed for areas abutting the corridor that would be exposed to noise levels that approach, meet, or exceed the NLC for considering barriers for the eight-lane DDI alternative. See **Exhibit 4-2, Proposed Noise Barriers Eight-Lane DDI Alternative**. Three of these barriers were considered both reasonable and feasible independent of cost averaging (Barriers 1, 4A and 7). A summary of the noise barrier analysis for the eight-lane DDI alternative is presented in **Table 6-3**.

6.3.4 Six-lane Hybrid Interchange with Half-Hawley Alternative

For the six-lane with half-Hawley Interchange alternative, a total of 12 noise barriers were analyzed for areas abutting the corridor that would be exposed to noise levels that approach, meet, or exceed the NLC for barrier consideration. See **Exhibit 4-3, Proposed Noise Barriers Six-Lane Hybrid Interchange Alternatives**. Five of these barriers were considered both reasonable and feasible independent of cost averaging (Barriers 1, 4A, 7, 9 and 10). A summary of the noise barrier analysis for the six-lane alternative is presented in **Table 6-4**.

6.3.5 Six-lane Hybrid Interchange with Full-Hawley Alternative

For the six-lane with full-Hawley Interchange alternative, a total of 12 noise barriers were analyzed for areas abutting the corridor that would be exposed to noise levels that approach, meet, or exceed the NLC for barrier consideration. See **Exhibit 4-3, Proposed Noise Barriers Six-Lane Hybrid Interchange Alternatives**. Five of these barriers were considered both reasonable and feasible independent of cost averaging (Barriers 1, 4A, 7, 9, and 10). A summary of the noise barrier analysis for the six-lane alternative is presented in **Table 6-5**.

6.3.6 Six-lane DDI with Half-Hawley Alternative

For the six-lane DDI with half-Hawley alternative, a total of 13 noise barriers were analyzed for areas abutting the corridor that would be exposed to noise levels that approach, meet, or exceed the NLC for barrier consideration. See **Exhibit 4-4, Proposed Noise Barriers Six-Lane DDI Alternatives**. Four of these barriers were considered both reasonable and feasible independent of cost averaging (Barriers 1, 4A, 7, and 9). A summary of the noise barrier analysis for the six-lane hybrid interchange alternative with half-Hawley s presented in **Table 6-6**.

6.3.7 Six-lane DDI with Full-Hawley Alternative

For the six-lane DDI with full-Hawley alternative, a total of 13 noise barriers were analyzed for areas abutting the corridor that would be exposed to noise levels that approach, meet, or exceed the NLC for barrier consideration. See **Exhibit 4-4, Proposed Noise Barriers Six-Lane DDI Alternative**. Four of these barriers were considered both reasonable and feasible independent of cost averaging (Barriers 1, 4A, 7 and 9). A summary of the noise barrier analysis for the six-lane DDI with full-Hawley alternative is presented in **Table 6-7**.

6.3.8 Cost Averaging

The final step in the reasonableness determination is to cost average⁴ the multiple noise barriers within the common noise environment on all noise barriers costing less than \$100,000 per unit.

- Cost averaging for the eight-lane hybrid interchange alternative provided cost reasonableness for one additional barrier (Barrier 3) for a total of six barriers.
- Cost averaging for the eight-lane DDI alternative provided cost reasonableness for three additional barriers (Barriers 3, 9 and 10) for a total of six barriers.
- Cost averaging for the six-lane hybrid interchange with Half-Hawley alternative provided cost reasonableness for one additional barrier (Barrier 3) for a total of six barriers.
- Cost averaging for the six-lane hybrid interchange with Full-Hawley alternative provided cost reasonableness for one additional barrier (Barrier 3) for a total of six barriers.
- Cost averaging for the six-lane DDI with Half-Hawley alternative provided cost reasonableness for two additional barriers (Barriers 3 and 10) for a total of six barriers.
- Cost averaging for the six-lane DDI with Full-Hawley alternative provided cost reasonableness for two additional barriers (Barriers 3 and 10) for a total of six barriers.

A summary of the noise barriers is presented in **Table 6-8**. **Table 6-8** presents the results of the noise barrier analysis, including barrier location, future Leq(1h) noise levels without and with a barrier, barrier length and height, estimated cost, number of residential units benefited, noise reduction provided by the barrier, and cost per residential unit for each alternative.

⁴ If a common noise environment exists within the project termini, cost averaging of multiple barriers within the common noise environment may occur as part of the reasonableness determination. A common noise environment is a group of receptors within the same Land Use Category listed in FDM 23-30 Table 2.1 (Noise Level Criteria For Considering Barriers), that are exposed to similar noise sources and levels, traffic volumes, traffic mix, and speed, and topographic features. Generally, common noise environments occur between two secondary noise sources, such as interchanges, intersections, and cross-roads. See *FDM 25-35-15* for more information.

TABLE 6-2

Summary of Noise Barrier Analysis for the Eight-lane Hybrid Interchange Alternative

Barrier #	Location	Existing Noise Levels (dBA)	Range of 2050 Future Leq Noise levels (dBA)		Noise Reduction (dBA)	Barrier Characteristics		Estimated Barrier Cost ^a	Total Benefitted	Estimated Barrier Cost per Benefitted Receiver	Feasible and Reasonable
			Without Barrier	With Barrier		Height (feet)	Total Length (feet)				
1	EB I-94 From N 72nd to 68th	64-70	67-74	63-68	1-9	20	1229	\$737,010	15	\$49,134	Yes
2	WB I-94 From N 68th to 72nd	61-67	65-70	60-65	4-7	30	1384	\$1,245,750	0	N/A	No
3	EB I-94 From N 68th to Hawley	63-77	62-77	57-63	4-18	12,22,22	3256	\$1,994,910	32	\$62,341	Yes ^b
4	WB I-94 From Hawley to 68th	61-72	64-74	57-65	2-12	16 to 26	3513	\$14,253,480 ^c	48	\$296,978	No
4A	WB I-94 From Hawley to 68th	61-72	64-74	57-65	2-12	12 to 20	2842	\$1,297,260	27	\$48,047	Yes
5	EB I-94 From Hawley to Zablocki	62-68	63-76	62-66	1-10	12	1060	\$381,450	1	\$381,450	No
6	WB I-94 From Zablocki to Hawley	65-77	65-78	60-65	5-13	18	1349	\$728,460	2	\$364,230	No
7	WB I-94 From Yount to General Mitchell	61-69	62-70	54-65	2-11	20	1041	\$624,600	17	\$36,741	Yes
8	NB 175 From Parkway to Blue Mound	58-69	59-69	59-64	0-8	18	331	\$178,740	1	\$178,740	No
9	WB Park Hill from 37th to End	57-74	57-73	56-65	0-13	20,22	814	\$532,830	12	\$44,403	Yes
10	WB Park Hill from 29th to 35th	61-75	62-73	55-63	3-16	20	2082	\$1,249,200	28	\$44,614	Yes
11	WB Clybourn From 25th to 26th	73	70	66	4	30	330	\$297,000	0	N/A	No
12	WB Clybourn From 17th to 19th	64-69	63-70	62-68	0-8	14	688	\$288,960	1	\$288,960	No

^aBased on \$30.00 per square foot; ^b Based on cost averaging of multiple barriers within the common noise environment for the Eight-lane Hybrid Interchange Alternative; see **Section 6.2.2, Reasonableness** for a description of how costs are averaged; ^c Costs include expense of relocating approximately 12 ATC towers.



TABLE 6-3

Summary of Noise Barrier Analysis for the Eight-lane DDI Alternative

Barrier #	Location	Existing Noise Levels (dBA)	Range of 2050 Future Leq Noise levels (dBA)		Noise Reduction (dBA)	Barrier Characteristics			Estimated Barrier Cost per Benefitted Receiver	Feasible and Reasonable	
			Without Barrier	With Barrier		Height (feet)	Total Length (feet)	Estimated Barrier Cost ^a			
1	EB I-94 From N 72nd to 68th	64-70	67-74	63-68	1-9	20	1229	\$737,400	15	\$49,160	Yes
2	WB I-94 From N 68th to 72nd	61-67	65-70	60-65	2-7	30	1384	\$1,245,750	0	N/A	No
3	EB I-94 From N 68th to Hawley	63-77	62-77	57-63	1-18	12,22,22	3256	\$1,994,910	32	\$62,341	Yes ^b
4	WB I-94 From Hawley to 68th	61-72	64-74	57-65	2-12	16 to 26	3535	\$14,253,480 ^c	51	\$279,480	No
4A	WB I-94 From Hawley to 68th	61-72	64-74	58-65	1-12	12,18,20	2842	\$1,308,870	32	\$40,902	Yes
5	EB I-94 From Hawley to Zablocki	62-68	63-76	62-66	1-10	12	1060	\$381,450	1	\$381,450	No
6	WB I-94 From Zablocki to Hawley	65-77	66-78	60-64	5-13	18	1349	\$728,460	2	\$364,230	No
7	WB I-94 From Yount to General Mitchell	61-69	64-70	58-65	1-12	20	1041	\$624,600	20	\$31,230	Yes
8	NB 175 From Parkway to Blue Mound	58-69	60-70	60-65	0-8	20	331	\$198,600	1	\$198,600	No
8A	SB 175 From Blue Mound to Parkway	58-66	60-70	60-65	0-8	30	359	\$323,100	0	N/A	No
9	WB Park Hill from 37th to End	57-74	58-73	58-68	0-13	20	814	\$488,400	9	\$54,267	Yes ^b
10	WB Park Hill from 29th to 35th	61-75	61-73	57-64	1-15	20	2082	\$1,249,200	23	\$54,313	Yes ^b
11	WB Clybourn From 25th to 26th	73	70	68	2	30	330	\$297,000	0	N/A	No
12	WB Clybourn From 17th to 19th	64-69	62-70	55-68	0-11	30	2052	\$1,846,800	1	\$1,846,800	No



TABLE 6-3

Summary of Noise Barrier Analysis for the Eight-lane DDI Alternative

Barrier #	Location	Existing Noise Levels (dBA)	Range of 2050 Future Leq Noise levels (dBA)		Noise Reduction (dBA)	Barrier Characteristics		Estimated Barrier Cost ^a	Total Benefitted	Estimated Barrier Cost per Benefitted Receiver	Feasible and Reasonable
			Without Barrier	With Barrier		Height (feet)	Total Length (feet)				
13	EB National Ave from S. 48th East 27 feet	66	67	63	4	30	27	\$24,300	0	N/A	No
14	EB National Ave from 50 feet east of S. 47th 48 feet	46	46	42	4	30	48	\$43,200	0	N/A	No

^aBased on \$30.00 per square foot; ^b Based on cost averaging of multiple barriers within the common noise environment for the Eight-lane DDI Alternative; see **Section 6.2.2, Reasonableness** for a description of how costs are averaged; ^c Costs include expense of relocating approximately 12 ATC towers.

TABLE 6-4

Summary of Noise Barrier Analysis for the Six-lane Hybrid Interchange with Half-Hawley Alternative

Barrier #	Location	Existing Noise Levels (dBA)	Range of 2050 Future Leq Noise levels (dBA)		Noise Reduction (dBA)	Barrier Characteristics		Estimated Barrier Cost ^a	Total Benefitted	Estimated Barrier Cost per Benefitted Receiver	Feasible and Reasonable
			Without Barrier	With Barrier		Height (feet)	Total Length (feet)				
1	EB I-94 From N 72nd to 68th	64-70	67-74	62-67	3-9	16	1235	\$592,800	16	\$37,050	Yes
2	WB I-94 From N 68th to 72nd	61-67	64-69	60-65	3-7	30	1346	\$1,211,400	0	N/A	No
3	EB I-94 From N 68th to Hawley	63-77	62-77	57-65	2-15	12,22,22	3236	\$1,982,160	35	\$56,633	Yes ^b
4	WB I-94 From Hawley to 68th	61-72	63-73	57-64	2-12	18 to 26	3514	\$14,283,810 ^c	48	\$297,579	No
4A	WB I-94 From Hawley to 68th	61-72	63-73	57-64	2-12	12,18,20	2843	\$1,391,880	30	\$46,396	Yes
5	EB I-94 From Hawley to Zablocki	62-68	63-76	62-65	1-10	12	1060	\$381,450	1	\$381,450	No
6	WB I-94 From Zablocki to Hawley	65-77	65-77	60-65	4-12	16	1349	\$647,430	2	\$323,715	No
7	WB I-94 From Yount to General Mitchell	61-69	62-69	57-64	2-11	20	1041	\$624,600	15	\$41,640	Yes
8	NB 175 From Parkway to Blue Mound	58-69	60-69	59-64	0-8	14	331	\$139,170	1	\$139,170	No
9	WB Park Hill from 37th to End	57-74	56-72	56-65	0-11	8,16,18	814	\$367,620	8	\$45,953	Yes
10	WB Park Hill from 29th to 35th	61-75	63-72	54-63	1-16	20	2082	\$1,249,200	27	\$46,267	Yes
11	WB Clybourn From 25th to 26th	73	70	65	5	30	320	\$288,000	0	N/A	No
12	WB Clybourn From 17th to 19th	64-69	62-70	62-68	0-8	14	688	\$288,960	1	\$288,960	No

^aBased on \$30.00 per square foot; ^b Based on cost averaging of multiple barriers within the common noise environment for the Six-Lane Hybrid Interchange with Half-Hawley Alternative; see Section 6.2.2, Reasonableness for a description of how costs are averaged; ^c Costs include expense of relocating approximately 12 ATC towers.



TABLE 6-5

Summary of Noise Barrier Analysis for the Six-lane Hybrid Interchange with Full-Hawley Alternative

Barrier #	Location	Existing Noise Levels (dBA)	Range of 2050 Future Leq Noise levels (dBA)		Noise Reduction (dBA)	Barrier Characteristics		Estimated Barrier Cost ^a	Total Benefitted	Estimated Barrier Cost per Benefitted Receiver	Feasible and Reasonable
			Without Barrier	With Barrier		Height (feet)	Total Length (feet)				
1	EB I-94 From N 72nd to 68th	64-70	67-74	62-66	3-10	20	1235	\$741,000	18	\$41,167	Yes
2	WB I-94 From N 68th to 72nd	61-67	64-69	59-65	3-7	30	1346	\$1,211,400	0	N/A	No
3	EB I-94 From N 68th to Hawley	63-77	62-73	56-63	3-16	12,22,22	3236	\$1,982,160	34	\$58,299	Yes ^b
4	WB I-94 From Hawley to 68th	61-72	64-73	56-68	2-13	18 to 26	3514	\$14,317,500 ^c	52	\$275,337	No
4A	WB I-94 From Hawley to 68th	61-72	63-73	57-64	2-12	12,18,20	2875	\$1,411,410	36	\$39,206	Yes
5	EB I-94 From Hawley to Zablocki	62-68	63-67	62-65	1-10	12	1060	\$381,450	1	\$381,450	No
6	WB I-94 From Zablocki to Hawley	65-77	65-77	60-65	4-12	16	1349	\$647,430	2	\$647,430	No
7	WB I-94 From Yount to General Mitchell	61-69	62-69	57-64	2-11	20	1041	\$624,600	15	\$41,640	Yes
8	NB 175 From Parkway to Blue Mound	58-69	60-69	59-64	0-8	14	331	\$139,170	1	\$139,170	No
9	WB Park Hill from 37th to End	57-74	56-73	56-65	0-11	12,14,18	814	\$356,190	9	\$39,577	Yes
10	WB Park Hill from 29th to 35th	61-75	61-72	57-62	1-16	20	2082	\$1,249,380	28	\$44,621	Yes
11	WB Clybourn From 25th to 26th	73	70	65	5	30	320	\$288,000	0	N/A	No
12	WB Clybourn From 17th to 19th	64-69	62-70	62-68	0-8	14	688	\$288,960	1	\$288,960	No

^aBased on \$30.00 per square foot; ^b Based on cost averaging of multiple barriers within the common noise environment for the Six-Lane Hybrid Interchange with Full-Hawley Alternative; see Section 6.2.2, Reasonableness for a description of how costs are averaged; ^c Costs include expense of relocating approximately 12 ATC towers.



TABLE 6-6

Summary of Noise Barrier Analysis for the Six-lane DDI with Half-Hawley Alternative

Barrier #	Location	Existing Noise Levels (dBA)	Range of 2050 Future Leq Noise levels (dBA)		Noise Reduction (dBA)	Barrier Characteristics		Estimated Barrier Cost ^a	Total Benefitted	Estimated Barrier Cost per Benefitted Receiver	Feasible and Reasonable
			Without Barrier	With Barrier		Height (feet)	Total Length (feet)				
1	EB I-94 From N 72nd to 68th	64-70	67-74	62-67	3-9	16	1235	\$592,800	16	\$37,050	Yes
2	WB I-94 From N 68th to 72nd	61-67	64-67	59-60	1-8	30	1346	\$1,211,400	9	\$134,600	No
3	EB I-94 From N 68th to Hawley	63-77	62-77	57-64	1-16	12,22,22	3236	\$1,982,160	35	\$56,633	Yes ^b
4	WB I-94 From Hawley to 68th	61-72	64-73	56-68	1-12	18 to 26	3514	\$14,283,570 ^c	45	\$317,413	No
4A	WB I-94 From Hawley to 68th	61-72	64-73	57-68	1-12	12,18 to 26	2843	\$1,391,880	29	\$47,996	Yes
5	EB I-94 From Hawley to Zablocki	62-68	63-76	62-65	1-10	12	1060	\$381,450	1	\$381,450	No
6	WB I-94 From Zablocki to Hawley	65-77	65-77	61-65	4-12	16	1349	\$647,430	1	\$647,430	No
7	WB I-94 From Yount to General Mitchell	61-69	63-70	57-64	0-12	20	1041	\$624,600	19	\$32,874	Yes
8	NB 175 From Parkway to Blue Mound	58-69	60-70	60-65	0-9	14	331	\$139,170	1	\$139,170	No
8A	SB 175 From Blue Mound to Parkway	58-66	61-66	58-61	0-8	30	359	\$323,100	1	\$323,100	No
9	WB Park Hill from 37th to End	57-74	58-73	58-67	0-10	10,16	814	\$378,120	8	\$47,265	Yes
10	WB Park Hill from 29th to 35th	61-75	62-72	58-63	1-15	20	2082	\$1,249,200	23	\$54,313	Yes ^b
11	WB Clybourn From 25th to 26th	73	70	67	3	30	330	\$297,000	0	N/A	No
12	WB Clybourn From 17th to 19th	64-69	62-70	62-68	0-8	14	688	\$288,960	1	\$288,960	No

^aBased on \$30.00 per square foot; ^b Based on cost averaging of multiple barriers within the common noise environment for the Six-lane DDI with Half-Hawley Interchange Alternative; see **Section 6.2.2, Reasonableness** for a description of how costs are averaged; ^cCosts include expense of relocating approximately 12 ATC towers.



TABLE 6-7

Summary of Noise Barrier Analysis for the Six-lane DDI with Full-Hawley Alternative

Barrier #	Location	Existing Noise Levels (dBA)	Range of 2050 Future Leq Noise levels (dBA)		Noise Reduction (dBA)	Barrier Characteristics		Estimated Barrier Cost ^a	Total Benefitted	Estimated Barrier Cost per Benefitted Receiver	Feasible and Reasonable
			Without Barrier	With Barrier		Height (feet)	Total Length (feet)				
1	EB I-94 From N 72nd to 68th	64-70	67-74	62-66	3-9	16	1235	\$592,800	16	\$37,050	Yes
2	WB I-94 From N 68th to 72nd	61-67	64-67	59-60	1-8	30	1346	\$1,211,400	10	\$121,140	No
3	EB I-94 From N 68th to Hawley	63-77	62-76	57-63	1-16	12,22,22	3236	\$1,982,160	32	\$61,943	Yes ^b
4	WB I-94 From Hawley to 68th	61-72	64-73	56-68	1-12	18 to 26	3546	\$14,302,770 ^c	51	\$280,447	No
4A	WB I-94 From Hawley to 68th	61-72	64-73	57-68	1-12	12,18 to 26	2875	\$1,411,410	36	\$39,206	Yes
5	EB I-94 From Hawley to Zablocki	62-68	63-76	62-65	1-10	12	1060	\$381,450	1	\$381,450	No
6	WB I-94 From Zablocki to Hawley	65-77	65-77	61-65	4-12	16	1349	\$647,430	1	\$647,430	No
7	WB I-94 From Yount to General Mitchell	61-69	64-70	57-64	0-12	20	1041	\$624,600	20	\$31,230	Yes
8	NB 175 From Parkway to Blue Mound	58-69	60-70	60-65	0-8	18	331	\$178,740	1	\$178,740	No
8A	SB 175 From Blue Mound to Parkway	58-66	61-66	58-61	0-8	30	359	\$323,100	1	\$323,100	No
9	WB Park Hill from 37th to End	57-74	58-73	58-67	0-10	10,16	814	\$378,120	8	\$47,265	Yes
10	WB Park Hill from 29th to 35th	61-75	62-72	58-63	1-15	20	2082	\$1,249,200	23	\$54,313	Yes ^b
11	WB Clybourn From 25th to 26th	73	70	67	3	30	330	\$297,000	0	N/A	No
12	WB Clybourn From 17th to 19th	64-69	62-70	62-68	0-8	14	688	\$288,960	1	\$288,960	No

^aBased on \$30.00 per square foot; ^b Based on cost averaging of multiple barriers within the common noise environment for the Six-Lane DDI with Full-Hawley Interchange Alternative; see Section 6.2.2, Reasonableness for a description of how costs are averaged; ^cCosts include expense of relocating approximately 12 ATC towers.



TABLE 6-8
Acoustical Mitigation – Summary of Feasible and Reasonable Noise Barriers

Barrier #	Location	As Modeled in Draft Supplemental EIS					
		8-Lane Hybrid Interchange Alternative	8-Lane DDI Alternative	6-Lane Hybrid Interchange with Half-Hawley Alternative	6-Lane Hybrid Interchange with Full-Hawley Alternative	6-Lane DDI with Half-Hawley Interchange Alternative	6-Lane DDI with Full-Hawley Interchange Alternative
1	EB I-94 From N 72nd to 68th	Yes	Yes	Yes	Yes	Yes	Yes
2	WB I-94 From N 68th to 72nd	No	No	No	No	No	No
3	EB I-94 From N 68th to Hawley	Yes (with Cost Averaging)	Yes (with Cost Averaging)	Yes (with Cost Averaging)	Yes (with Cost Averaging)	Yes (with Cost Averaging)	Yes (with Cost Averaging)
4	WB I-94 From Hawley to 68 th	No	No	No	No	No	No
4A		Yes	Yes	Yes	Yes	Yes	Yes
5	EB I-94 From Hawley to Zablocki	No	No	No	No	No	No
6	WB I-94 From Zablocki to Hawley	No	No	No	No	No	No
7	WB I-94 From Yount to General Mitchell	Yes	Yes	Yes	Yes	Yes	Yes
8	NB 175 From Parkway to Blue Mound	No	No	No	No	No	No
8A	SB 175 From Blue Mound to Parkway	NA	No	NA	NA	No	No
9	WB Park Hill from 37th to End	Yes	Yes (with Cost Averaging)	Yes	Yes	Yes	Yes
10	WB Park Hill from 29th to 35th	Yes	Yes (with Cost Averaging)	Yes	Yes	Yes (with Cost Averaging)	Yes (with Cost Averaging)
11	WB Clybourn From 25th to 26th	No	No	No	No	No	No
12	WB Clybourn From 17th to 19th	No	No	No	No	No	No
13	EB National Ave from S. 48th East 27'	NA	No	NA	NA	NA	NA
14	EB National Ave from 50' east of S. 47th 48'	NA	No	NA	NA	NA	NA
Number of Feasible and Reasonable Noise Barriers		5	3	6	5	4	4
Number of Cost Averaged Feasible and Reasonable Noise Barriers		1	3	0	1	2	2
Total Number of Feasible and Reasonable Noise Barriers		6	6	6	6	6	6

Likelihood Statement

Noise barriers 1, 3, 4A, 7, 9, and 10 were determined to meet the feasibility and reasonableness criteria for all alternatives. If the project's final design characteristics are different from the preliminary design, WisDOT will determine if revisions to the traffic noise analysis are necessary. A final decision on noise abatement will not be made until the project's final design has progressed to a point where barrier siting can be confidently determined and until the public involvement process is complete. The public involvement process will solicit the viewpoints of residents and property owners who benefit by the construction of the feasible and reasonable noise barriers to determine whether noise abatement will be likely to be incorporated into the project.

Construction Noise

Trucks and machinery used for construction produce noise that may affect some land uses and activities during the construction period. Residents along the alignment will at some time experience perceptible construction noise from implementation of the project. Measurement of construction noise is not required for highway projects. However, **Table 8-1** presents the distance from a construction site and the range of noise levels expected based on a range of construction equipment noise levels.

TABLE 8-1

Construction Noise/Distance Relationships

Distance from Construction Site (feet)	Range of Typical Noise Levels (dBA) ¹
25	82 - 102
50	75 - 95
100	69 - 89
200	63 - 83
300	59 - 79
400	57 - 77
500	55 - 75
1000	49 - 69

¹ Point sources = 6 dBA reduction per doubling of distance
(Source: EPA and WisDOT)

To minimize or eliminate the effect of construction noise on these receptors, *WisDOT Standard Specifications 107.8(6) and 108.7.1* regarding timing of work will apply.

SECTION 9

Coordination with Local Officials for Undeveloped Land

Documenting future noise levels is helpful to local agencies and the public to aid in future land-use planning. 23 CFR 772.17 requires that certain information be provided to local officials related to future traffic noise impacts on currently undeveloped lands. The intent is to have the transportation agency work with the planning or zoning agency to prevent incompatibility arising from future traffic sound levels and future development.

For all Type I projects where undeveloped lands that are not permitted are located adjacent to the roadway and for which a detailed traffic noise analysis was prepared, local officials should be provided future traffic sound level information. There is no undeveloped land in the project area.

Conclusions

As a result of this traffic noise analysis, the following conclusions can be made:

- Noise levels under the existing condition range from 26 dBA to 77 dBA. Under existing conditions, 23% of the receptors exceed the WisDOT NLC.
- Noise levels under the no-build condition range from 26 dBA to 78 dBA and exceed WisDOT NLC at 26% of the receptors.
- Under the eight-lane hybrid interchange alternative, noise levels range from 43 –78 dBA, with 37% exceeding the NLC.
- Under the eight-lane DDI alternative, noise levels range from 26-78 dBA, with 29% exceeding the NLC.
- Noise levels for the six-lane hybrid interchange with Half-Hawley alternative range from 43 –77 dBA; with 31% exceeding the NLC.
- Noise levels for the six-lane with hybrid interchange with Full-Hawley alternative range from 43 –77 dBA; with 41% exceeding the NLC.
- Noise levels for the six-lane DDI with Half-Hawley alternative range from 43 –77 dBA; with 32% exceeding the NLC.
- Noise levels for the six-lane DDI with Full-Hawley alternative range from 43 –77 dBA; with 32% exceeding the NLC.
- No noise levels exceed the NLC for the Washington Street Extension.
- Six noise barriers, 1, 3, 4A, 7, 9, and 10, were determined to meet the feasibility and reasonableness criteria in the noise study area for the eight-lane and six-lane alternatives. See Barriers 1, 3, 4A, 7, 9, and 10 on **Exhibits 4-1 through 4-4**.
- There are no barriers recommended in the Washington Street Extension area.

A final decision on noise impacts will be made upon completion of the project's final design.

References

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Appendix A Exhibits

Appendix B
Traffic Noise Impact Summary

APPENDIX B-1

Traffic Noise Impact Summary – Eight-lane Hybrid Interchange Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	67	66	1	0	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	65	63	2	-2	N
N2	400	Residence (7)	67	65	62	3	-2	N
N3	384	Residence (2)	67	65	63	2	-2	N
N4	262	Residence (4)	67	67	63	4	0	I
N5	257	Residence (6)	67	66	63	3	-1	I
N6	235	Residence (2)	67	66	62	4	-1	I
N7	227	Residence (6)	67	65	62	3	-2	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	66	64	2	-1	I
N10	190	Residence (4)	67	67	65	2	0	I
N11	190	Residence (3)	67	67	64	3	0	I
N12	212	Residence (6)	67	68	65	3	1	I
N13	206	Residence (7)	67	74	71	3	7	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	68	65	3	1	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	66	63	3	-1	I
N19	111	Residence (3)	67	69	67	2	2	I
N20	540	Residence (2)	67	68	66	2	1	I



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Traffic Noise Impact Summary – Eight-lane Hybrid Interchange Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	67	67	0	0	I
N25	224	Residence (3)	67	69	68	1	2	I
N26	355	Residence (2)	67	68	67	1	1	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	70	70	0	3	I
N29	338	Residence (4)	67	68	67	1	1	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	72	73	-1	5	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	77	77	0	10	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	68	67	1	1	I
N38	169	Residence (6)	67	68	67	1	1	I
N39	133	Residence (1)	67	73	74	-1	6	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	67	68	-1	0	I
N43	225	Residence (2)	67	65	65	0	-2	N
N44	303	Residence (1)	67	64	63	1	-3	N
N45	208	Residence (5)	67	65	66	-1	-2	N
N46	160	Residence (1)	67	70	70	0	3	I
N47	309	Residence (4)	67	66	64	2	-1	I
N48	492	Cemetery	67	65	65	0	-2	N



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Traffic Noise Impact Summary – Eight-lane Hybrid Interchange Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N49	276	Cemetery	67	70	69	1	3	I
N50	75	Cemetery	67	78	77	1	11	I
N51	97	Cemetery	67	69	68	1	2	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	64	64	0	-3	N
N54	671	Cemetery	67	62	62	0	-5	N
N55	518	Residence (4)	67	64	64	0	-3	N
N56	312	Residence (1)	67	68	68	0	1	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	69	69	0	2	I
N59	434	Residence (6)	67	64	63	1	-3	N
N60	182	Residence (2)	67	68	66	2	1	I
N61	249	Residence (2)	67	67	66	1	0	I
N62	299	Residence (2)	67	66	65	1	-1	I
N63	289	Residence (2)	67	64	64	0	-3	N
N64	295	Residence (3)	67	64	63	1	-3	N
N65	296	Residence (3)	67	63	62	1	-4	N
N66	329	Residence (4)	67	62	61	1	-5	N
N67	369	Residence (18)	67	62	62	0	-5	N
N68	182	Residence (1)	67	67	67	0	0	I
N69	118	Residence (2)	67	69	69	0	2	I
N70	87	Residence (1)	67	69	69	0	2	I
N71	270	Residence (6)	67	63	64	-1	-4	N
N72	380	Residence (6)	67	61	61	0	-6	N
N73	202	Residence (1)	67	65	66	-1	-2	N
N74	281	Residence (4)	67	63	64	-1	-4	N
N75	262	Residence (3)	67	62	63	-1	-5	N
N76	184	Residence (3)	67	58	62	-4	-9	N
N77	504	Residence (4)	67	56	56	0	-11	N



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Traffic Noise Impact Summary – Eight-lane Hybrid Interchange Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N78	352	Residence (5)	67	61	61	0	-6	N
N79	385	Residence (6)	67	57	57	0	-10	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	65	66	-1	-2	N
N84	243	Residence (8)	67	62	63	-1	-5	N
N85	181	Residence (1)	67	63	67	-4	-4	N
N86	164	Residence (3)	67	65	68	-3	-2	N
N87	236	Residence (3)	67	67	66	1	0	I
N88	152	Residence (1)	67	69	71	-2	2	I
N89	391	Residence (12)	67	64	63	1	-3	N
N90	186	Residence (2)	67	69	68	1	2	I
N91	232	Residence (5)	67	69	68	1	2	I
N92	555	Residence (10)	67	62	61	1	-5	N
N93	239	Merrill Park Apt. (6)	67	69	69	0	2	I
N94	382	Residence (5)	67	66	65	1	-1	I
N95	153	Residence (3)	67	68	68	0	1	I
N96	197	Residence (10)	67	70	70	0	3	I
N97	389	Residence (7)	67	63	62	1	-4	N
N98	255	Residence (3)	67	67	67	0	0	I
N99	111	Residence (3)	67	72	74	-2	5	I
N100	183	Residence (3)	67	66	65	1	-1	I
N101	186	Residence (14)	67	61	60	1	-6	N
N102	160	Residence (6)	67	65	65	0	-2	N
N103	112	Residence (5)	67	72	75	-3	5	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	72	73	-1	5	I



APPENDIX B-1

Traffic Noise Impact Summary – Eight-lane Hybrid Interchange Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	63	64	-1	-4	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	68	69	-1	1	I
FS-2	195	Residence (1)	67	67	64	3	0	I
FS-3	467	Residence (1)	67	63	61	2	-4	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	68	68	0	1	I
FS-6	150	Cemetery	67	71	72	-1	4	I
FS-7	184	Residence (1)	67	69	67	2	2	I
FS-8	495	Residence (1)	67	63	62	1	-4	N
FS-9	427	Park	67	61	60	1	-6	N
FS-10	117	Residence (2)	67	69	69	0	2	I
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	58	59	-1	-9	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	73	74	-1	6	I

APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	67	66	1	0	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	65	63	2	-2	N
N2	400	Residence (7)	67	65	62	3	-2	N
N3	384	Residence (2)	67	65	63	2	-2	N
N4	262	Residence (4)	67	67	63	4	0	I
N5	257	Residence (6)	67	66	63	3	-1	I
N6	235	Residence (2)	67	66	62	4	-1	I
N7	227	Residence (6)	67	65	62	3	-2	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	66	64	2	-1	I
N10	190	Residence (4)	67	67	65	2	0	I
N11	190	Residence (3)	67	67	64	3	0	I
N12	212	Residence (6)	67	68	65	3	1	I
N13	206	Residence (7)	67	74	71	3	7	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	68	65	3	1	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	66	63	3	-1	I
N19	111	Residence (3)	67	69	67	2	2	I



APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N20	540	Residence (2)	67	68	66	2	1	I
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	67	67	0	0	I
N25	224	Residence (3)	67	69	68	1	2	I
N26	355	Residence (2)	67	67	67	0	0	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	70	70	0	3	I
N29	338	Residence (4)	67	68	67	1	1	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	72	73	-1	5	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	77	77	0	10	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	68	67	1	1	I
N38	169	Residence (6)	67	68	67	1	1	I
N39	133	Residence (1)	67	73	74	-1	6	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	67	68	-1	0	I
N43	225	Residence (2)	67	65	65	0	-2	N
N44	303	Residence (1)	67	64	63	1	-3	N
N45	208	Residence (5)	67	65	66	-1	-2	N
N46	160	Residence (1)	67	70	70	0	3	I
N47	309	Residence (4)	67	66	64	2	-1	I
N48	492	Cemetery	67	66	65	1	-1	I



APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N49	276	Cemetery	67	70	69	1	3	I
N50	75	Cemetery	67	78	77	1	11	I
N51	97	Cemetery	67	69	68	1	2	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	64	64	0	-3	N
N54	671	Cemetery	67	63	62	1	-4	N
N55	518	Residence (4)	67	65	64	1	-2	N
N56	312	Residence (1)	67	68	68	0	1	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	70	69	1	3	I
N59	434	Residence (6)	67	65	63	2	-2	N
N60	182	Residence (2)	67	70	66	4	3	I
N61	249	Residence (2)	67	69	66	3	2	I
N62	299	Residence (2)	67	67	65	2	0	I
N63	289	Residence (2)	67	66	64	2	-1	I
N64	295	Residence (3)	67	65	63	2	-2	N
N65	296	Residence (3)	67	65	62	3	-2	N
N66	329	Residence (4)	67	64	61	3	-3	N
N67	369	Residence (18)	67	60	58	2	-7	N
N68	182	Residence (1)	67	63	62	1	-4	N
N69	118	Residence (2)	67	65	65	0	-2	N
N70	87	Residence (1)	67	70	69	1	3	I
N71	270	Residence (6)	67	60	59	1	-7	N
N72	380	Residence (6)	67	60	58	2	-7	N
N73	202	Residence (1)	67	65	64	1	-2	N
N74	281	Residence (4)	67	64	63	1	-3	N
N75	262	Residence (3)	67	64	63	1	-3	N
N76	184	Residence (3)	67	62	62	0	-5	N



APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N77	504	Residence (4)	67	59	56	3	-8	N
N78	352	Residence (5)	67	62	61	1	-5	N
N79	385	Residence (6)	67	57	57	0	-10	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	67	66	1	0	I
N84	243	Residence (8)	67	63	63	0	-4	N
N85	181	Residence (1)	67	66	67	-1	-1	I
N86	164	Residence (3)	67	67	68	-1	0	I
N87	236	Residence (3)	67	68	66	2	1	I
N88	152	Residence (1)	67	70	71	-1	3	I
N89	391	Residence (12)	67	65	63	2	-2	N
N90	186	Residence (2)	67	70	68	2	3	I
N91	232	Residence (5)	67	70	68	2	3	I
N92	555	Residence (10)	67	63	61	2	-4	N
N93	239	Merrill Park Apt. (6)	67	69	69	0	2	I
N94	382	Residence (5)	67	66	65	1	-1	I
N95	153	Residence (3)	67	68	68	0	1	I
N96	197	Residence (10)	67	70	70	0	3	I
N97	389	Residence (7)	67	63	62	1	-4	N
N98	255	Residence (3)	67	67	67	0	0	I
N99	111	Residence (3)	67	72	74	-2	5	I
N100	183	Residence (3)	67	66	65	1	-1	I
N101	186	Residence (14)	67	61	60	1	-6	N
N102	160	Residence (6)	67	64	65	-1	-3	N
N103	112	Residence (5)	67	72	75	-3	5	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	72	73	-1	5	I



APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	63	64	-1	-4	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	68	69	-1	1	I
FS-2	195	Residence (1)	67	67	64	3	0	I
FS-3	467	Residence (1)	67	62	61	1	-5	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	69	68	1	2	I
FS-6	150	Cemetery	67	72	72	0	5	I
FS-7	184	Residence (1)	67	70	67	3	3	I
FS-8	495	Residence (1)	67	64	62	2	-3	N
FS-9	427	Park	67	62	60	2	-5	N
FS-10	117	Residence (2)	67	66	66	0	-1	I
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	59	59	0	-8	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	73	74	-1	6	I
NR1	331	Hospital	52	26	26	0	-26	N
NR2	63	Residence (1)	67	64	64	0	-3	N
NR3	53	Residence (6)	67	65	65	0	-2	N
NR4	64	Residence (1)	67	63	64	-1	-4	N
NR5	99	Residence (1)	67	61	61	0	-6	N
NR6	29	Residence (4)	67	68	68	0	1	I
NR7	48	Dentist	52	40	40	0	-12	N
NR8	40	Residence (8)	67	66	66	0	-1	I



APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
NR9	148	Residence (6)	67	64	65	-1	-3	N
NR10	205	Residence (3)	67	62	62	0	-5	N
NR11	252	Residence (10)	67	60	60	0	-7	N
NR12	235	Residence (1)	67	58	59	-1	-9	N
NR13	190	Residence (1)	67	58	58	0	-9	N
NR14	188	Residence (1)	67	58	58	0	-9	N
NR15	155	Residence (2)	67	60	60	0	-7	N
NR16	190	Residence (4)	67	56	56	0	-11	N
NR17	194	Residence (1)	67	56	56	0	-11	N
NR18	188	Residence (1)	67	56	56	0	-11	N
NR19	184	Residence (1)	67	56	56	0	-11	N
NR20	187	Residence (1)	67	56	55	1	-11	N
NR21	439	Residence (1)	67	49	49	0	-18	N
NR22	450	Residence (2)	67	49	49	0	-18	N
NR23	393	Residence (2)	67	53	52	1	-14	N

APPENDIX B-3

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	66	66	0	-1	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	64	63	1	-3	N
N2	400	Residence (7)	67	64	62	2	-3	N
N3	384	Residence (2)	67	64	63	1	-3	N
N4	262	Residence (4)	67	66	63	3	-1	I
N5	257	Residence (6)	67	66	63	3	-1	I
N6	235	Residence (2)	67	65	62	3	-2	N
N7	227	Residence (6)	67	64	62	2	-3	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	65	64	1	-2	N
N10	190	Residence (4)	67	66	65	1	-1	I
N11	190	Residence (3)	67	66	64	2	-1	I
N12	212	Residence (6)	67	68	65	3	1	I
N13	206	Residence (7)	67	73	71	2	6	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	67	65	2	0	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	65	63	2	-2	N



APPENDIX B-3

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N19	111	Residence (3)	67	69	67	2	2	I
N20	540	Residence (2)	67	67	66	1	0	I
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	66	67	-1	-1	I
N25	224	Residence (3)	67	69	68	1	2	I
N26	355	Residence (2)	67	67	67	0	0	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	70	70	0	3	I
N29	338	Residence (4)	67	67	67	0	0	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	72	73	-1	5	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	77	77	0	10	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	67	67	0	0	I
N38	169	Residence (6)	67	68	67	1	1	I
N39	133	Residence (1)	67	73	74	-1	6	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	67	68	-1	0	I
N43	225	Residence (2)	67	64	65	-1	-3	N
N44	303	Residence (1)	67	63	63	0	-4	N
N45	208	Residence (5)	67	66	66	0	-1	I
N46	160	Residence (1)	67	70	70	0	3	I

APPENDIX B-3

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N47	309	Residence (4)	67	65	64	1	-2	N
N48	492	Cemetery	67	65	65	0	-2	N
N49	276	Cemetery	67	69	69	0	2	I
N50	75	Cemetery	67	77	77	0	10	I
N51	97	Cemetery	67	68	68	0	1	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	63	64	-1	-4	N
N54	671	Cemetery	67	62	62	0	-5	N
N55	518	Residence (4)	67	64	64	0	-3	N
N56	312	Residence (1)	67	67	68	-1	0	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	69	69	0	2	I
N59	434	Residence (6)	67	64	63	1	-3	N
N60	182	Residence (2)	67	68	66	2	1	I
N61	249	Residence (2)	67	67	66	1	0	I
N62	299	Residence (2)	67	65	65	0	-2	N
N63	289	Residence (2)	67	64	64	0	-3	N
N64	295	Residence (3)	67	63	63	0	-4	N
N65	296	Residence (3)	67	62	62	0	-5	N
N66	329	Residence (4)	67	62	61	1	-5	N
N67	369	Residence (18)	67	61	62	-1	-6	N
N68	182	Residence (1)	67	67	67	0	0	I
N69	118	Residence (2)	67	69	69	0	2	I
N70	87	Residence (1)	67	69	69	0	2	I
N71	270	Residence (6)	67	63	64	-1	-4	N
N72	380	Residence (6)	67	61	61	0	-6	N
N73	202	Residence (1)	67	65	66	-1	-2	N



APPENDIX B-3

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N74	281	Residence (4)	67	63	64	-1	-4	N
N75	262	Residence (3)	67	62	63	-1	-5	N
N76	184	Residence (3)	67	58	62	-4	-9	N
N77	504	Residence (4)	67	56	56	0	-11	N
N78	352	Residence (5)	67	60	61	-1	-7	N
N79	385	Residence (6)	67	57	57	0	-10	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	65	66	-1	-2	N
N84	243	Residence (8)	67	62	63	-1	-5	N
N85	181	Residence (1)	67	63	67	-4	-4	N
N86	164	Residence (3)	67	65	68	-3	-2	N
N87	236	Residence (3)	67	66	66	0	-1	I
N88	152	Residence (1)	67	69	71	-2	2	I
N89	391	Residence (12)	67	64	63	1	-3	N
N90	186	Residence (2)	67	69	68	1	2	I
N91	232	Residence (5)	67	69	68	1	2	I
N92	555	Residence (10)	67	62	61	1	-5	N
N93	239	Merrill Park Apt. (6)	67	68	69	-1	1	I
N94	382	Residence (5)	67	65	65	0	-2	N
N95	153	Residence (3)	67	67	68	-1	0	I
N96	197	Residence (10)	67	69	70	-1	2	I
N97	389	Residence (7)	67	63	62	1	-4	N
N98	255	Residence (3)	67	67	67	0	0	I
N99	111	Residence (3)	67	72	74	-2	5	I
N100	183	Residence (3)	67	65	65	0	-2	N
N101	186	Residence (14)	67	61	60	1	-6	N

APPENDIX B-3

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N102	160	Residence (6)	67	65	65	0	-2	N
N103	112	Residence (5)	67	72	75	-3	5	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	71	73	-2	4	I
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	62	64	-2	-5	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	69	69	0	2	I
FS-2	195	Residence (1)	67	66	64	2	-1	I
FS-3	467	Residence (1)	67	62	61	1	-5	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	68	68	0	1	I
FS-6	150	Cemetery	67	71	72	-1	4	I
FS-7	184	Residence (1)	67	68	67	1	1	I
FS-8	495	Residence (1)	67	62	62	0	-5	N
FS-9	427	Park	67	61	60	1	-6	N
FS-10	117	Residence (2)	67	69	69	0	2	I
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	58	59	-1	-9	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	72	74	-2	5	I



APPENDIX B-4

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	66	66	0	-1	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	64	63	1	-3	N
N2	400	Residence (7)	67	64	62	2	-3	N
N3	384	Residence (2)	67	64	63	1	-3	N
N4	262	Residence (4)	67	66	63	3	-1	I
N5	257	Residence (6)	67	65	63	2	-2	N
N6	235	Residence (2)	67	65	62	3	-2	N
N7	227	Residence (6)	67	64	62	2	-3	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	65	64	1	-2	N
N10	190	Residence (4)	67	66	65	1	-1	I
N11	190	Residence (3)	67	66	64	2	-1	I
N12	212	Residence (6)	67	68	65	3	1	I
N13	206	Residence (7)	67	73	71	2	6	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	67	65	2	0	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	65	63	2	-2	N
N19	111	Residence (3)	67	69	67	2	2	I

APPENDIX B-4

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N20	540	Residence (2)	67	67	66	1	0	I
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	66	67	-1	-1	I
N25	224	Residence (3)	67	68	68	0	1	I
N26	355	Residence (2)	67	67	67	0	0	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	69	70	-1	2	I
N29	338	Residence (4)	67	67	67	0	0	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	71	73	-2	4	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	76	77	-1	9	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	67	67	0	0	I
N38	169	Residence (6)	67	67	67	0	0	I
N39	133	Residence (1)	67	72	74	-2	5	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	67	68	-1	0	I
N43	225	Residence (2)	67	64	65	-1	-3	N
N44	303	Residence (1)	67	63	63	0	-4	N
N45	208	Residence (5)	67	66	66	0	-1	I
N46	160	Residence (1)	67	70	70	0	3	I



APPENDIX B-4

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N47	309	Residence (4)	67	65	64	1	-2	N
N48	492	Cemetery	67	65	65	0	-2	N
N49	276	Cemetery	67	70	69	1	3	I
N50	75	Cemetery	67	77	77	0	10	I
N51	97	Cemetery	67	68	68	0	1	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	63	64	-1	-4	N
N54	671	Cemetery	67	62	62	0	-5	N
N55	518	Residence (4)	67	64	64	0	-3	N
N56	312	Residence (1)	67	67	68	-1	0	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	69	69	0	2	I
N59	434	Residence (6)	67	64	63	1	-3	N
N60	182	Residence (2)	67	68	66	2	1	I
N61	249	Residence (2)	67	67	66	1	0	I
N62	299	Residence (2)	67	65	65	0	-2	N
N63	289	Residence (2)	67	64	64	0	-3	N
N64	295	Residence (3)	67	63	63	0	-4	N
N65	296	Residence (3)	67	62	62	0	-5	N
N66	329	Residence (4)	67	62	61	1	-5	N
N67	369	Residence (18)	67	58	58	0	-9	N
N68	182	Residence (1)	67	62	62	0	-5	N
N69	118	Residence (2)	67	64	65	-1	-3	N
N70	87	Residence (1)	67	68	69	-1	1	I
N71	270	Residence (6)	67	59	59	0	-8	N
N72	380	Residence (6)	67	58	58	0	-9	N
N73	202	Residence (1)	67	64	64	0	-3	N
N74	281	Residence (4)	67	62	63	-1	-5	N

APPENDIX B-4

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N75	262	Residence (3)	67	62	63	-1	-5	N
N76	184	Residence (3)	67	58	62	-4	-9	N
N77	504	Residence (4)	67	56	56	0	-11	N
N78	352	Residence (5)	67	60	61	-1	-7	N
N79	385	Residence (6)	67	57	57	0	-10	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	65	66	-1	-2	N
N84	243	Residence (8)	67	62	63	-1	-5	N
N85	181	Residence (1)	67	63	67	-4	-4	N
N86	164	Residence (3)	67	65	68	-3	-2	N
N87	236	Residence (3)	67	66	66	0	-1	I
N88	152	Residence (1)	67	69	71	-2	2	I
N89	391	Residence (12)	67	64	63	1	-3	N
N90	186	Residence (2)	67	69	68	1	2	I
N91	232	Residence (5)	67	69	68	1	2	I
N92	555	Residence (10)	67	62	61	1	-5	N
N93	239	Merrill Park Apt. (6)	67	68	69	-1	1	I
N94	382	Residence (5)	67	65	65	0	-2	N
N95	153	Residence (3)	67	67	68	-1	0	I
N96	197	Residence (10)	67	69	70	-1	2	I
N97	389	Residence (7)	67	63	62	1	-4	N
N98	255	Residence (3)	67	67	67	0	0	I
N99	111	Residence (3)	67	72	74	-2	5	I
N100	183	Residence (3)	67	65	65	0	-2	N
N101	186	Residence (14)	67	61	60	1	-6	N



APPENDIX B-4

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N102	160	Residence (6)	67	65	65	0	-2	N
N103	112	Residence (5)	67	72	75	-3	5	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	71	73	-2	4	I
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	63	64	-1	-4	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	69	69	0	2	I
FS-2	195	Residence (1)	67	66	64	2	-1	I
FS-3	467	Residence (1)	67	62	61	1	-5	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	68	68	0	1	I
FS-6	150	Cemetery	67	71	72	-1	4	I
FS-7	184	Residence (1)	67	68	67	1	1	I
FS-8	495	Residence (1)	67	62	62	0	-5	N
FS-9	427	Park	67	61	60	1	-6	N
FS-10	117	Residence (2)	67	65	66	-1	-2	N
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	58	59	-1	-9	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	72	74	-2	5	I

APPENDIX B-5

Traffic Noise Impact Summary—Six-lane DDI with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	66	66	0	-1	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	64	63	1	-3	N
N2	400	Residence (7)	67	64	62	2	-3	N
N3	384	Residence (2)	67	64	63	1	-3	N
N4	262	Residence (4)	67	66	63	3	-1	I
N5	257	Residence (6)	67	65	63	2	-2	N
N6	235	Residence (2)	67	65	62	3	-2	N
N7	227	Residence (6)	67	64	62	2	-3	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	65	64	1	-2	N
N10	190	Residence (4)	67	66	65	1	-1	I
N11	190	Residence (3)	67	66	64	2	-1	I
N12	212	Residence (6)	67	68	65	3	1	I
N13	206	Residence (7)	67	73	71	2	6	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	67	65	2	0	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	65	63	2	-2	N
N19	111	Residence (3)	67	68	67	1	1	I

APPENDIX B-5

Traffic Noise Impact Summary—Six-lane DDI with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N20	540	Residence (2)	67	67	66	1	0	I
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	66	67	-1	-1	I
N25	224	Residence (3)	67	69	68	1	2	I
N26	355	Residence (2)	67	67	67	0	0	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	70	70	0	3	I
N29	338	Residence (4)	67	67	67	0	0	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	72	73	-1	5	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	77	77	0	10	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	67	67	0	0	I
N38	169	Residence (6)	67	68	67	1	1	I
N39	133	Residence (1)	67	73	74	-1	6	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	67	68	-1	0	I
N43	225	Residence (2)	67	64	65	-1	-3	N
N44	303	Residence (1)	67	63	63	0	-4	N
N45	208	Residence (5)	67	66	66	0	-1	I
N46	160	Residence (1)	67	70	70	0	3	I
N47	309	Residence (4)	67	65	64	1	-2	N

APPENDIX B-5

Traffic Noise Impact Summary—Six-lane DDI with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N48	492	Cemetery	67	65	65	0	-2	N
N49	276	Cemetery	67	70	69	1	3	I
N50	75	Cemetery	67	77	77	0	10	I
N51	97	Cemetery	67	68	68	0	1	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	63	64	-1	-4	N
N54	671	Cemetery	67	62	62	0	-5	N
N55	518	Residence (4)	67	64	64	0	-3	N
N56	312	Residence (1)	67	67	68	-1	0	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	70	69	1	3	I
N59	434	Residence (6)	67	65	63	2	-2	N
N60	182	Residence (2)	67	69	66	3	2	I
N61	249	Residence (2)	67	68	66	2	1	I
N62	299	Residence (2)	67	67	65	2	0	I
N63	289	Residence (2)	67	66	64	2	-1	I
N64	295	Residence (3)	67	65	63	2	-2	N
N65	296	Residence (3)	67	64	62	2	-3	N
N66	329	Residence (4)	67	63	61	2	-4	N
N67	369	Residence (18)	67	59	58	1	-8	N
N68	182	Residence (1)	67	62	62	0	-5	N
N69	118	Residence (2)	67	65	65	0	-2	N
N70	87	Residence (1)	67	70	69	1	3	I
N71	270	Residence (6)	67	60	59	1	-7	N
N72	380	Residence (6)	67	60	58	2	-7	N
N73	202	Residence (1)	67	65	64	1	-2	N
N74	281	Residence (4)	67	64	63	1	-3	N



APPENDIX B-5

Traffic Noise Impact Summary—Six-lane DDI with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N75	262	Residence (3)	67	64	63	1	-3	N
N76	184	Residence (3)	67	63	62	1	-4	N
N77	504	Residence (4)	67	58	56	2	-9	N
N78	352	Residence (5)	67	62	61	1	-5	N
N79	385	Residence (6)	67	56	57	-1	-11	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	67	66	1	0	I
N84	243	Residence (8)	67	63	63	0	-4	N
N85	181	Residence (1)	67	66	67	-1	-1	I
N86	164	Residence (3)	67	67	68	-1	0	I
N87	236	Residence (3)	67	67	66	1	0	I
N88	152	Residence (1)	67	70	71	-1	3	I
N89	391	Residence (12)	67	64	63	1	-3	N
N90	186	Residence (2)	67	70	68	2	3	I
N91	232	Residence (5)	67	69	68	1	2	I
N92	555	Residence (10)	67	62	61	1	-5	N
N93	239	Merrill Park Apt. (6)	67	69	69	0	2	I
N94	382	Residence (5)	67	66	65	1	-1	I
N95	153	Residence (3)	67	67	68	-1	0	I
N96	197	Residence (10)	67	69	70	-1	2	I
N97	389	Residence (7)	67	62	62	0	-5	N
N98	255	Residence (3)	67	66	67	-1	-1	I
N99	111	Residence (3)	67	71	74	-3	4	I
N100	183	Residence (3)	67	64	65	-1	-3	N
N101	186	Residence (14)	67	61	60	1	-6	N
N102	160	Residence (6)	67	64	65	-1	-3	N

APPENDIX B-5

Traffic Noise Impact Summary—Six-lane DDI with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N103	112	Residence (5)	67	71	75	-4	4	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	71	73	-2	4	I
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	62	64	-2	-5	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	69	69	0	2	I
FS-2	195	Residence (1)	67	66	64	2	-1	I
FS-3	467	Residence (1)	67	62	61	1	-5	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	68	68	0	1	I
FS-6	150	Cemetery	67	71	72	-1	4	I
FS-7	184	Residence (1)	67	69	67	2	2	I
FS-8	495	Residence (1)	67	64	62	2	-3	N
FS-9	427	Park	67	62	60	2	-5	N
FS-10	117	Residence (2)	67	66	66	0	-1	I
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	58	59	-1	-9	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	72	74	-2	5	I



APPENDIX B-6

Traffic Noise Impact Summary—Six-lane DDI with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	66	66	0	-1	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	64	63	1	-3	N
N2	400	Residence (7)	67	64	62	2	-3	N
N3	384	Residence (2)	67	64	63	1	-3	N
N4	262	Residence (4)	67	66	63	3	-1	I
N5	257	Residence (6)	67	65	63	2	-2	N
N6	235	Residence (2)	67	65	62	3	-2	N
N7	227	Residence (6)	67	64	62	2	-3	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	65	64	1	-2	N
N10	190	Residence (4)	67	66	65	1	-1	I
N11	190	Residence (3)	67	66	64	2	-1	I
N12	212	Residence (6)	67	67	65	2	0	I
N13	206	Residence (7)	67	73	71	2	6	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	67	65	2	0	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	65	63	2	-2	N
N19	111	Residence (3)	67	69	67	2	2	I

APPENDIX B-6

Traffic Noise Impact Summary—Six-lane DDI with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N20	540	Residence (2)	67	67	66	1	0	I
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	66	67	-1	-1	I
N25	224	Residence (3)	67	68	68	0	1	I
N26	355	Residence (2)	67	67	67	0	0	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	69	70	-1	2	I
N29	338	Residence (4)	67	67	67	0	0	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	71	73	-2	4	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	76	77	-1	9	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	67	67	0	0	I
N38	169	Residence (6)	67	67	67	0	0	I
N39	133	Residence (1)	67	72	74	-2	5	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	66	68	-2	-1	I
N43	225	Residence (2)	67	64	65	-1	-3	N
N44	303	Residence (1)	67	63	63	0	-4	N
N45	208	Residence (5)	67	66	66	0	-1	I
N46	160	Residence (1)	67	70	70	0	3	I



APPENDIX B-6

Traffic Noise Impact Summary—Six-lane DDI with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N47	309	Residence (4)	67	65	64	1	-2	N
N48	492	Cemetery	67	65	65	0	-2	N
N49	276	Cemetery	67	70	69	1	3	I
N50	75	Cemetery	67	77	77	0	10	I
N51	97	Cemetery	67	68	68	0	1	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	63	64	-1	-4	N
N54	671	Cemetery	67	62	62	0	-5	N
N55	518	Residence (4)	67	64	64	0	-3	N
N56	312	Residence (1)	67	67	68	-1	0	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	70	69	1	3	I
N59	434	Residence (6)	67	65	63	2	-2	N
N60	182	Residence (2)	67	69	66	3	2	I
N61	249	Residence (2)	67	68	66	2	1	I
N62	299	Residence (2)	67	67	65	2	0	I
N63	289	Residence (2)	67	66	64	2	-1	I
N64	295	Residence (3)	67	65	63	2	-2	N
N65	296	Residence (3)	67	64	62	2	-3	N
N66	329	Residence (4)	67	64	61	3	-3	N
N67	369	Residence (18)	67	59	58	1	-8	N
N68	182	Residence (1)	67	62	62	0	-5	N
N69	118	Residence (2)	67	65	65	0	-2	N
N70	87	Residence (1)	67	70	69	1	3	I
N71	270	Residence (6)	67	60	59	1	-7	N
N72	380	Residence (6)	67	60	58	2	-7	N
N73	202	Residence (1)	67	65	64	1	-2	N
N74	281	Residence (4)	67	64	63	1	-3	N

APPENDIX B-6

Traffic Noise Impact Summary—Six-lane DDI with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N75	262	Residence (3)	67	64	63	1	-3	N
N76	184	Residence (3)	67	63	62	1	-4	N
N77	504	Residence (4)	67	58	56	2	-9	N
N78	352	Residence (5)	67	62	61	1	-5	N
N79	385	Residence (6)	67	56	57	-1	-11	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	67	66	1	0	I
N84	243	Residence (8)	67	63	63	0	-4	N
N85	181	Residence (1)	67	66	67	-1	-1	I
N86	164	Residence (3)	67	67	68	-1	0	I
N87	236	Residence (3)	67	67	66	1	0	I
N88	152	Residence (1)	67	70	71	-1	3	I
N89	391	Residence (12)	67	64	63	1	-3	N
N90	186	Residence (2)	67	70	68	2	3	I
N91	232	Residence (5)	67	69	68	1	2	I
N92	555	Residence (10)	67	63	61	2	-4	N
N93	239	Merrill Park Apt. (6)	67	69	69	0	2	I
N94	382	Residence (5)	67	66	65	1	-1	I
N95	153	Residence (3)	67	67	68	-1	0	I
N96	197	Residence (10)	67	69	70	-1	2	I
N97	389	Residence (7)	67	62	62	0	-5	N
N98	255	Residence (3)	67	66	67	-1	-1	I
N99	111	Residence (3)	67	72	74	-2	5	I
N100	183	Residence (3)	67	64	65	-1	-3	N
N101	186	Residence (14)	67	61	60	1	-6	N

APPENDIX B-6

Traffic Noise Impact Summary—Six-lane DDI with Full-Hawley Alternative

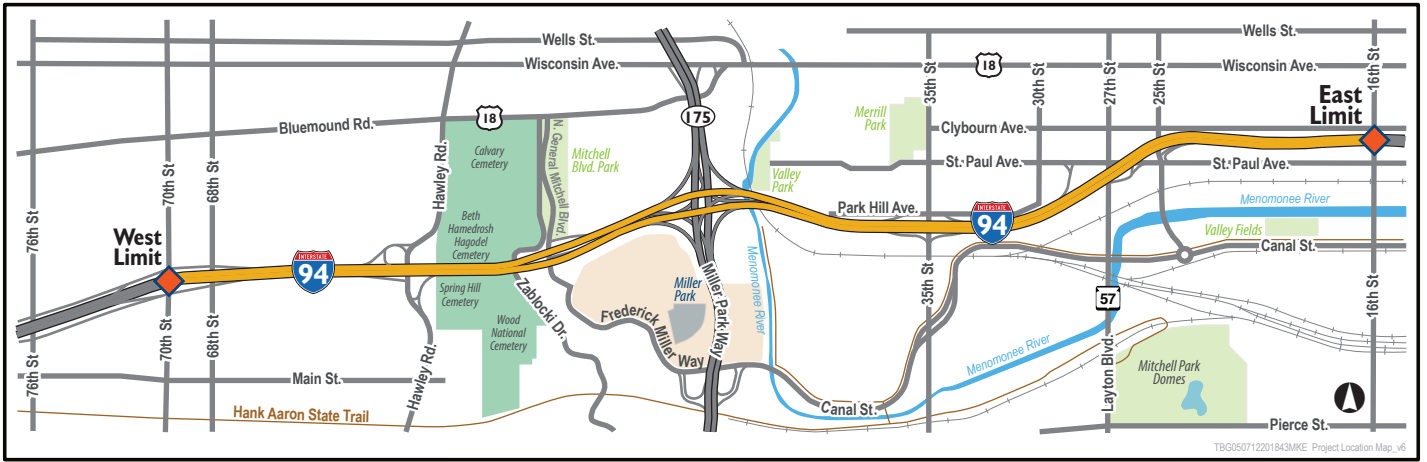
A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N102	160	Residence (6)	67	64	65	-1	-3	N
N103	112	Residence (5)	67	71	75	-4	4	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	71	73	-2	4	I
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	62	64	-2	-5	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	69	69	0	2	I
FS-2	195	Residence (1)	67	66	64	2	-1	I
FS-3	467	Residence (1)	67	62	61	1	-5	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	69	68	1	2	I
FS-6	150	Cemetery	67	71	72	-1	4	I
FS-7	184	Residence (1)	67	69	67	2	2	I
FS-8	495	Residence (1)	67	64	62	2	-3	N
FS-9	427	Park	67	62	60	2	-5	N
FS-10	117	Residence (2)	67	66	66	0	-1	I
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	58	59	-1	-9	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	72	74	-2	5	I

APPENDIX B-7

Traffic Noise Impact Summary – Washington Street Extension

A. Receptor Location (see Exhibit 4-1)	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N112	45	Residence (16)	67	63	62	1	-4	N
N113	69	Residence (26)	67	61	60	1	-6	N
N114	347	Residence (3)	67	48	40	8	-19	N
N115	85	Residence (1)	67	61	62	-1	-6	N
N116	34	Residence (8)	67	64	65	-1	-3	N
N117	24	Residence (8)	67	65	66	-1	-2	N
N118	31	Residence (14)	67	65	66	-1	-2	N
N119	34	Residence (11)	67	64	65	-1	-3	N
N120	18	Residence (14)	67	65	66	-1	-2	N
N121	288	Residence (4)	67	43	41	2	-24	N
N122	234	Residence (4)	67	46	44	2	-21	N
N123	239	Residence (1)	67	55	53	2	-12	N
FS-15	147	Residence (3)	67	53	41	12	-14	N
FS-16	440	Residence (3)	67	46	38	8	-21	N
FS-17	188	Residence (4)	67	54	50	4	-13	N

Appendix A Exhibits



TB050712201843MKE Project Location Map_v6

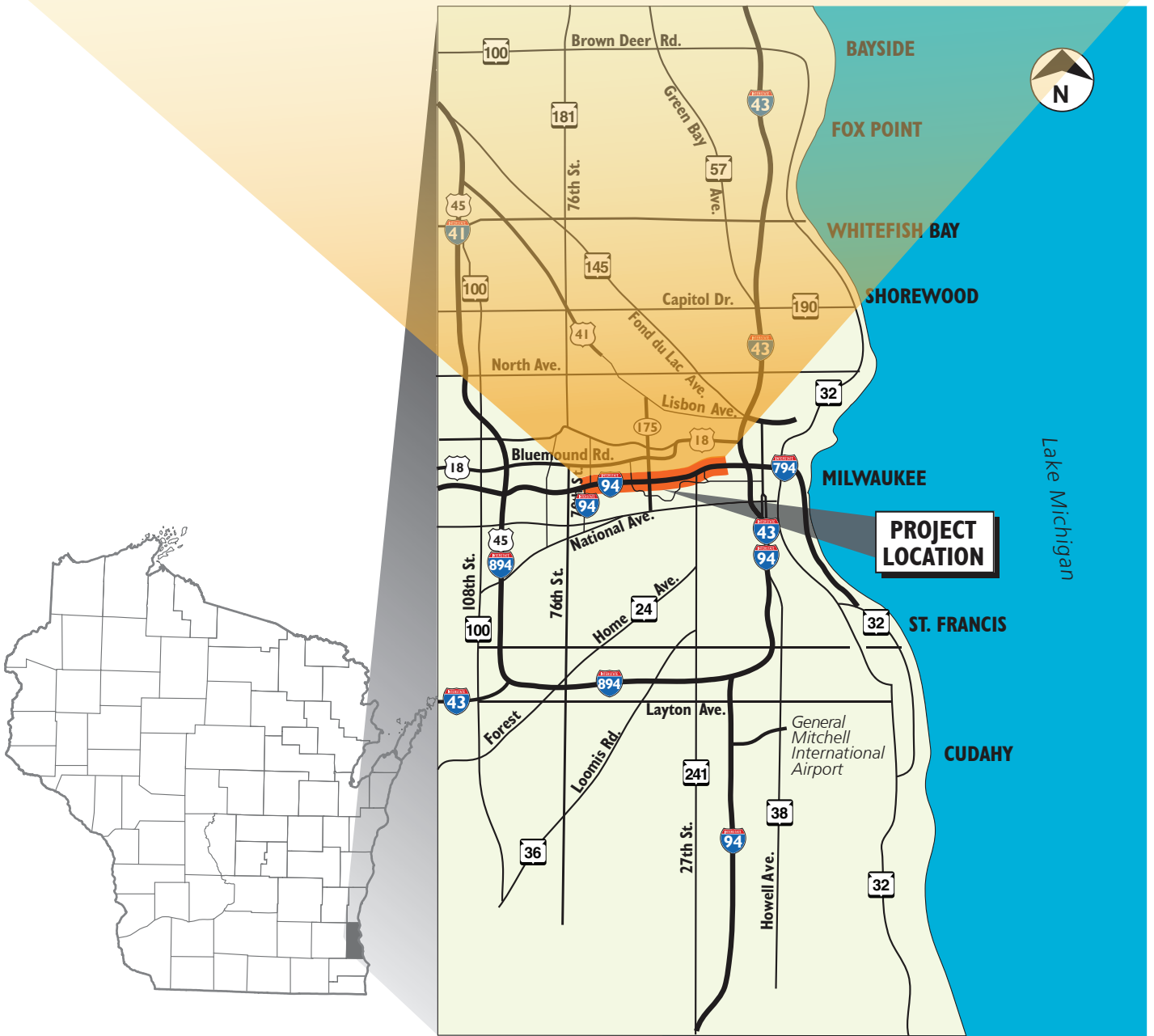
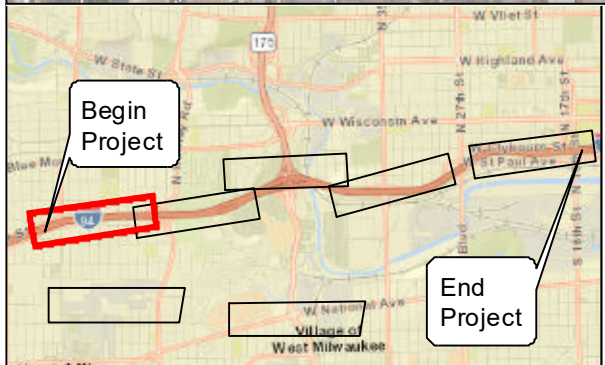
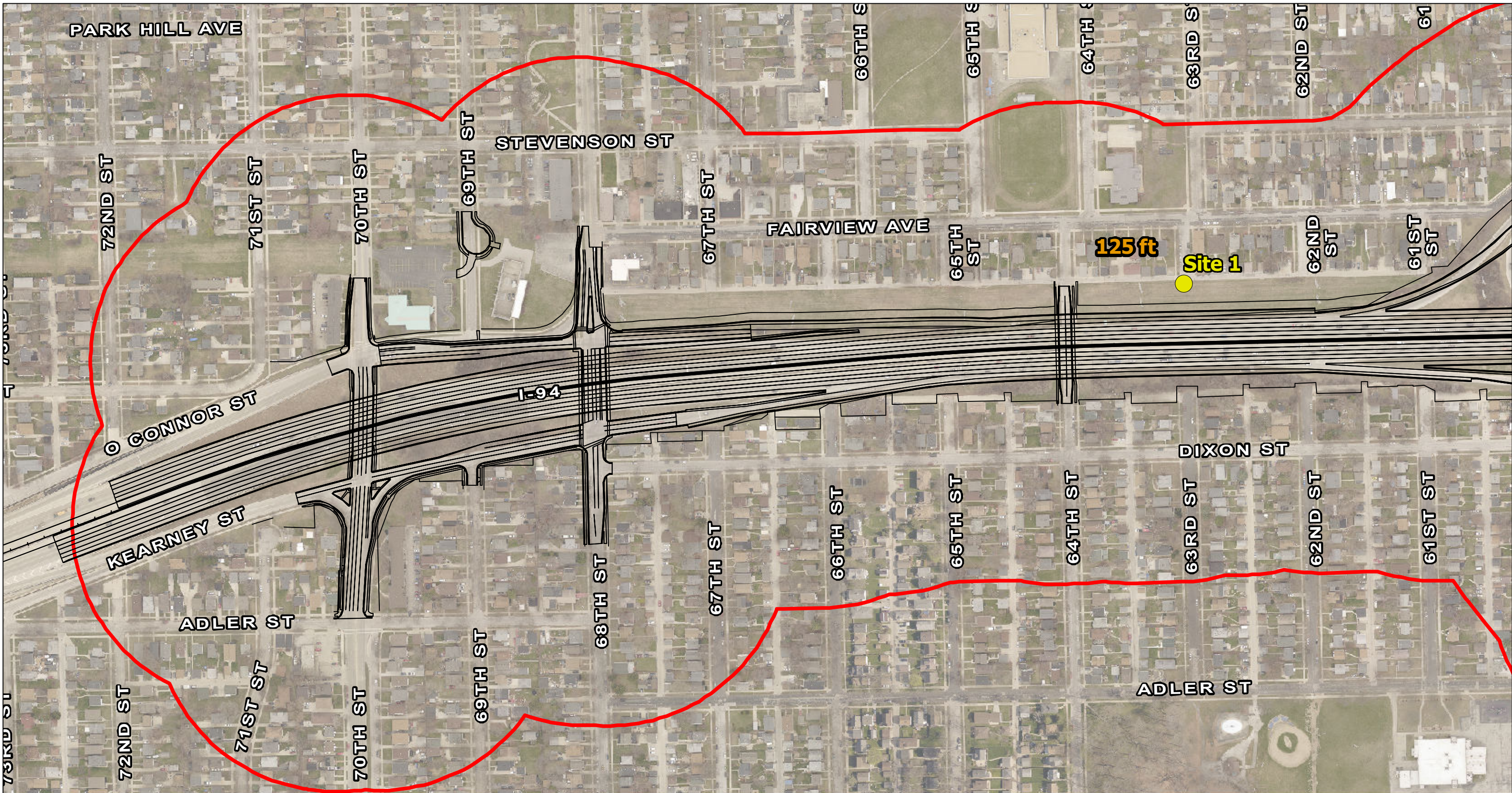


Exhibit I-1
Project Location Map

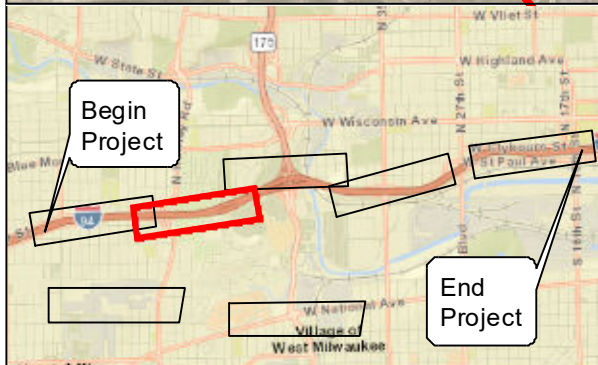
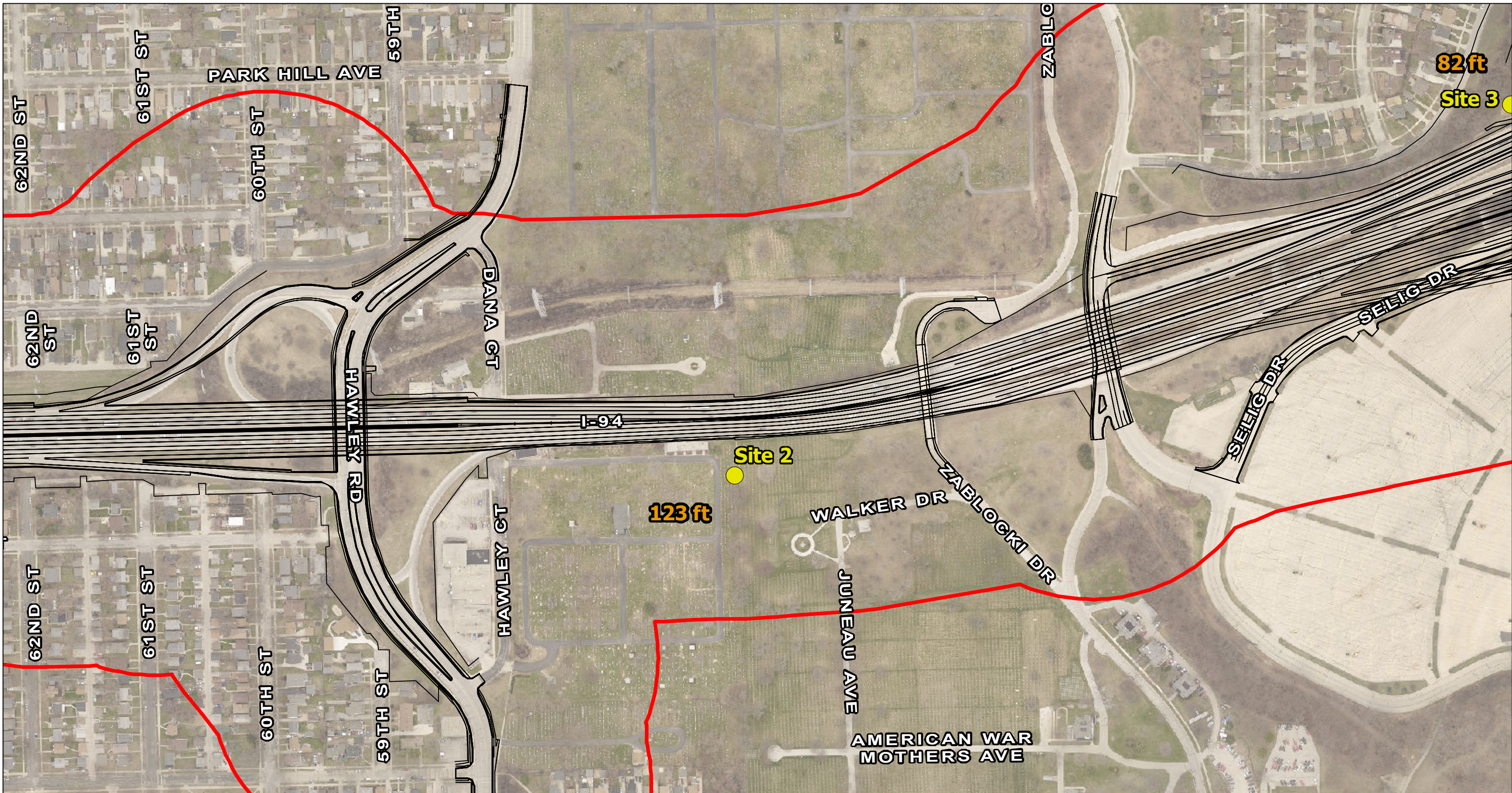


- Legend**
- Validation Site
 - Field Reading Site
 - XXft** Distance from Centerline
 - 500 ft Buffer
 - Proposed Design

Locations on the map identified and labeled receptor may be utilized as individual receptor locations or may be receiver locations representative of multiple receptors with the exception of properties protected by Section 4(f).

**I-94
Milwaukee County, WI**

**Exhibit 1-2
Field Site (Validation)
Location Map**



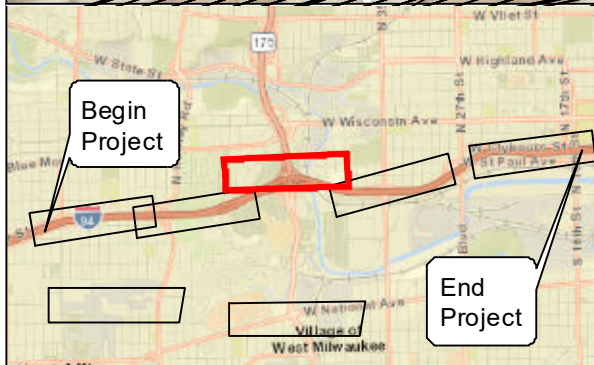
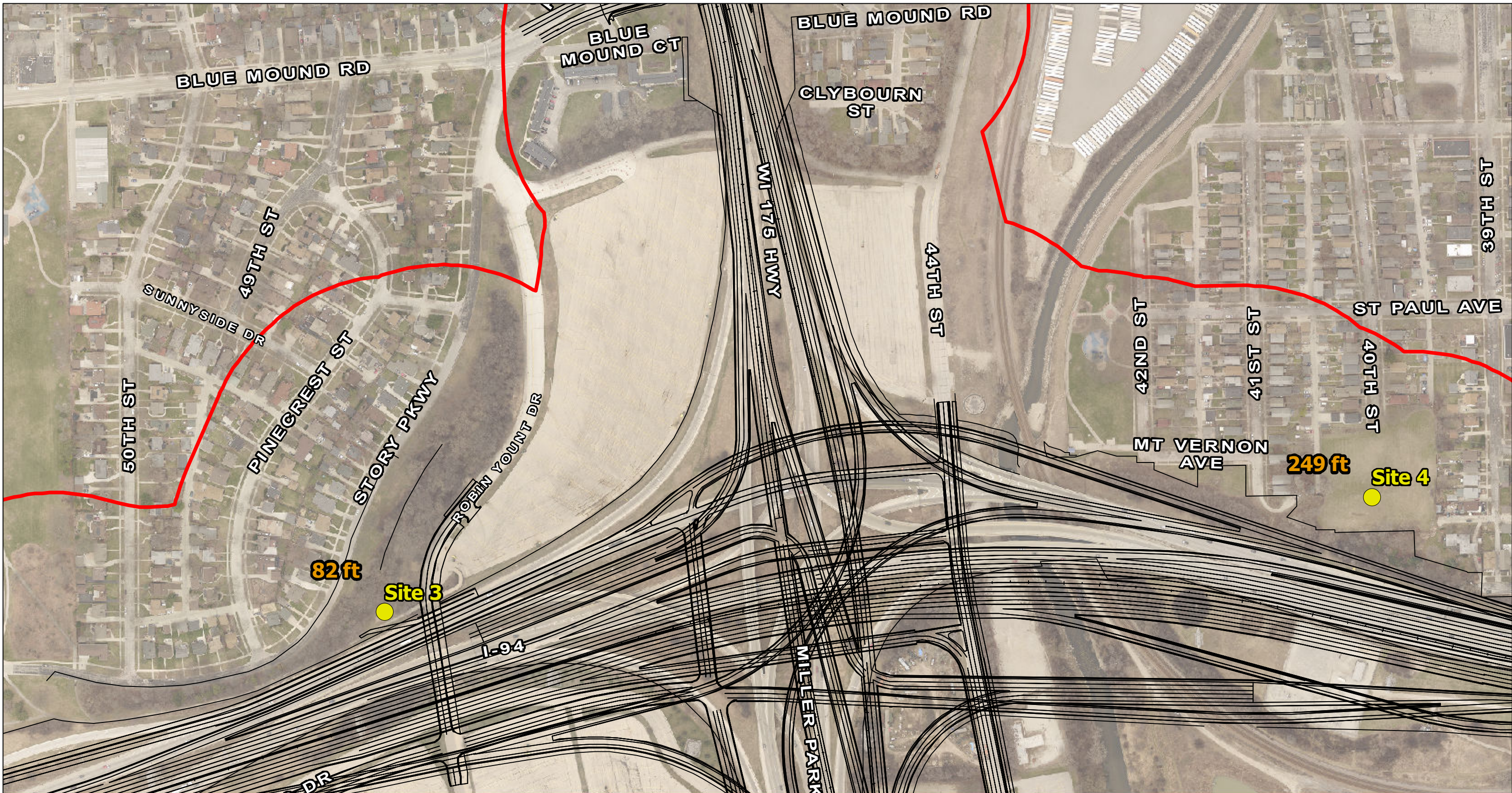
Legend

- Validation Site
- Field Reading Site
- XXft** Distance from Centerline
- 500 ft Buffer
- Proposed Design

Locations on the map identified and labeled receptor may be utilized as individual receptor locations or may be receiver locations representative of multiple receptors with the exception of properties protected by Section 4(f).

**I-94
Milwaukee County, WI**

**Exhibit 1-2
Field Site (Validation)
Location Map**



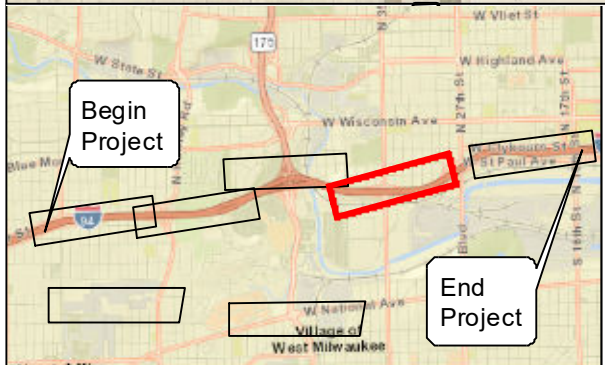
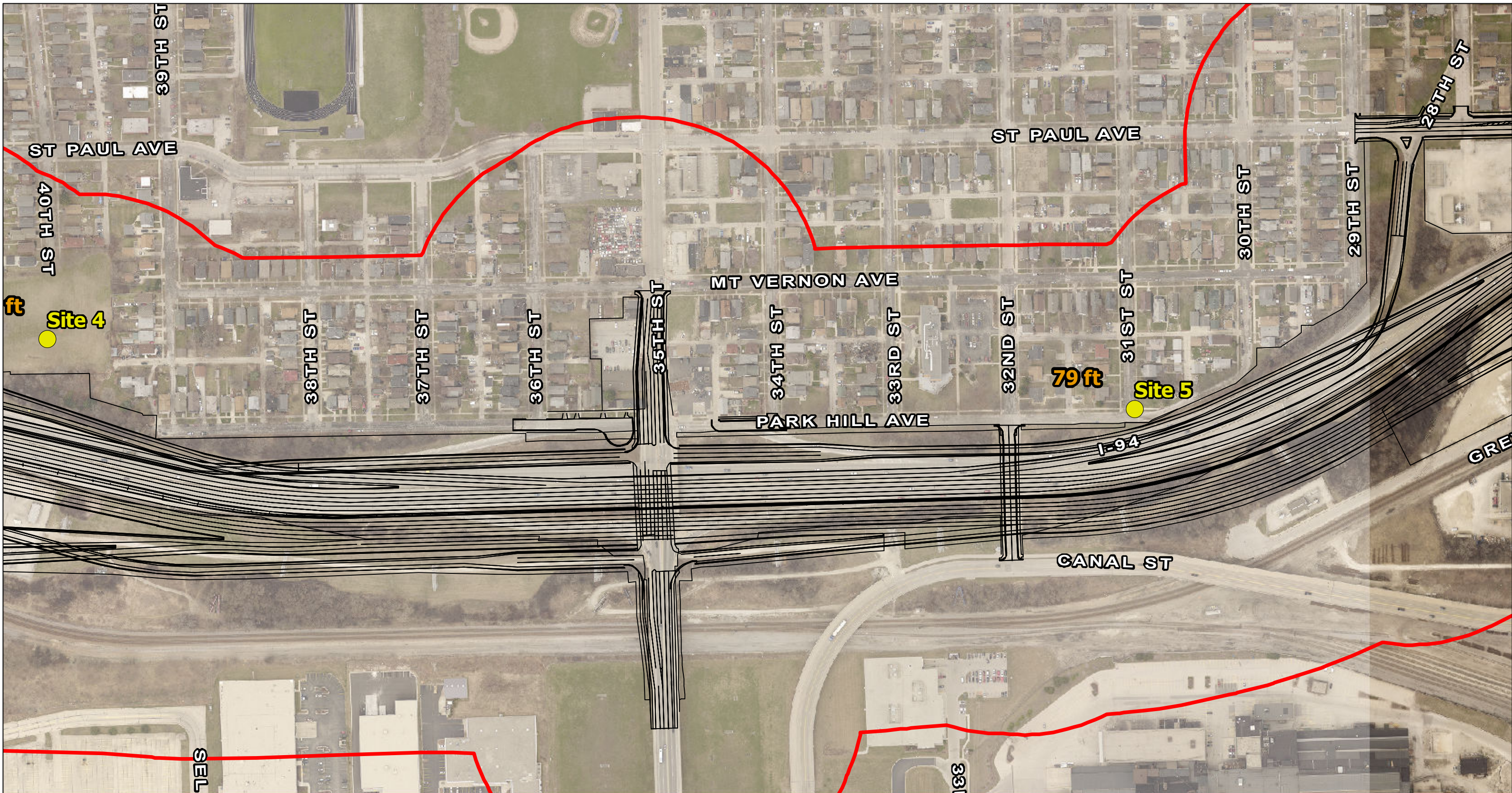
Legend

- Validation Site
- Field Reading Site
- XXft** Distance from Centerline
- 500 ft Buffer
- Proposed Design

Locations on the map identified and labeled receptor may be utilized as individual receptor locations or may be receiver locations representative of multiple receptors with the exception of properties protected by Section 4(f).

**I-94
Milwaukee County, WI**

**Exhibit 1-2
Field Site (Validation)
Location Map**

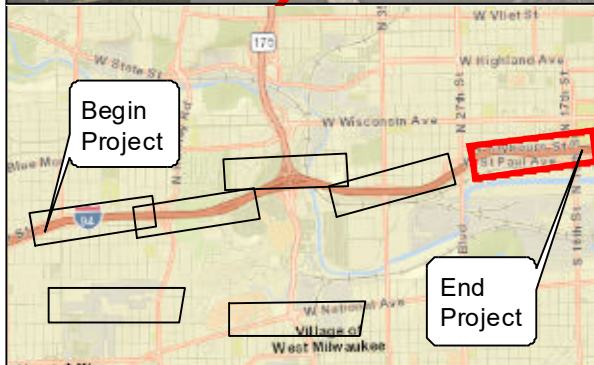
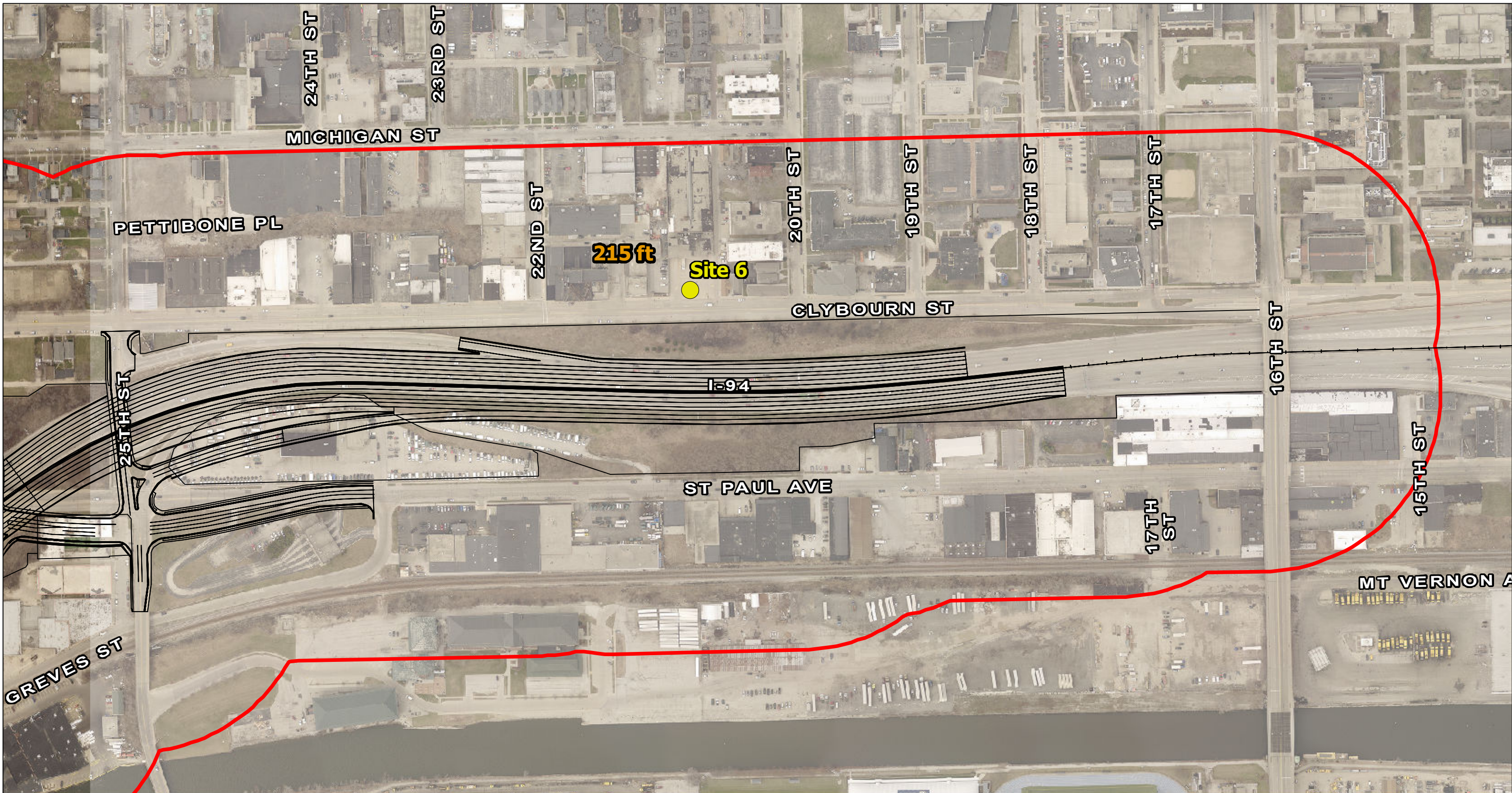


- Legend**
- Validation Site
 - Field Reading Site
 - XXft** Distance from Centerline
 - 500 ft Buffer
 - Proposed Design

Locations on the map identified and labeled receptor may be utilized as individual receptor locations or may be receiver locations representative of multiple receptors with the exception of properties protected by Section 4(f).

**I-94
Milwaukee County, WI**

**Exhibit 1-2
Field Site (Validation)
Location Map**



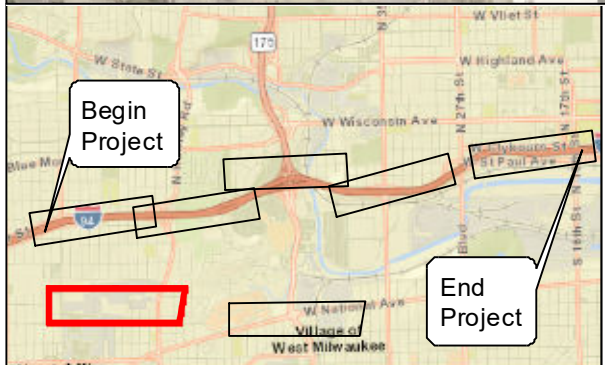
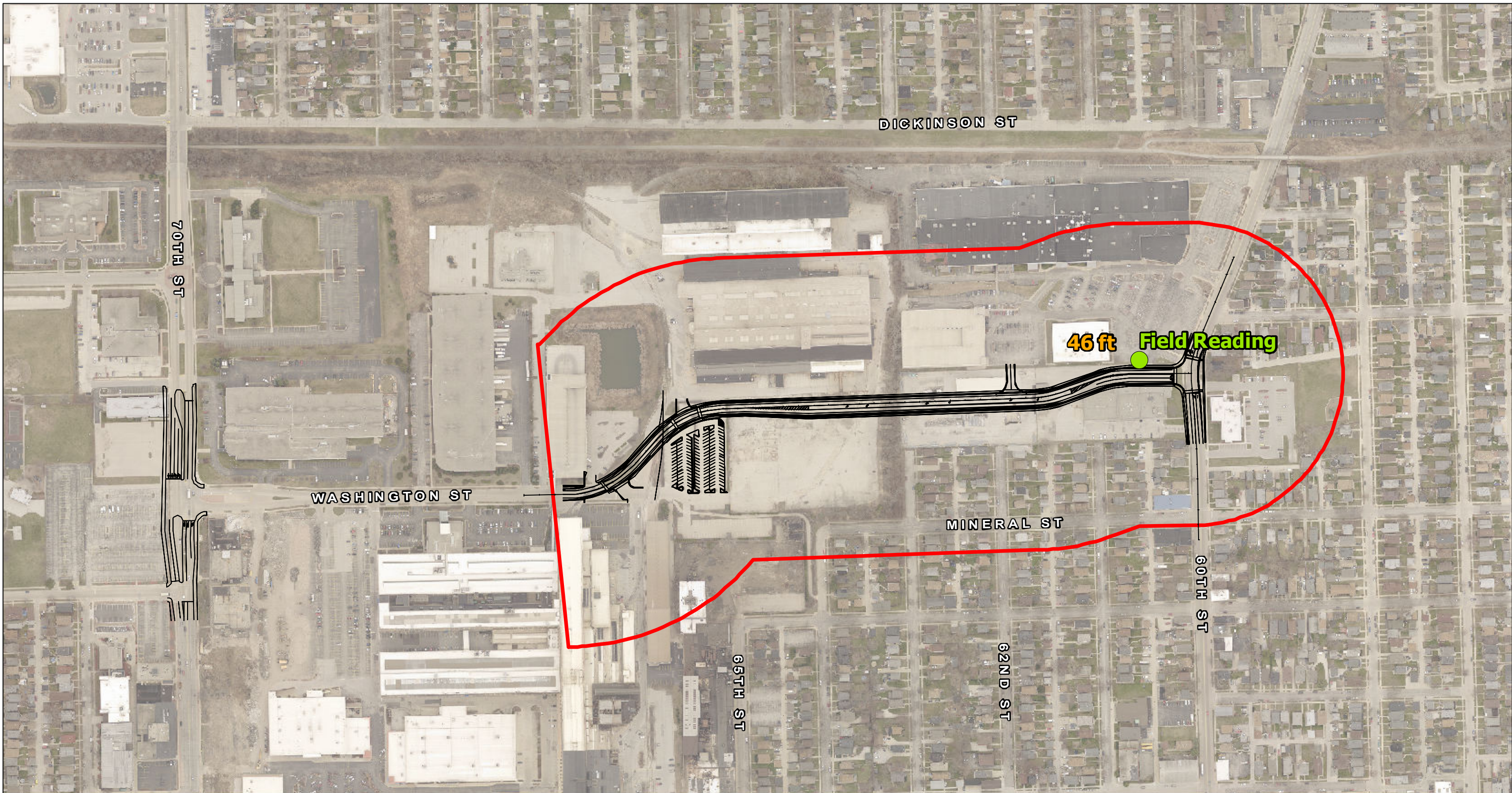
Legend

- Validation Site
- Field Reading Site
- XXft** Distance from Centerline
- 500 ft Buffer
- Proposed Design

Locations on the map identified and labeled receptor may be utilized as individual receptor locations or may be receiver locations representative of multiple receptors with the exception of properties protected by Section 4(f).

**I-94
Milwaukee County, WI**

**Exhibit 1-2
Field Site (Validation)
Location Map**

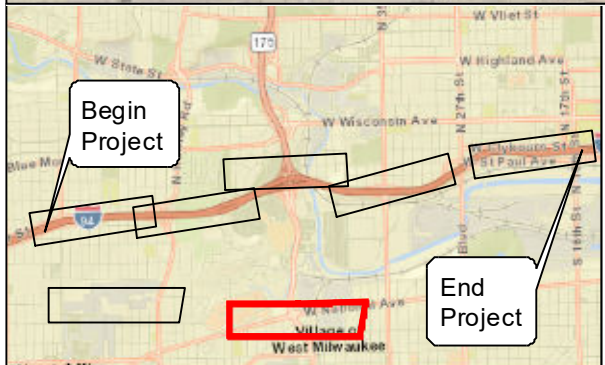
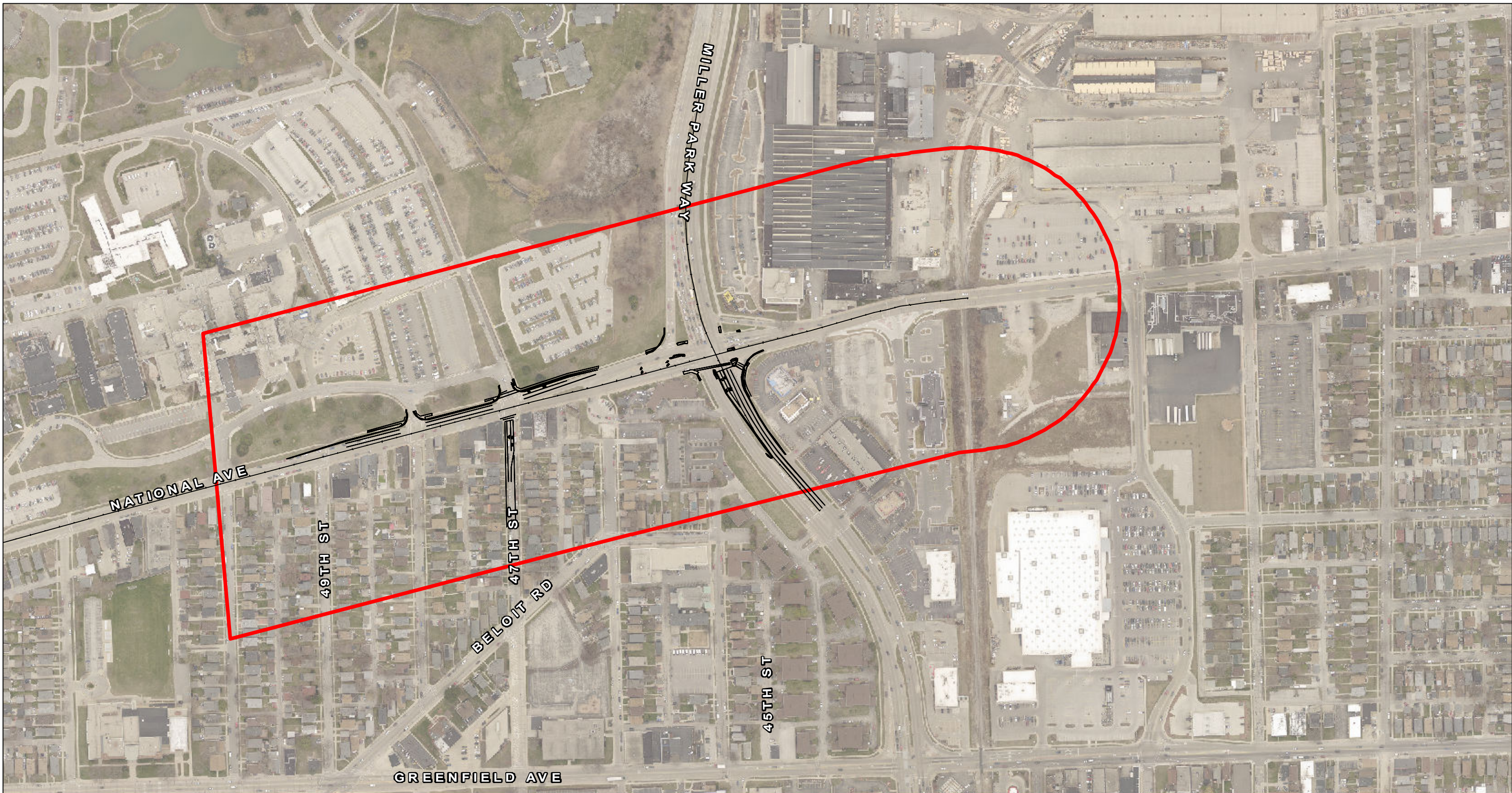


- Legend**
- Validation Site
 - Field Reading Site
 - XXft** Distance from Centerline
 - 500 ft Buffer
 - Proposed Design

Locations on the map identified and labeled receptor may be utilized as individual receptor locations or may be receiver locations representative of multiple receptors with the exception of properties protected by Section 4(f).

**I-94
Milwaukee County, WI**

**Exhibit 1-2
Field Site (Validation)
Location Map**

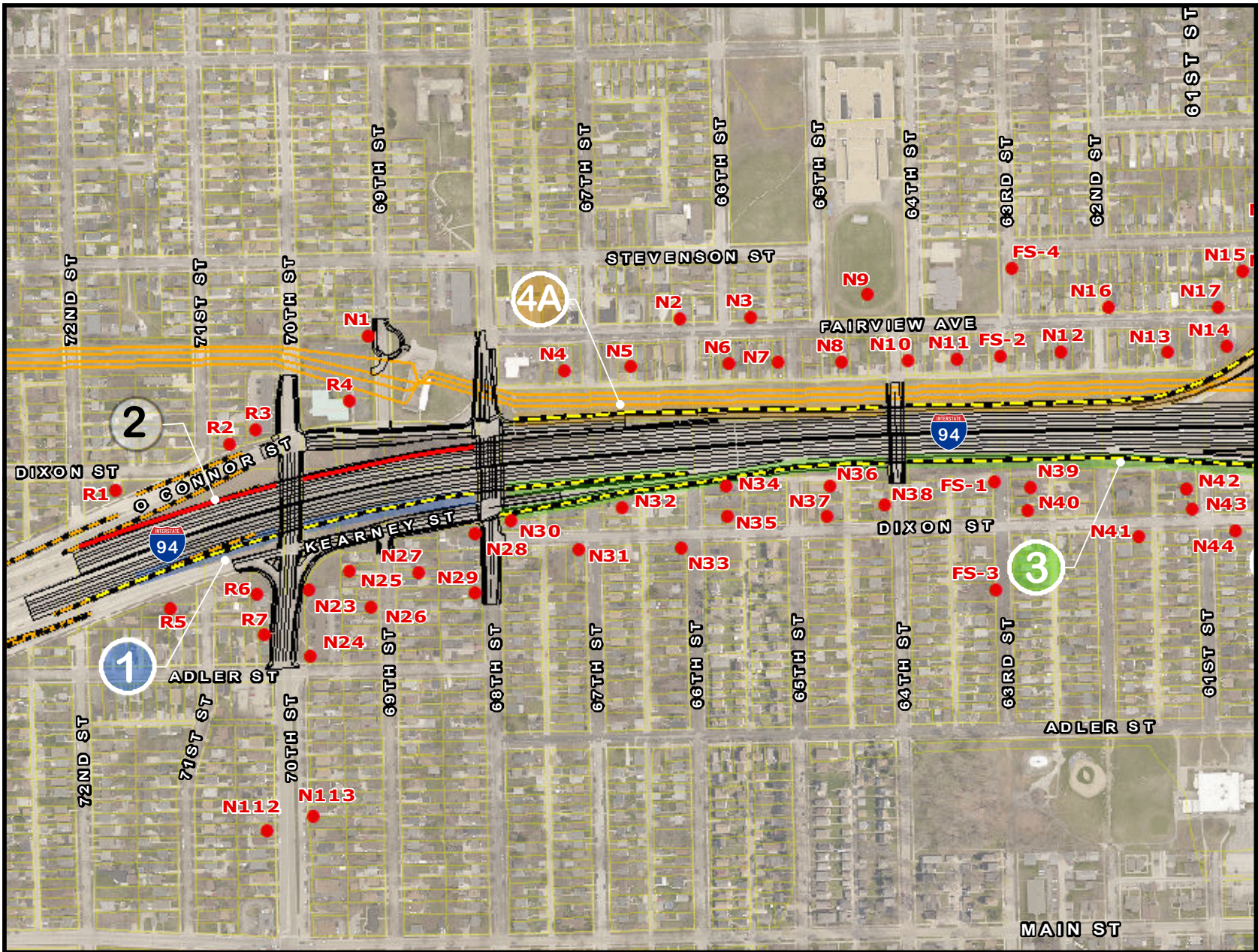


- Legend**
- Validation Site
 - Field Reading Site
 - XXft** Distance from Centerline
 - 500 ft Buffer
 - Proposed Design

Locations on the map identified and labeled receptor may be utilized as individual receptor locations or may be receiver locations representative of multiple receptors with the exception of properties protected by Section 4(f).

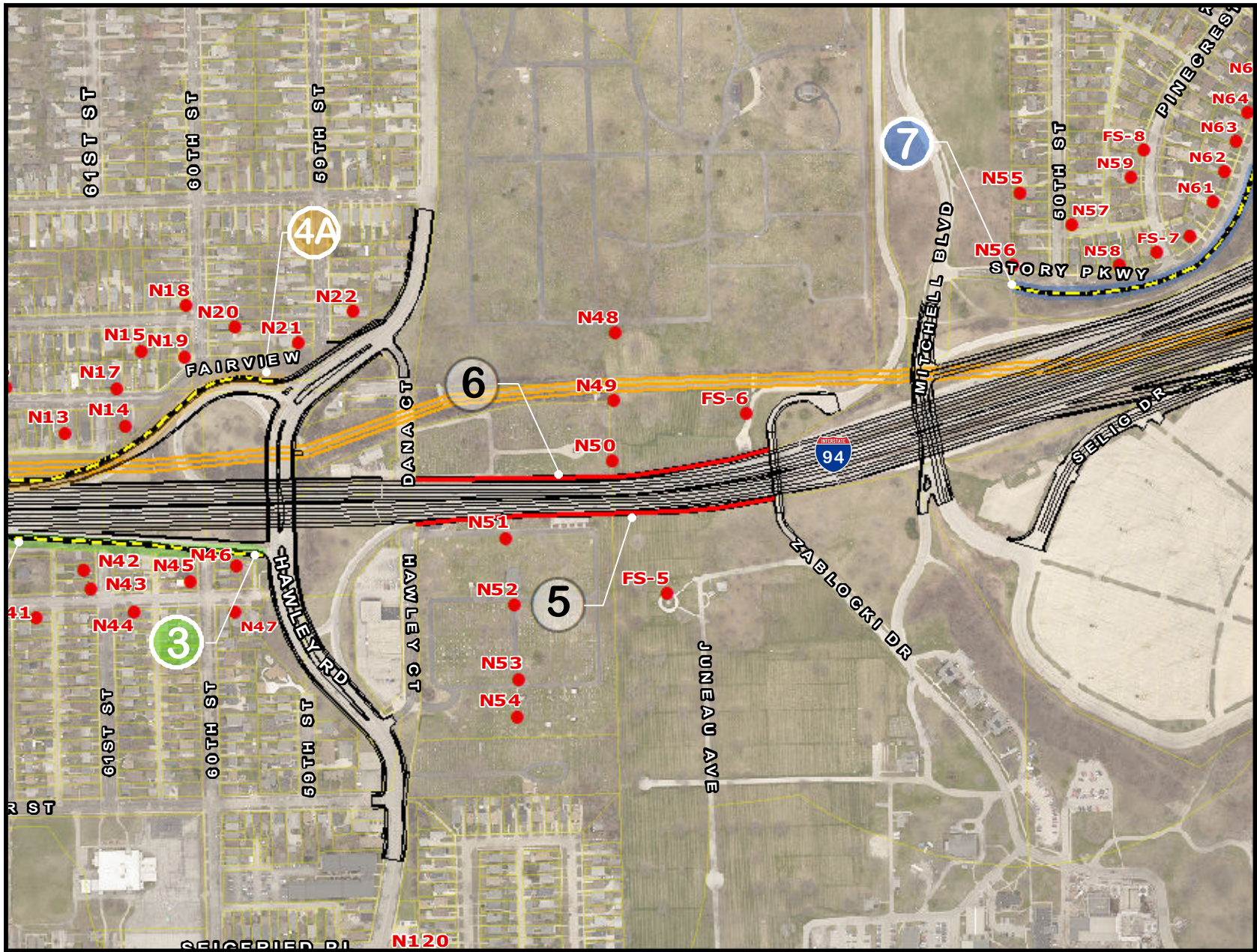
**I-94
Milwaukee County, WI**

**Exhibit 1-2
Field Site (Validation)
Location Map**



LEGEND

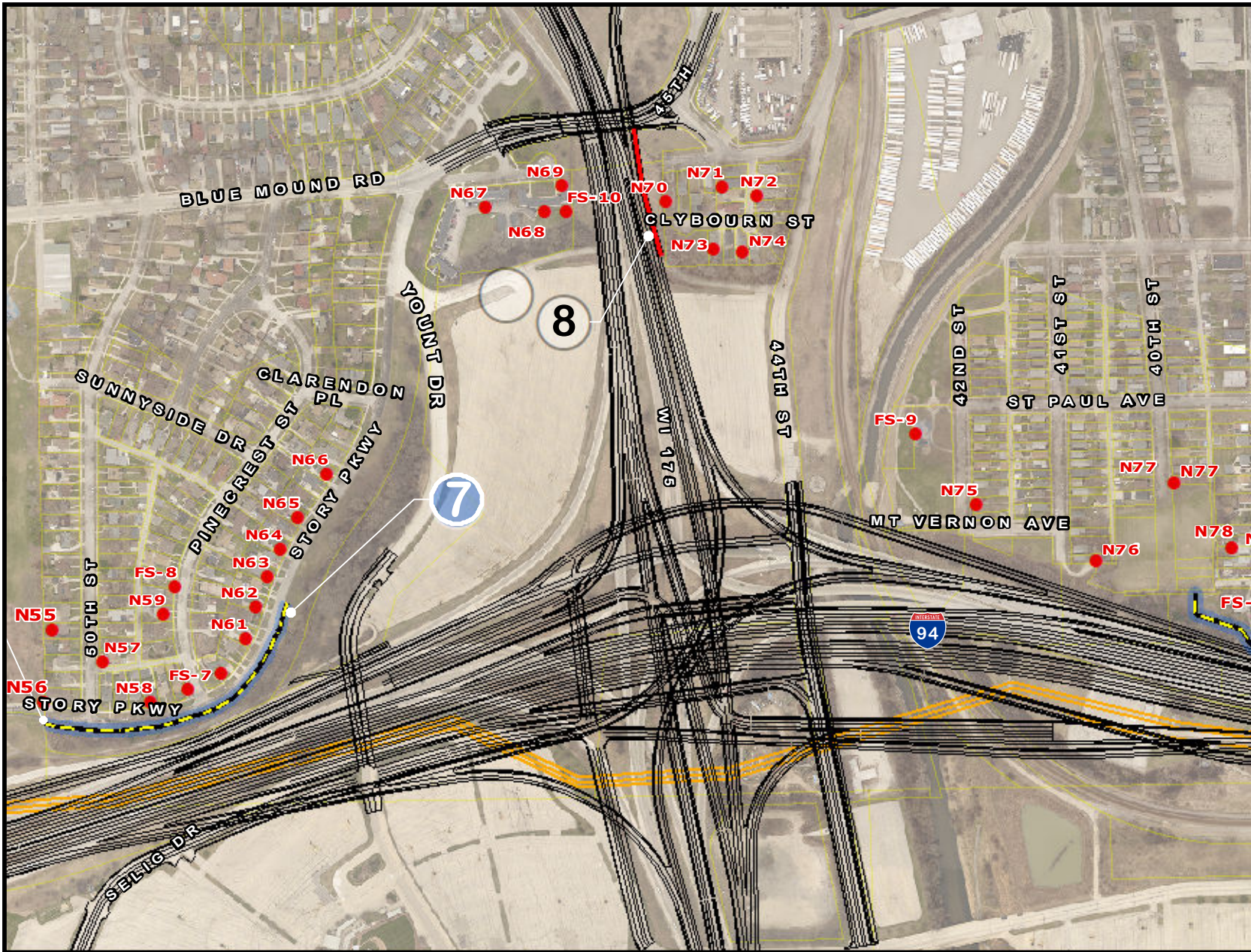
- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design
- 1 Noise Barrier Number
Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number
- *Barrier locations are approximate
- Electric Power Transmission Lines



North

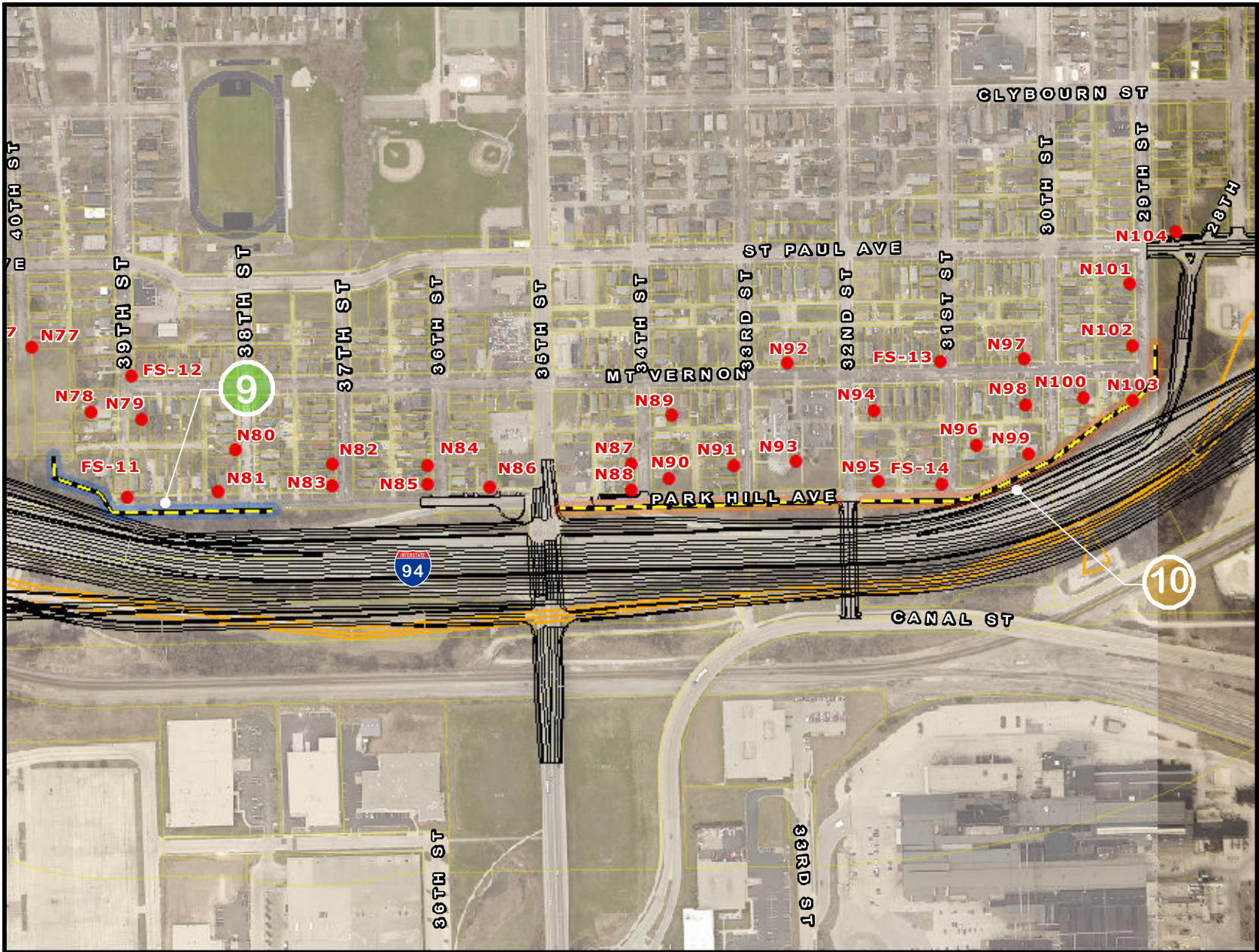
LEGEND

- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design
- 1 Noise Barrier Number
 Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number
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- Electric Power Transmission Lines



LEGEND

- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design
- 1 Noise Barrier Number
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- Electric Power Transmission Lines



North

LEGEND

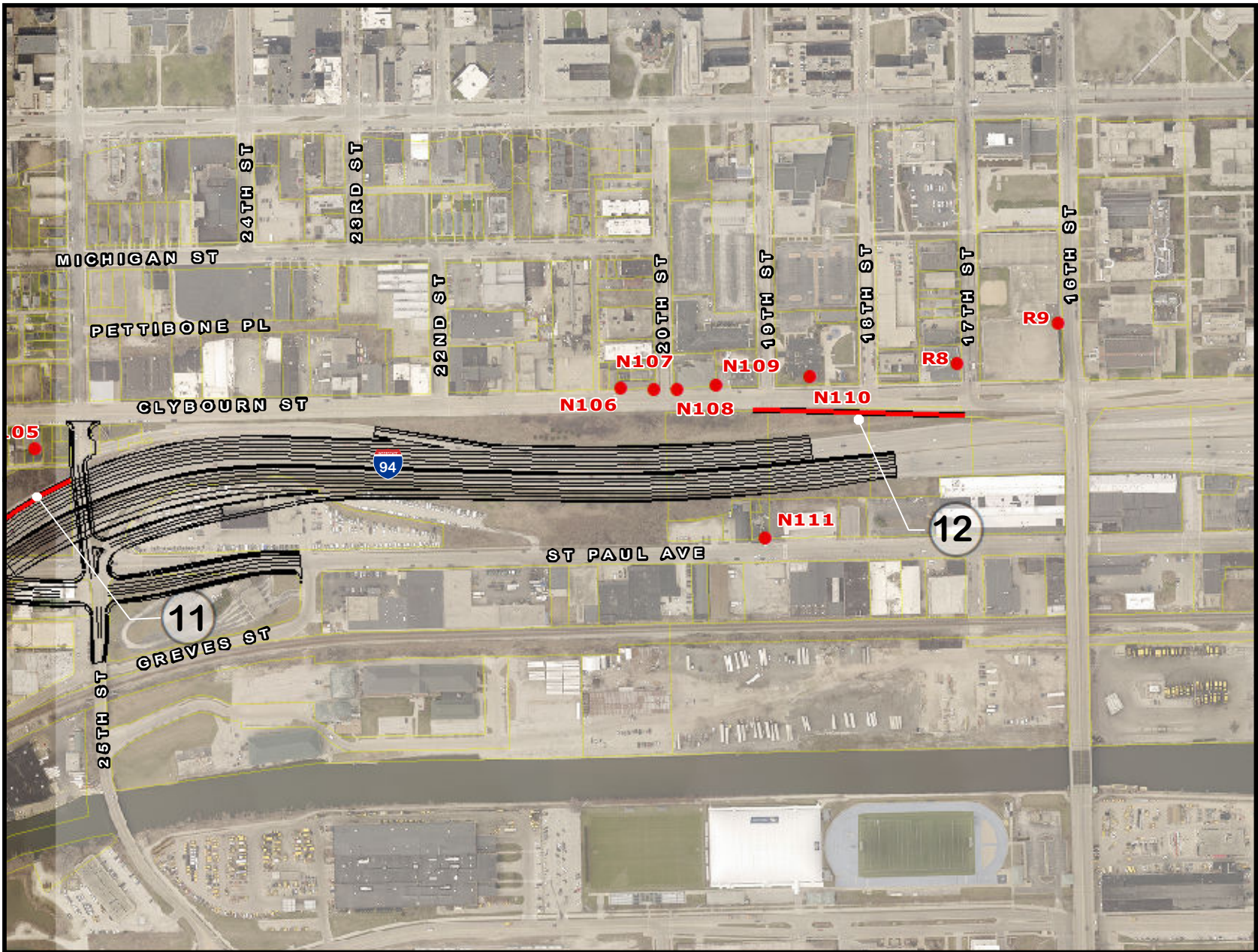
- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
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- 1 Noise Barrier Number
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Exhibit 4-1
 Page 4 of 6

Proposed Noise Barriers Eight-Lane Hybrid Interchange Alternative



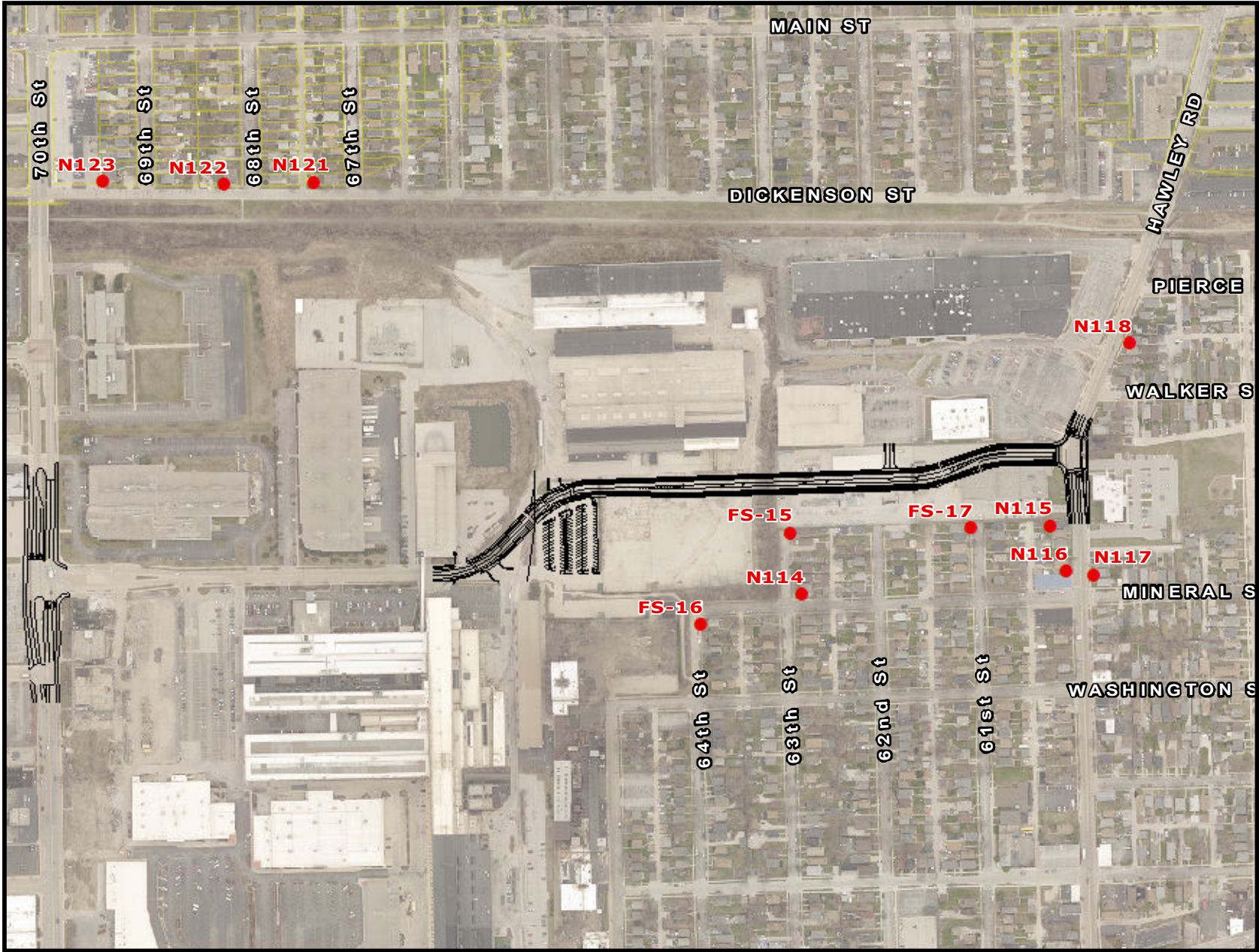
North

LEGEND

- **N2** Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design
- 1 **Noise Barrier Number**
Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number
- *Barrier locations are approximate
- Electric Power Transmission Lines



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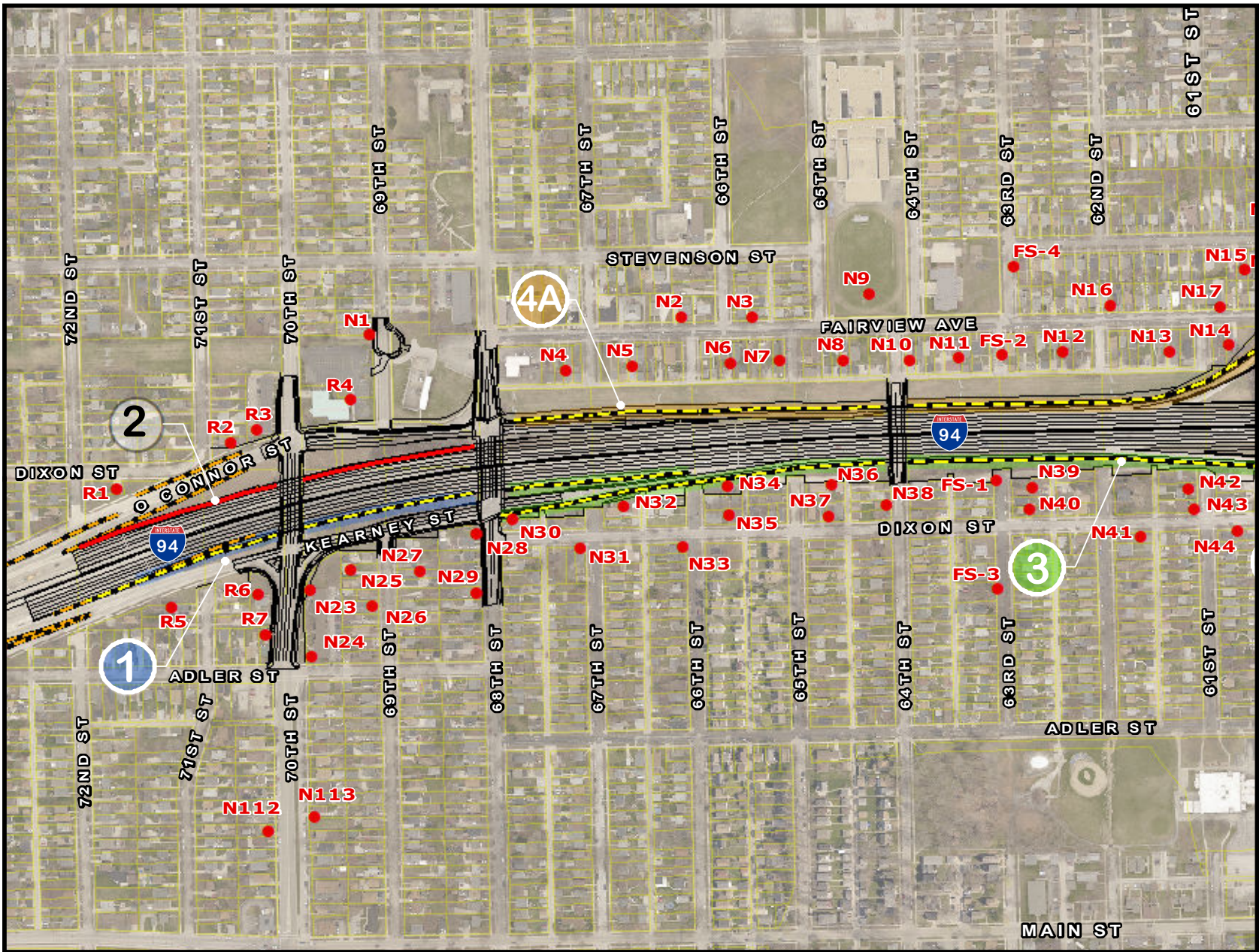


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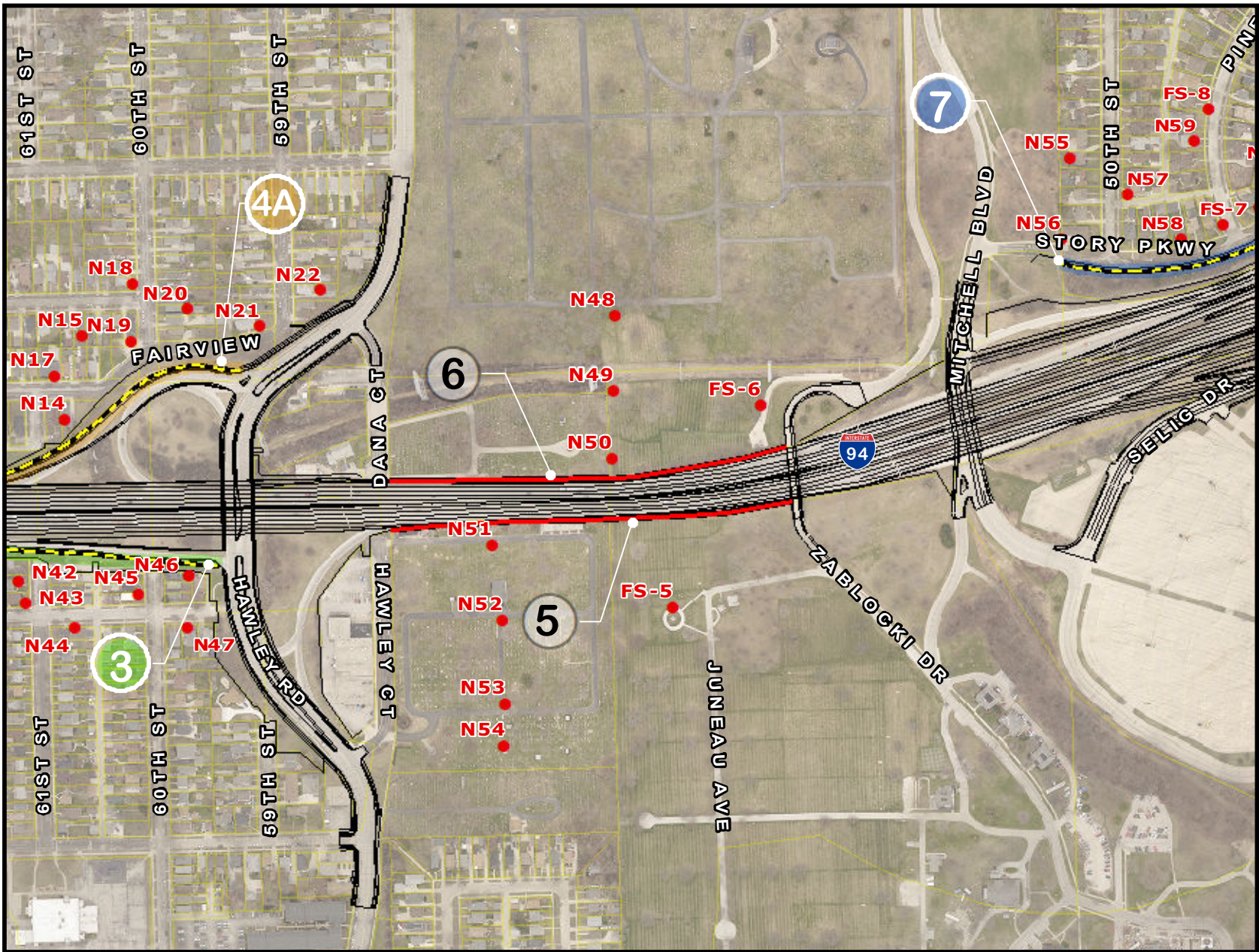
- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design
- 1 Noise Barrier Number
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- *Barrier locations are approximate
- Electric Power Transmission Lines



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- LEGEND**
- N2 Noise Receptors
 - Existing Noise Barrier
 - Potential Noise Barrier
 - Barrier Did Not Meet Reasonableness Criteria
 - Proposed Design
 - 1 Noise Barrier Number
Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number
- *Barrier locations are approximate

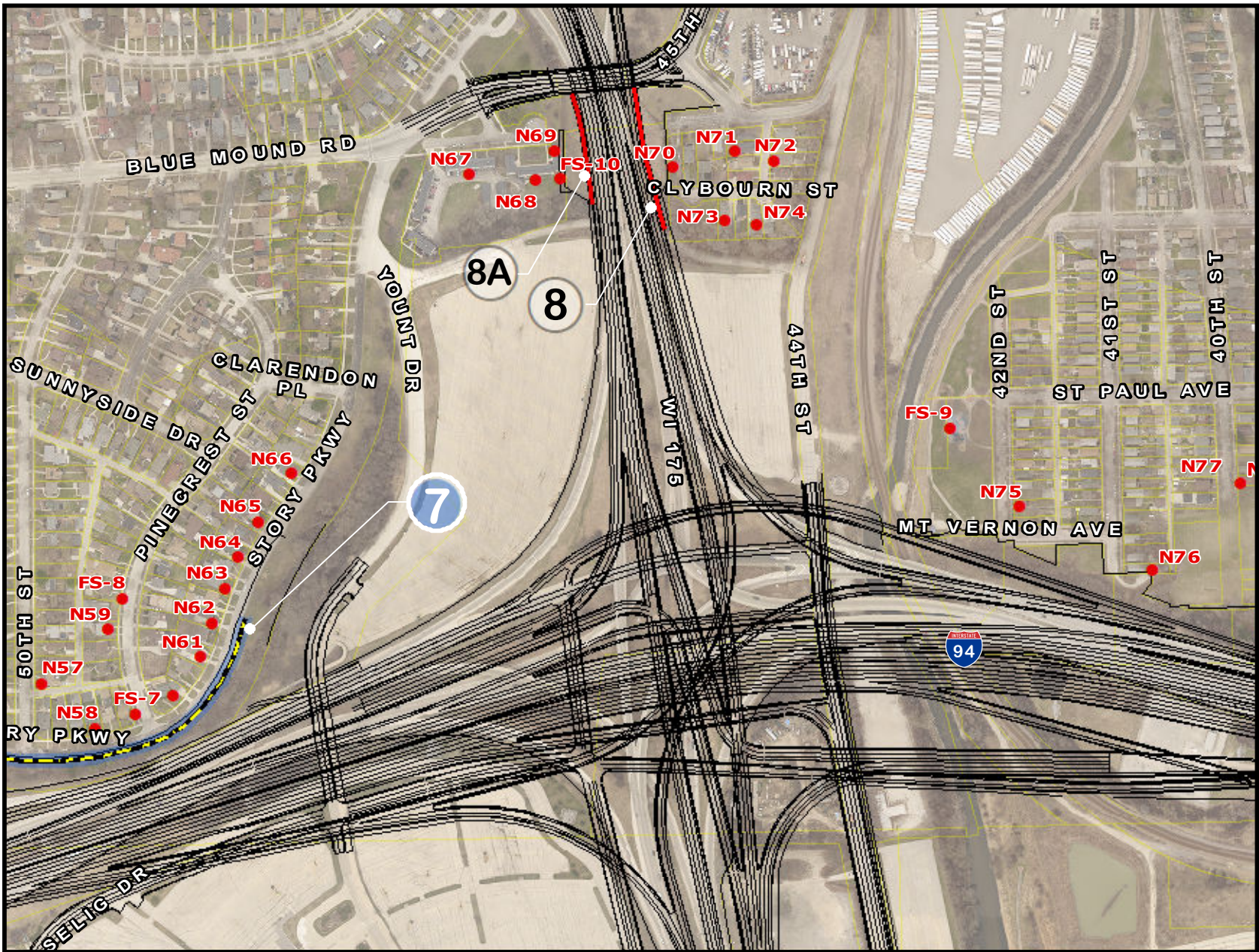


LEGEND

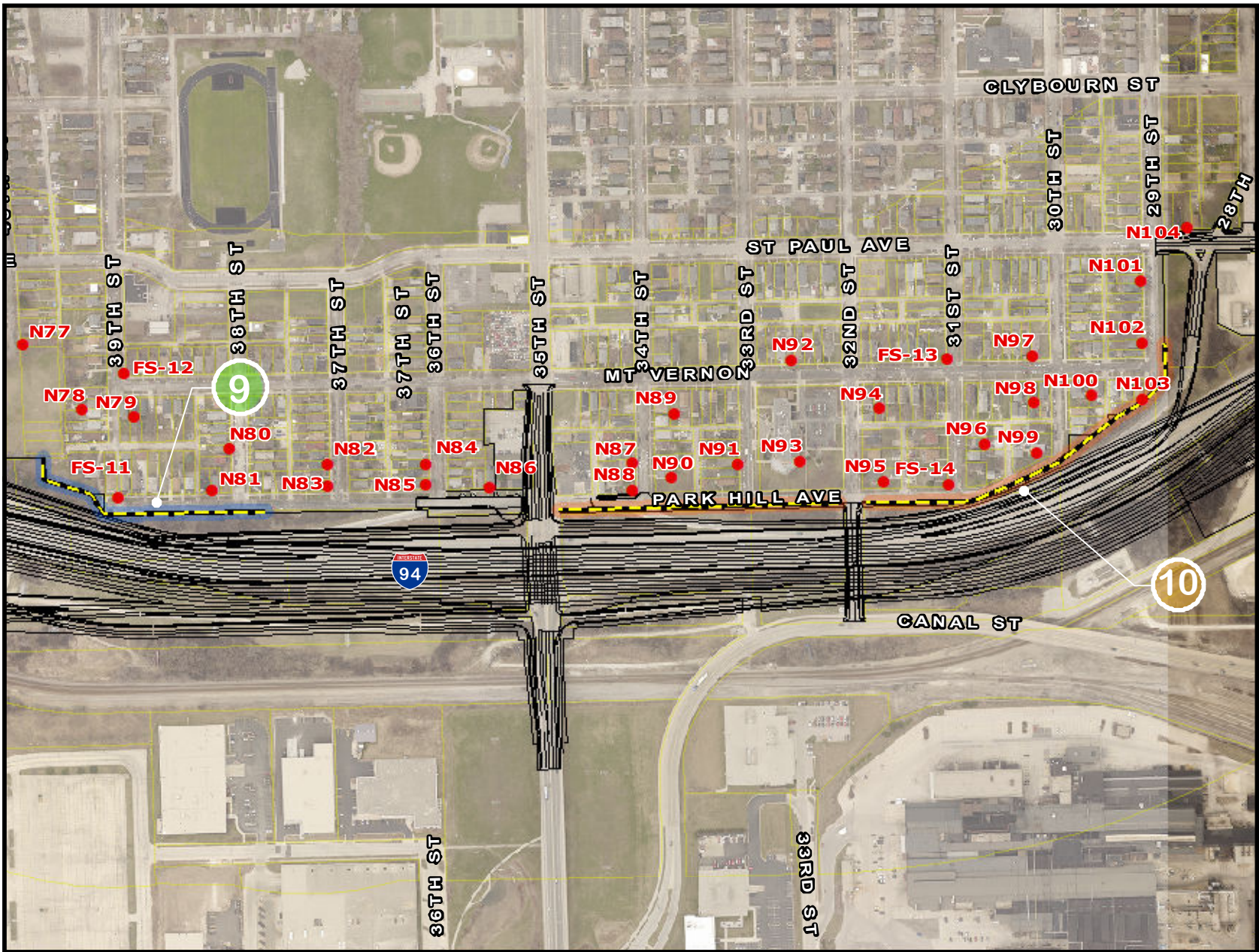
- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design

1 Noise Barrier Number
 Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

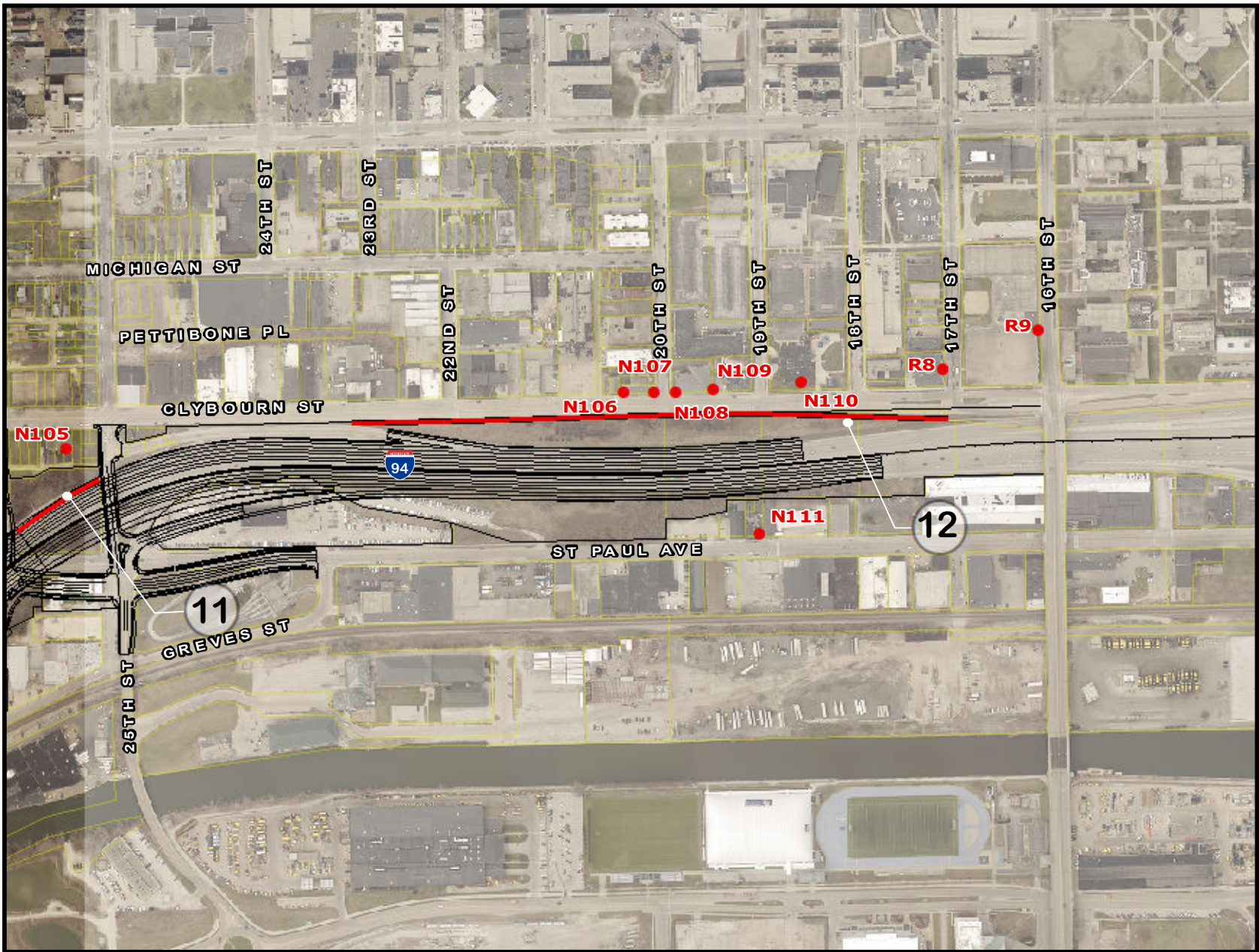


- LEGEND**
- N2 Noise Receptors
 - Existing Noise Barrier
 - Potential Noise Barrier
 - Barrier Did Not Meet Reasonableness Criteria
 - Proposed Design
- 1** Noise Barrier Number
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- LEGEND**
- N2 Noise Receptors
 - Existing Noise Barrier
 - Potential Noise Barrier
 - Barrier Did Not Meet Reasonableness Criteria
 - Proposed Design
- 1** Noise Barrier Number
 Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number
- *Barrier locations are approximate





North

LEGEND

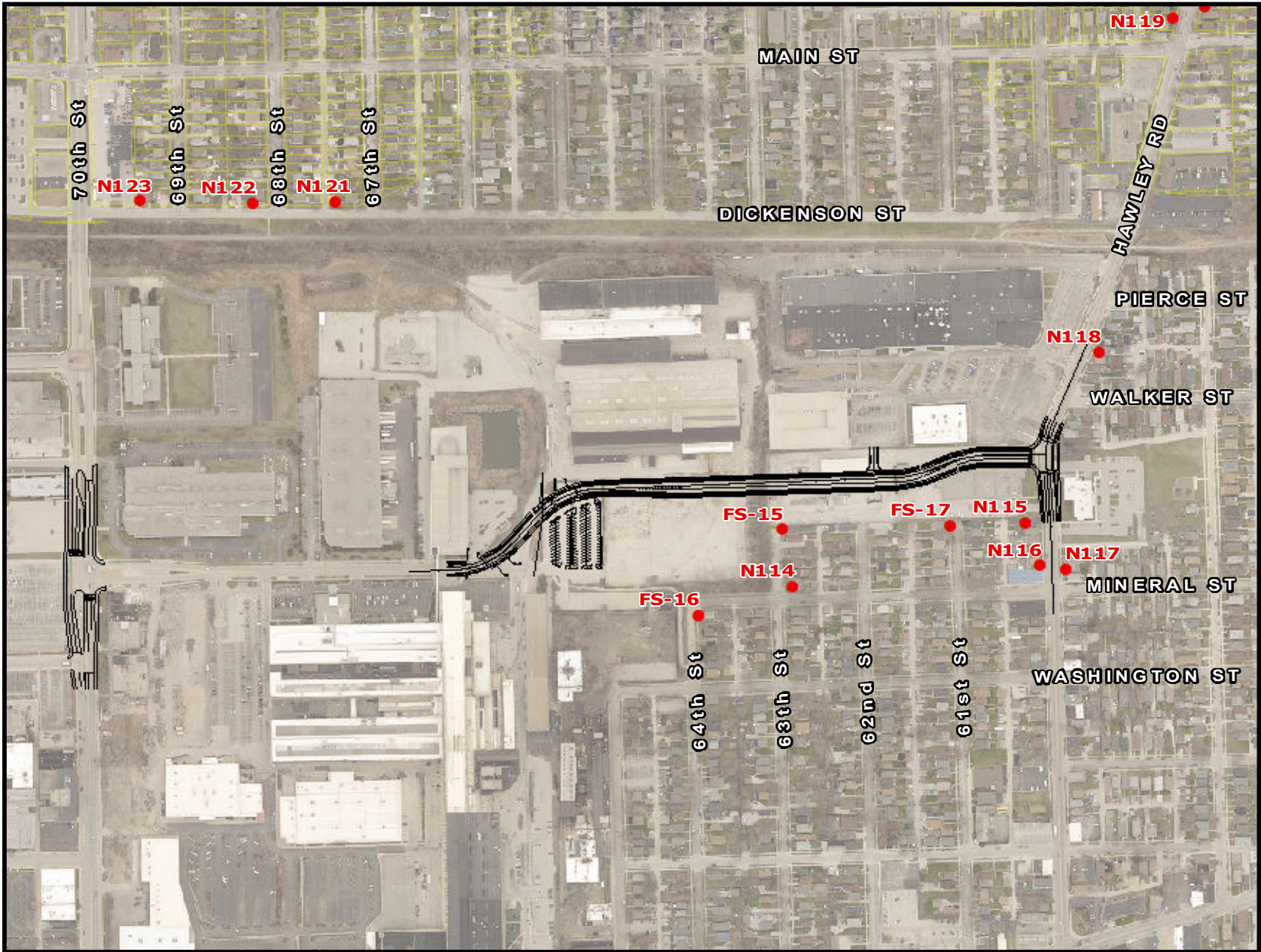
- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design

1 Noise Barrier Number
 Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate



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LEGEND

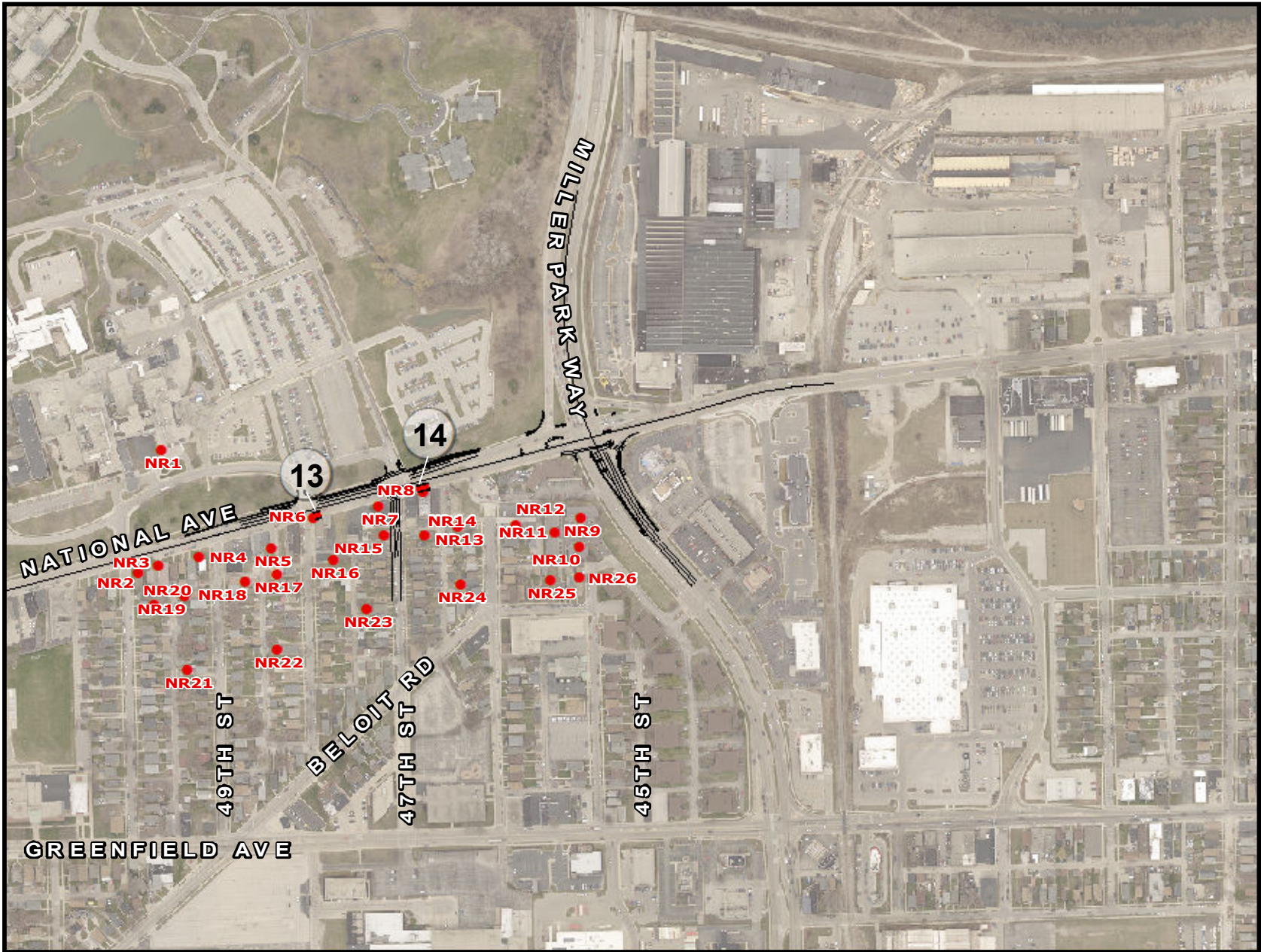
- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design

1 Noise Barrier Number
 Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate



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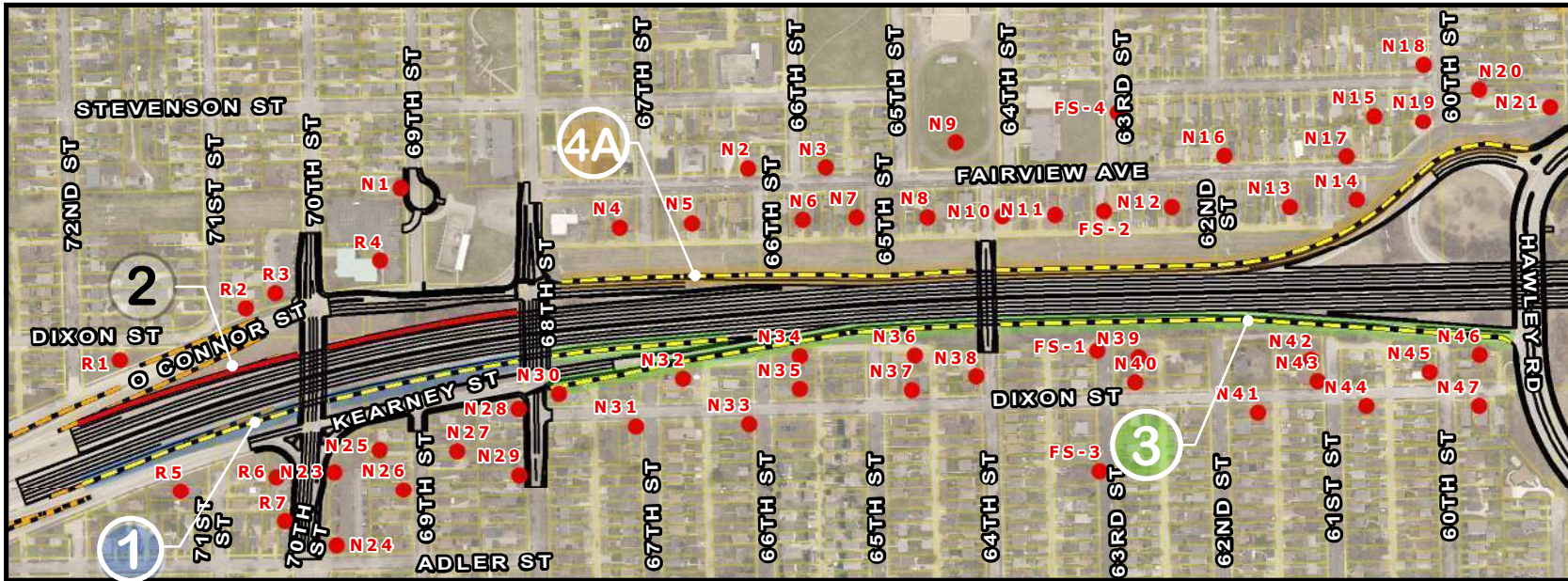
LEGEND

- NR Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design

1 Noise Barrier Number
 Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

6 LANE



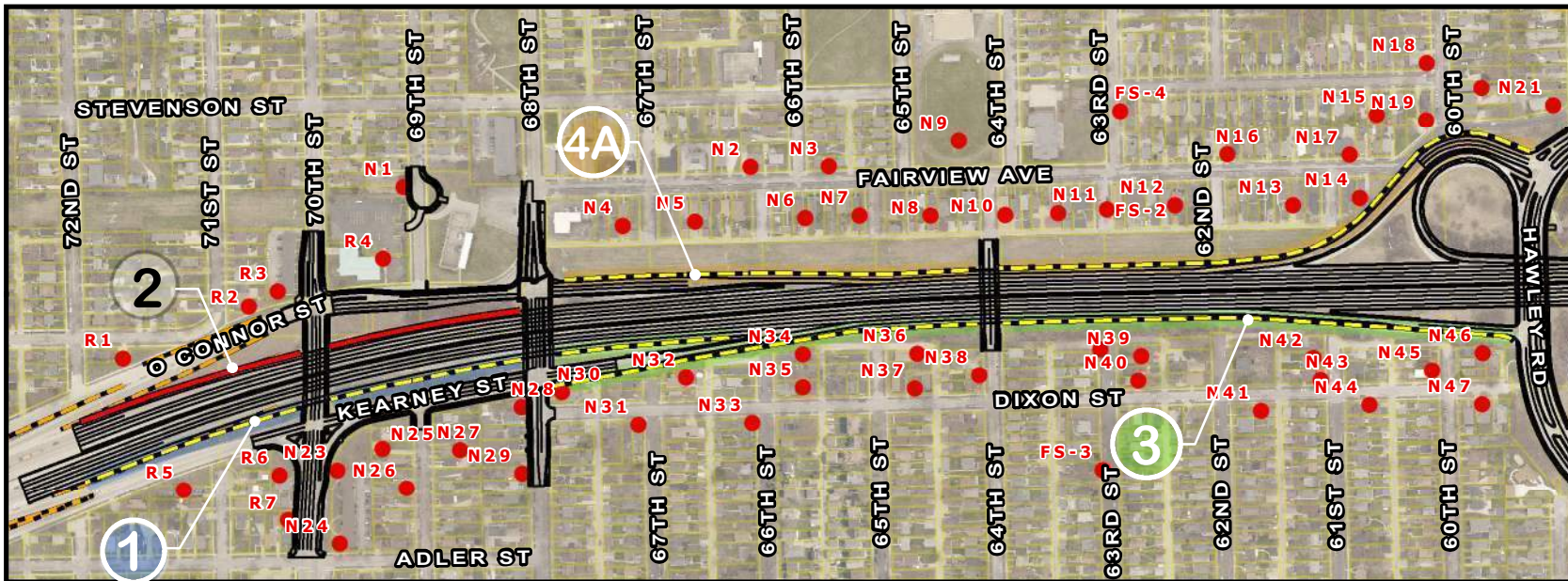
LEGEND

- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design
- 1 Noise Barrier Number

Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

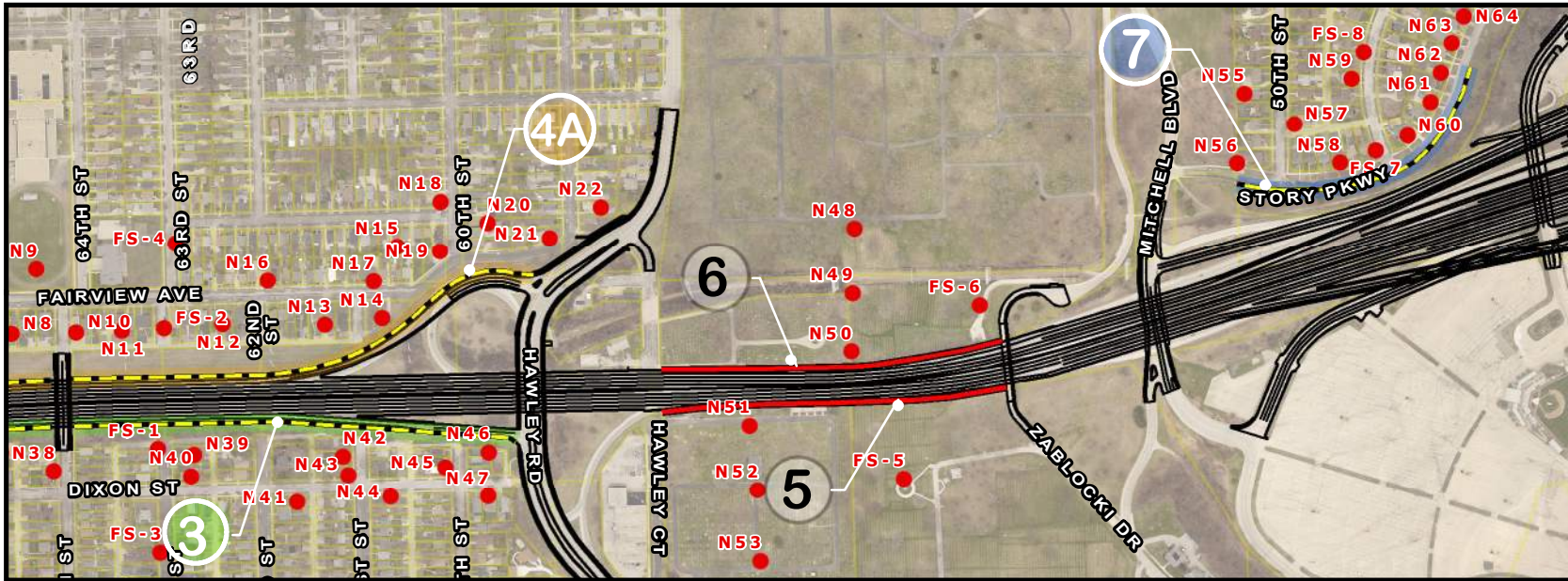
6 LANE (FULL HAWLEY)



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Exhibit 4-3

6 LANE



LEGEND

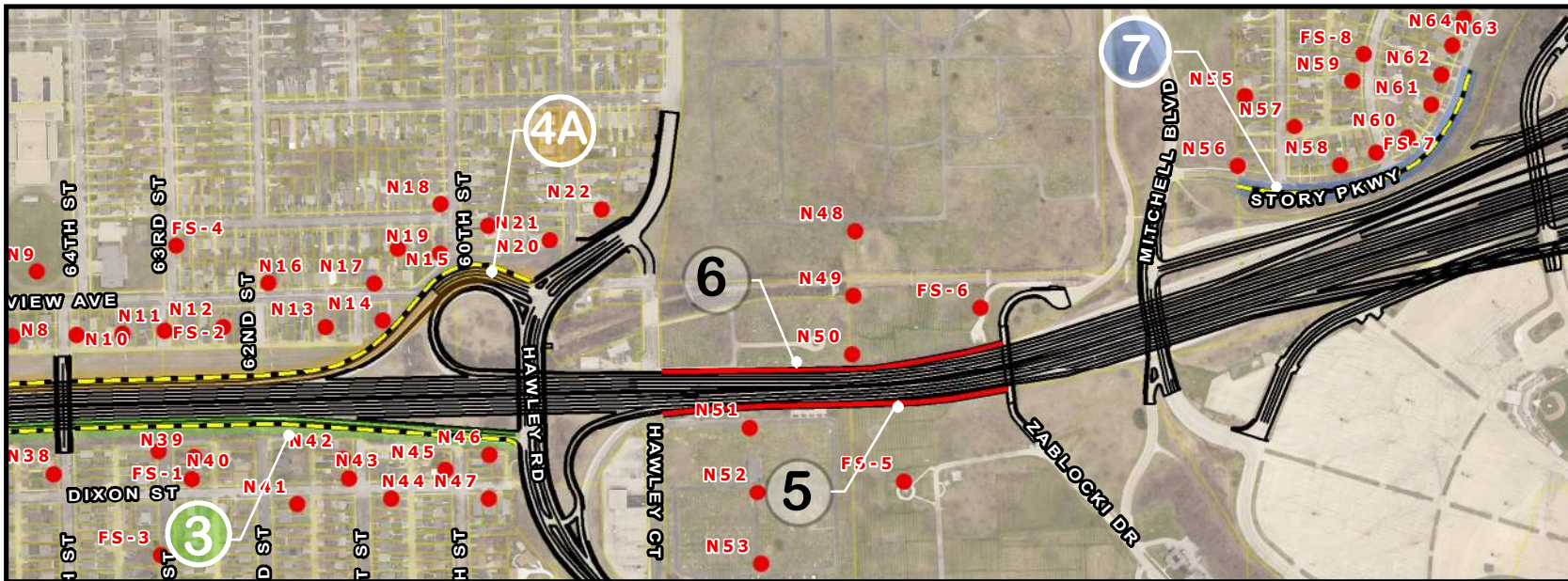
- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design

1 Noise Barrier Number

Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

6 LANE (FULL HAWLEY)

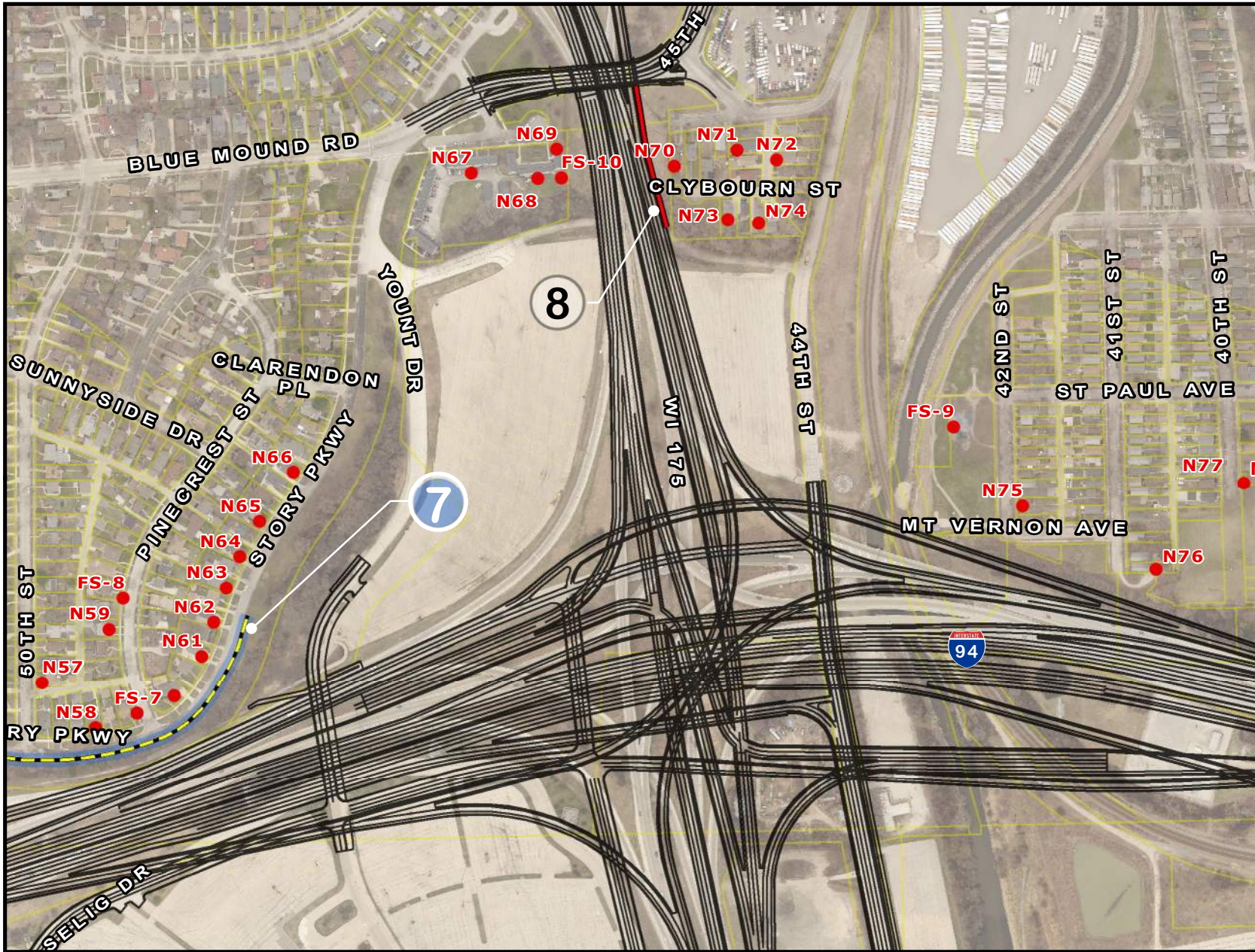


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Exhibit 4-3

Page 2

Proposed Noise Barriers Six-Lane Hybrid Interchange Alternatives



LEGEND

- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design

- 1 Noise Barrier Number
- Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

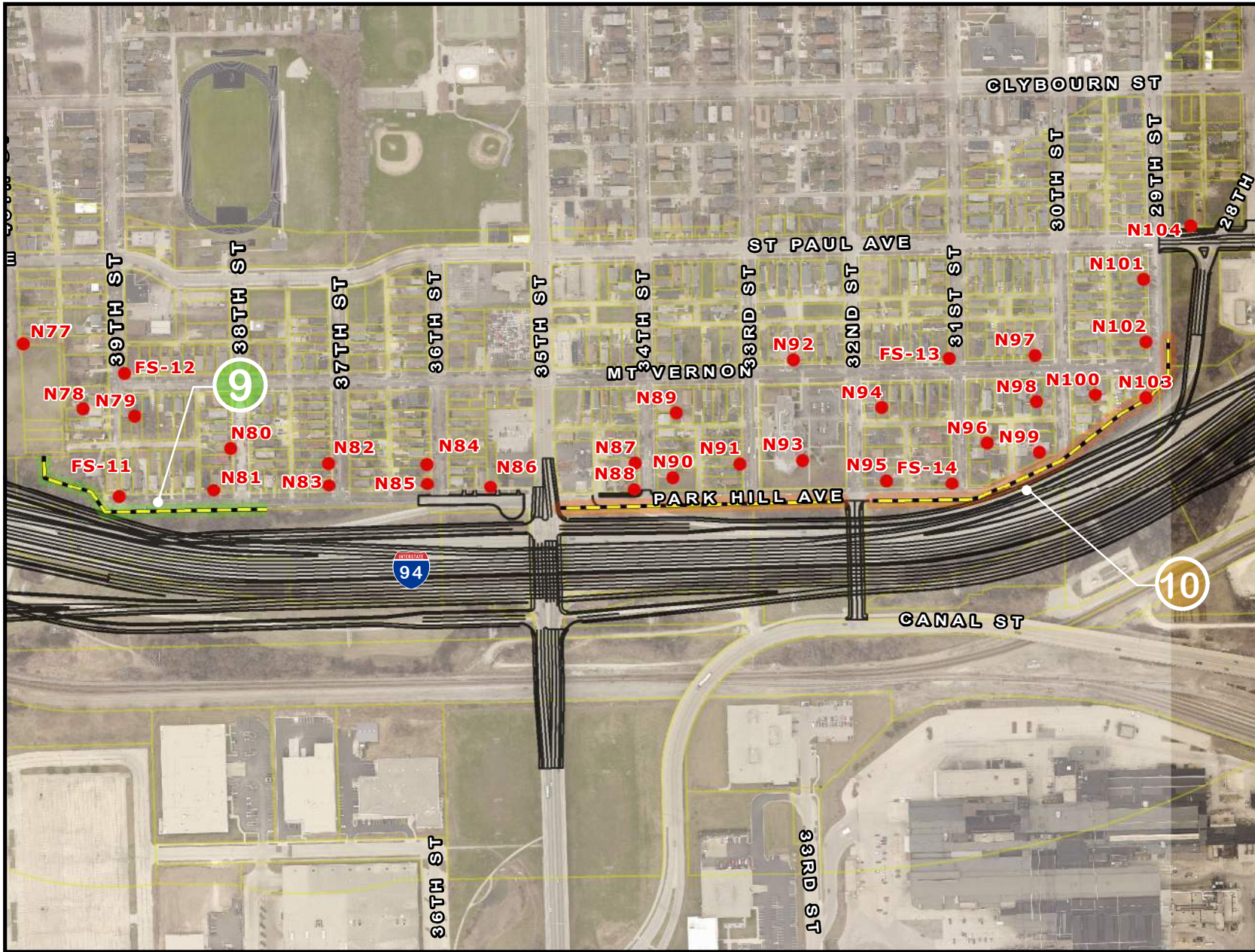


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Exhibit 4-3

Page 3

Proposed Noise Barriers Six-Lane Hybrid Interchange Alternatives



LEGEND

- N2 Noise Receptors
 - Existing Noise Barrier
 - Potential Noise Barrier
 - Barrier Did Not Meet Reasonableness Criteria
 - Proposed Design
 - 1 Noise Barrier Number
- Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

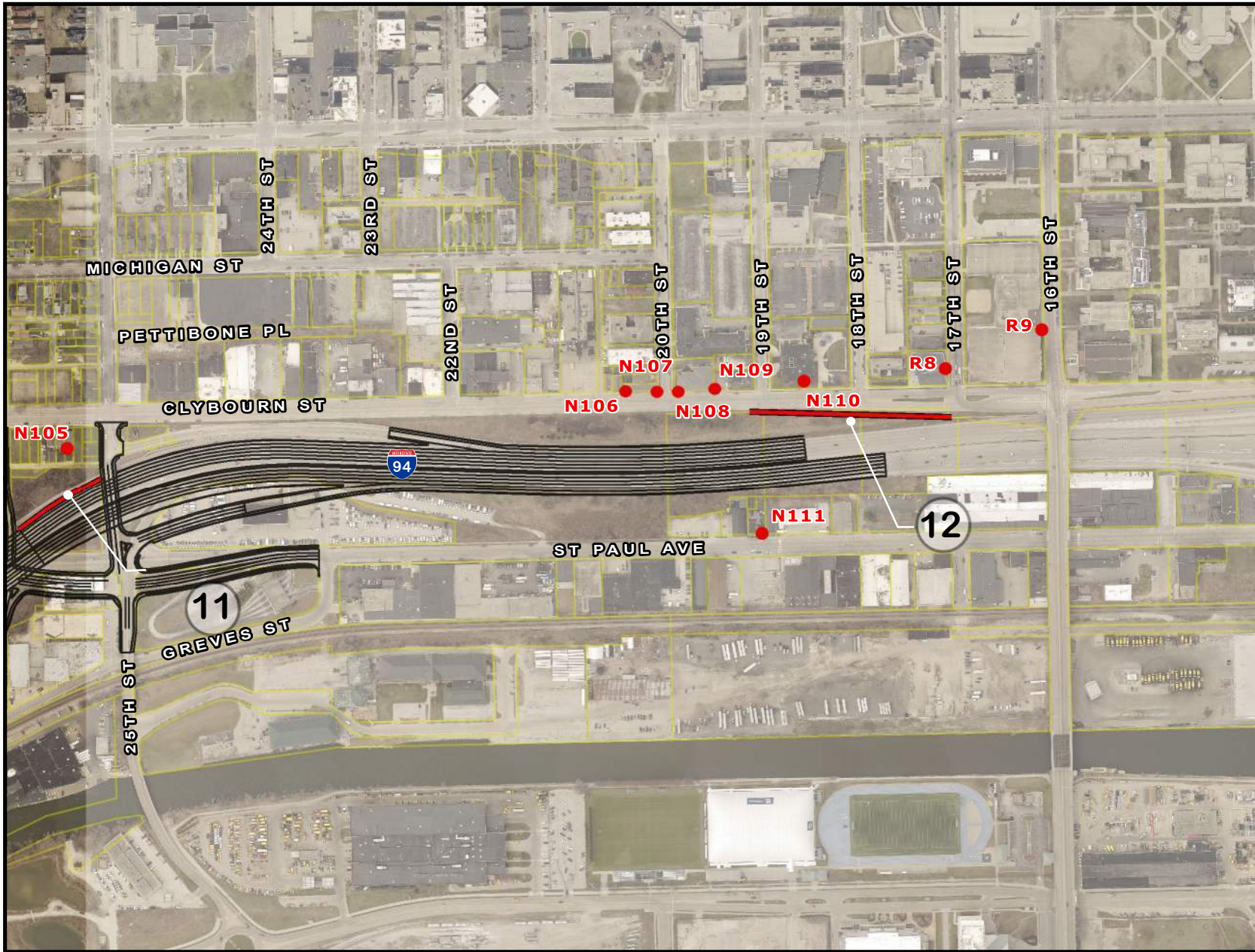


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Federal Highway Administration

Exhibit 4-3

Page 4

Proposed Noise Barriers Six-Lane Hybrid Interchange Alternatives



LEGEND

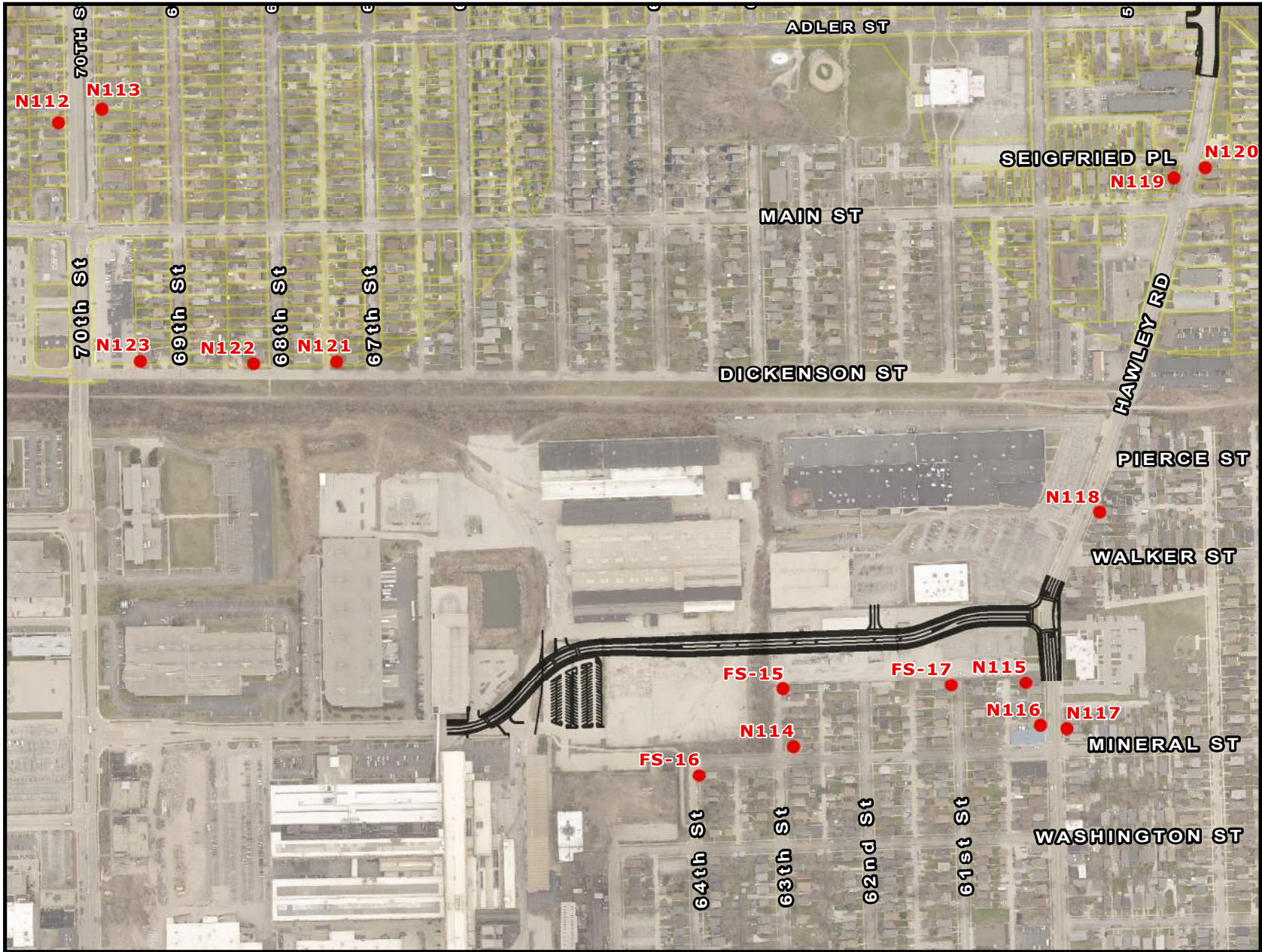
- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design

- 1 Noise Barrier Number
 Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate



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LEGEND

- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
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- 1 Noise Barrier Number
Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate



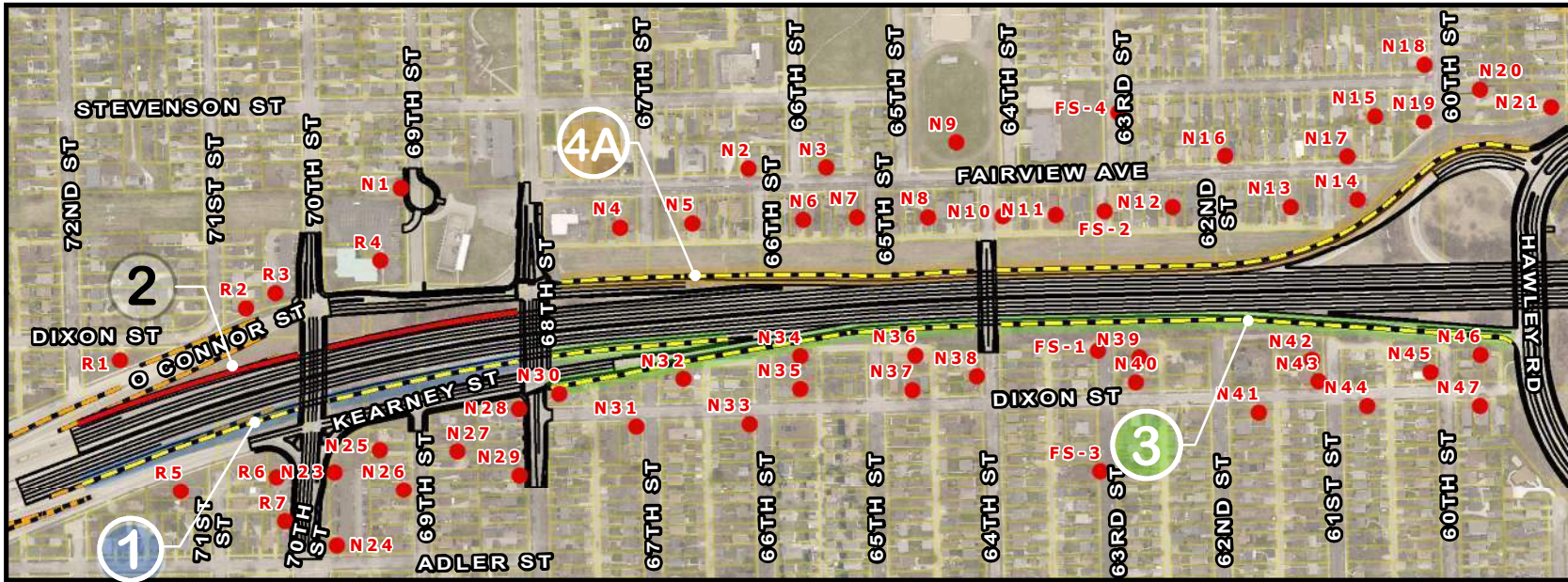
U.S. Department of Transportation
Federal Highway Administration

Exhibit 4-3

Page 6

Proposed Noise Barriers Six-Lane Hybrid Interchange Alternatives

6 LANE



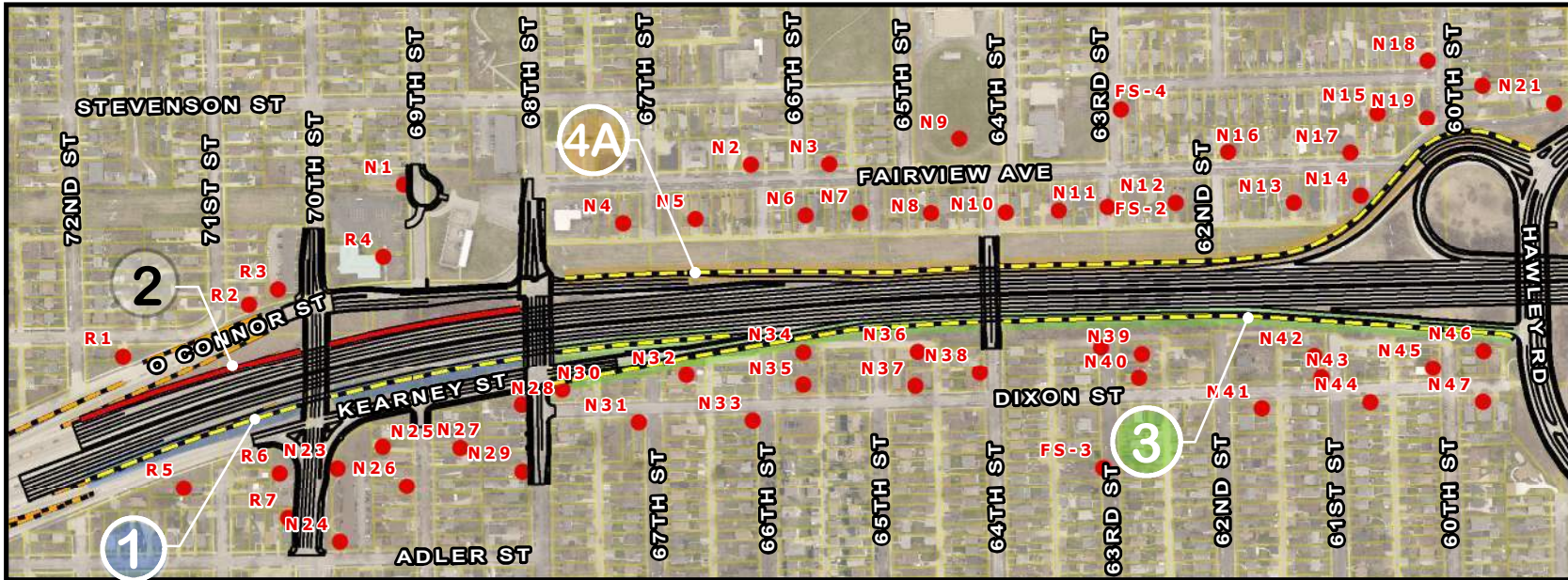
LEGEND

- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design
- 1 Noise Barrier Number

Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

6 LANE (FULL HAWLEY)



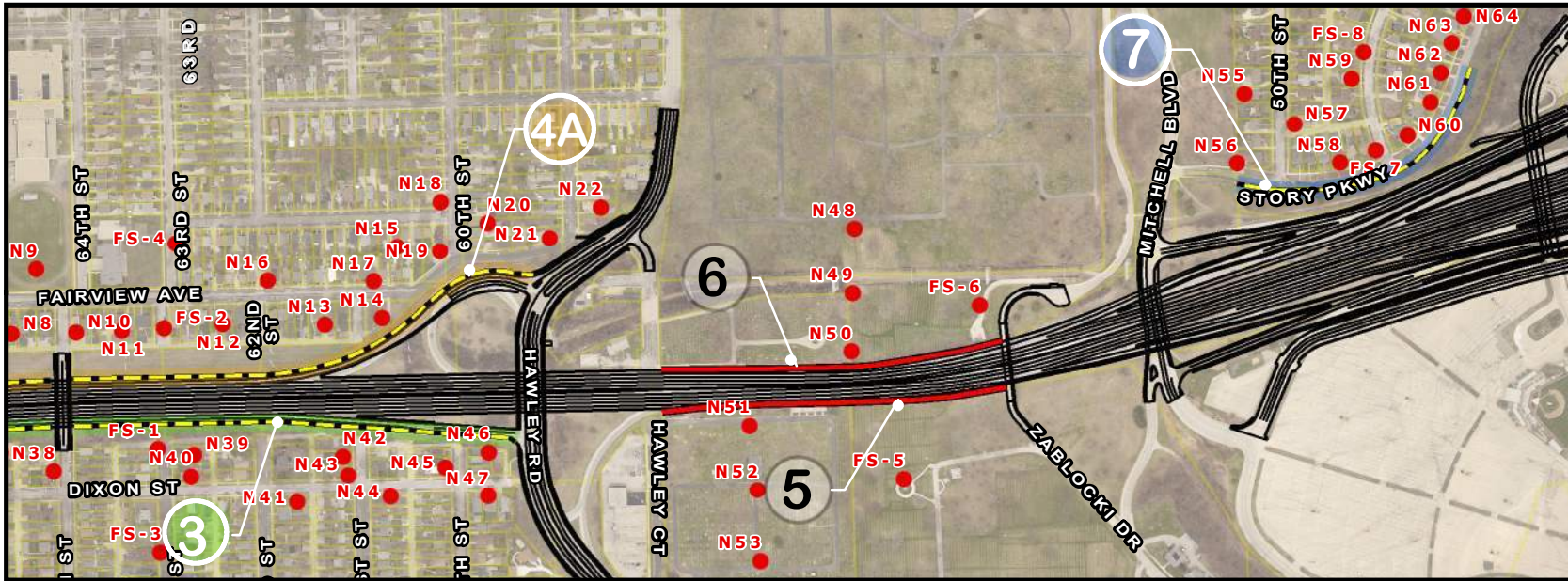
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Federal Highway Administration

Exhibit 4-4

Page 1

Proposed Noise Barriers Six-Lane DDI Alternatives

6 LANE



LEGEND

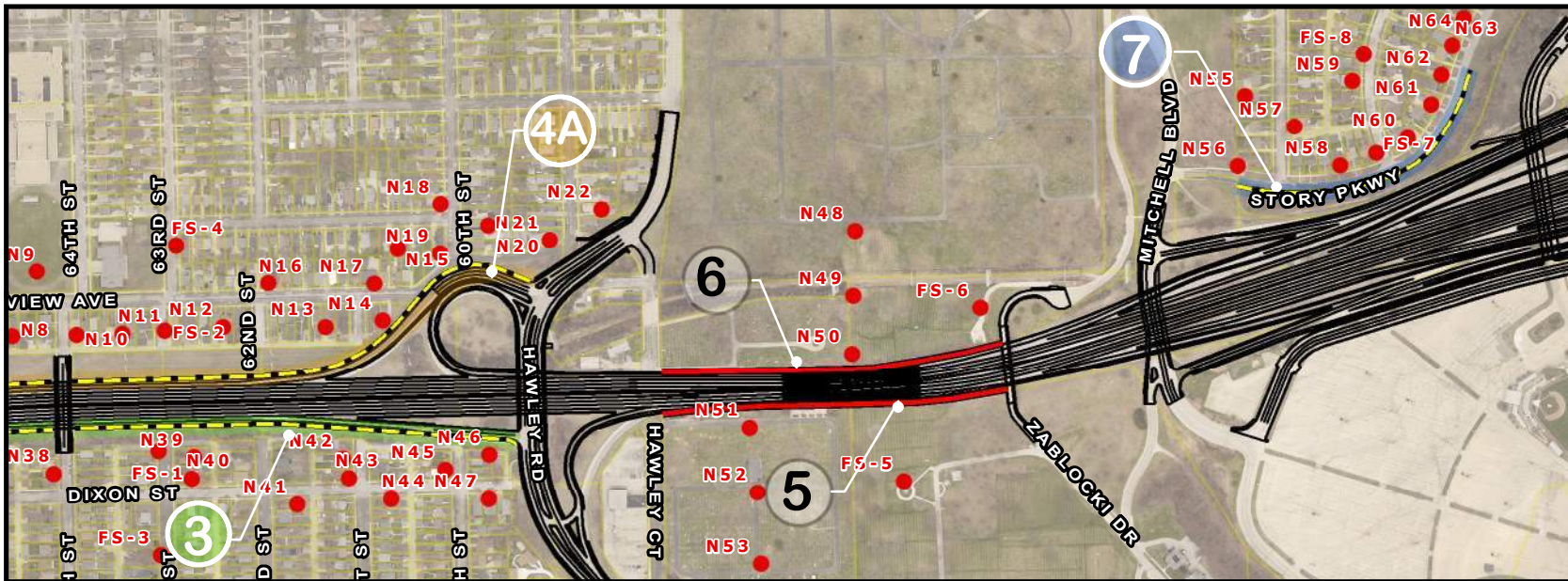
- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design

1 Noise Barrier Number

Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

6 LANE (FULL HAWLEY)

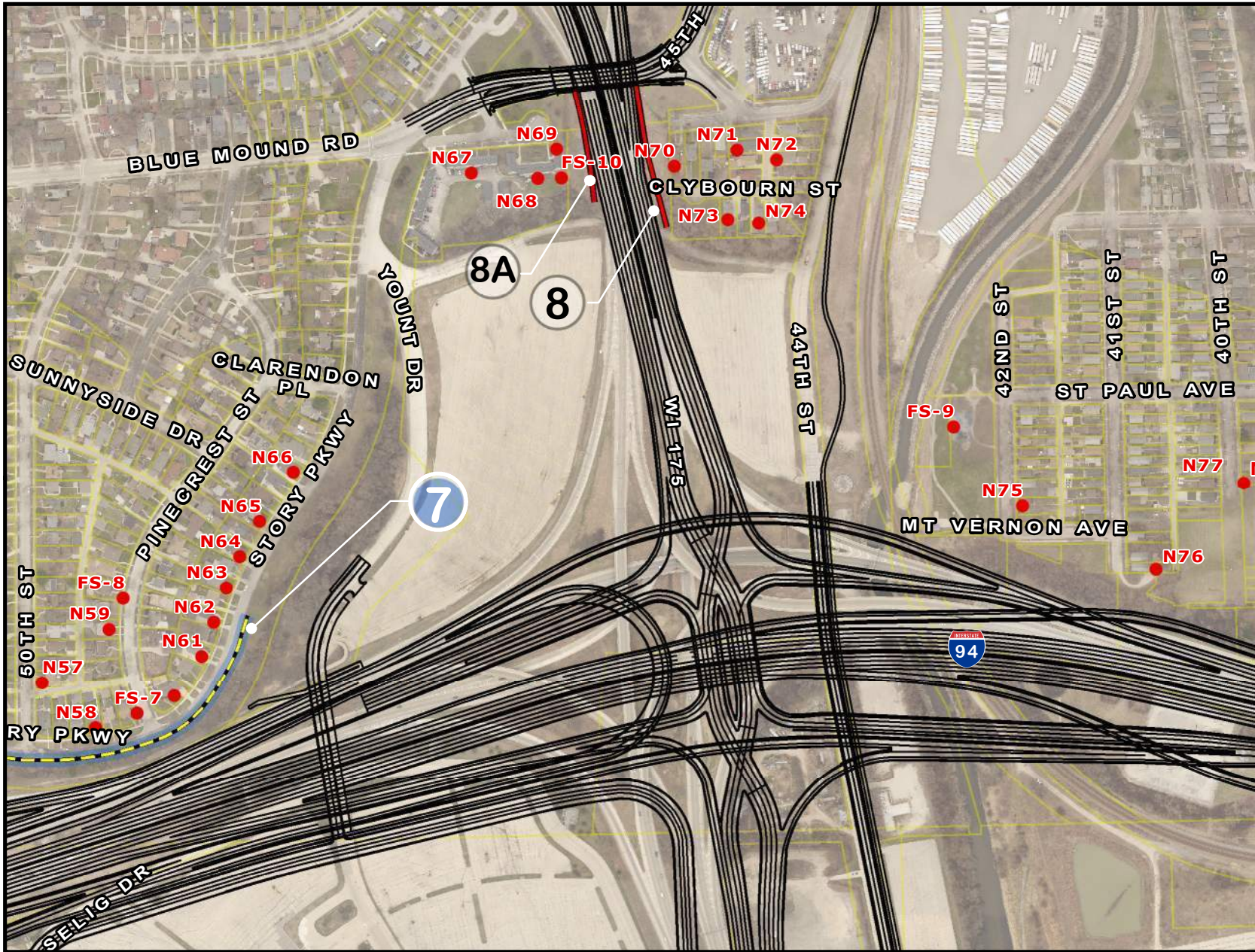


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Federal Highway Administration

Exhibit 4-4

Page 2

Proposed Noise Barriers Six-Lane DDI Alternatives



LEGEND

- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design

- 1 Noise Barrier Number
- Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

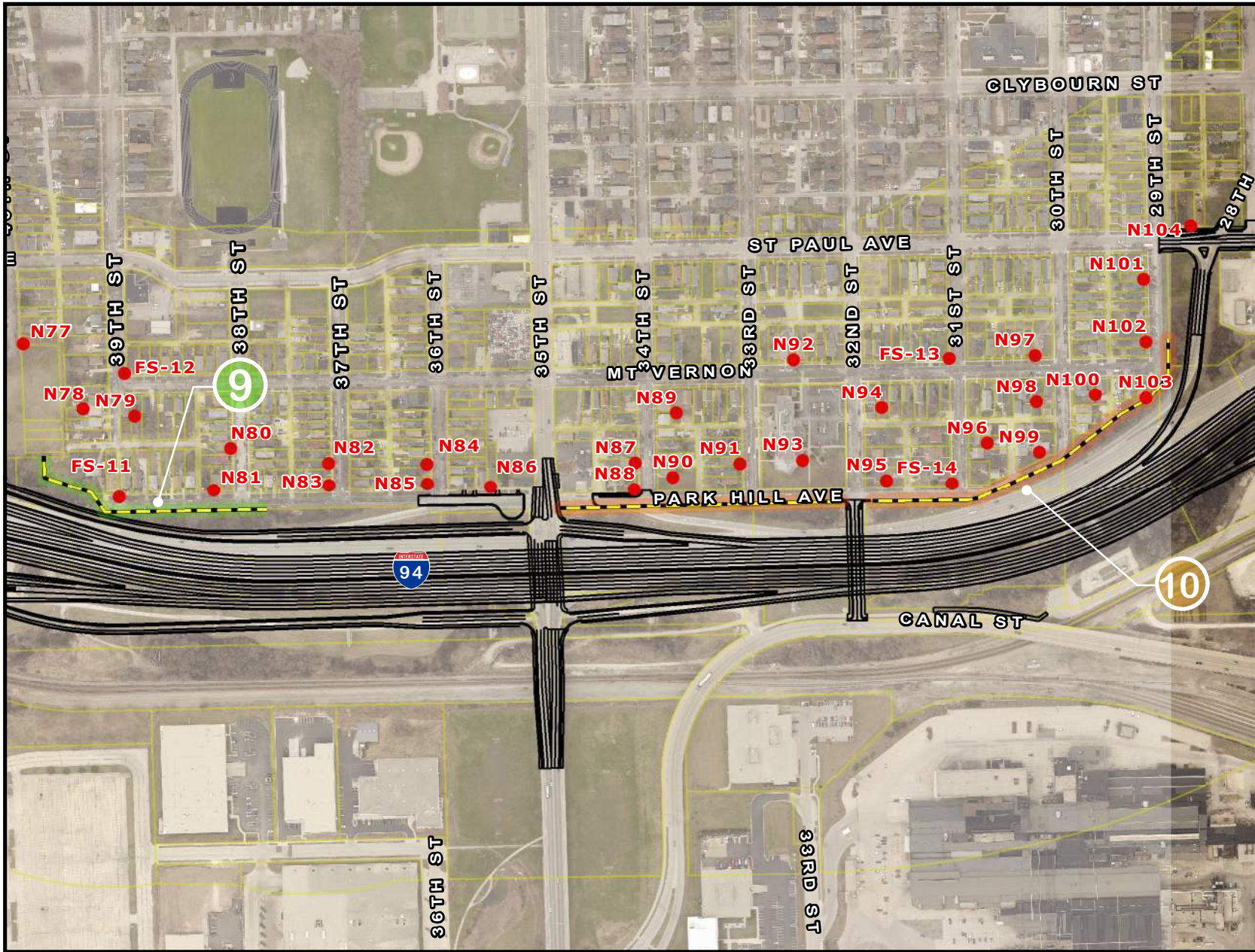


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Federal Highway Administration

Exhibit 4-4

Page 3

Proposed Noise Barriers Six-Lane DDI Alternatives



LEGEND

- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design
- 1 Noise Barrier Number
Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

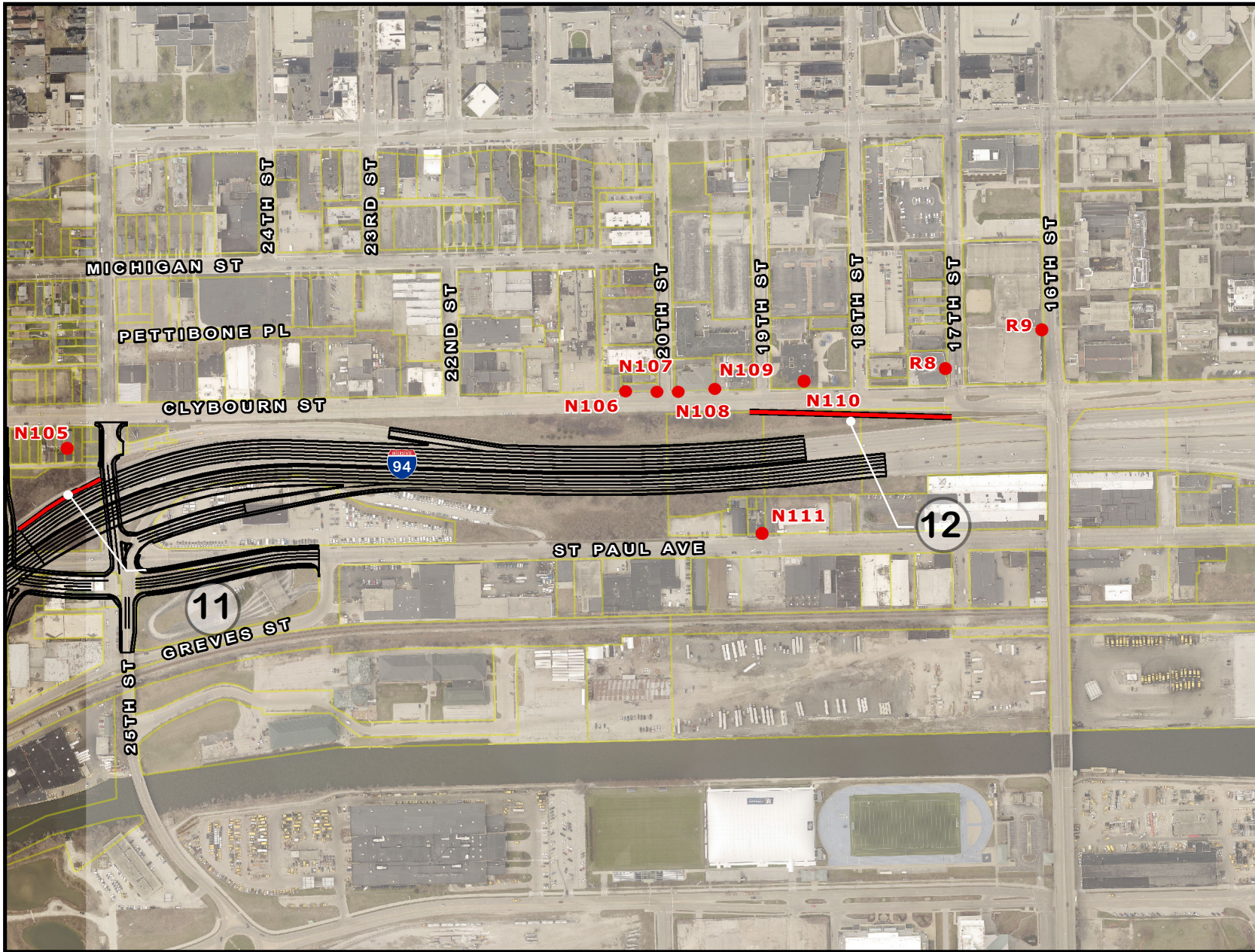


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Federal Highway Administration

Exhibit 4-4

Page 4

Proposed Noise Barriers Six-Lane DDI Alternatives



LEGEND

- N2 Noise Receptors
- Existing Noise Barrier
- Potential Noise Barrier
- Barrier Did Not Meet Reasonableness Criteria
- Proposed Design

1 Noise Barrier Number
 Note: Proposed Noise Barriers are color coded to match the Noise Barrier Number

*Barrier locations are approximate

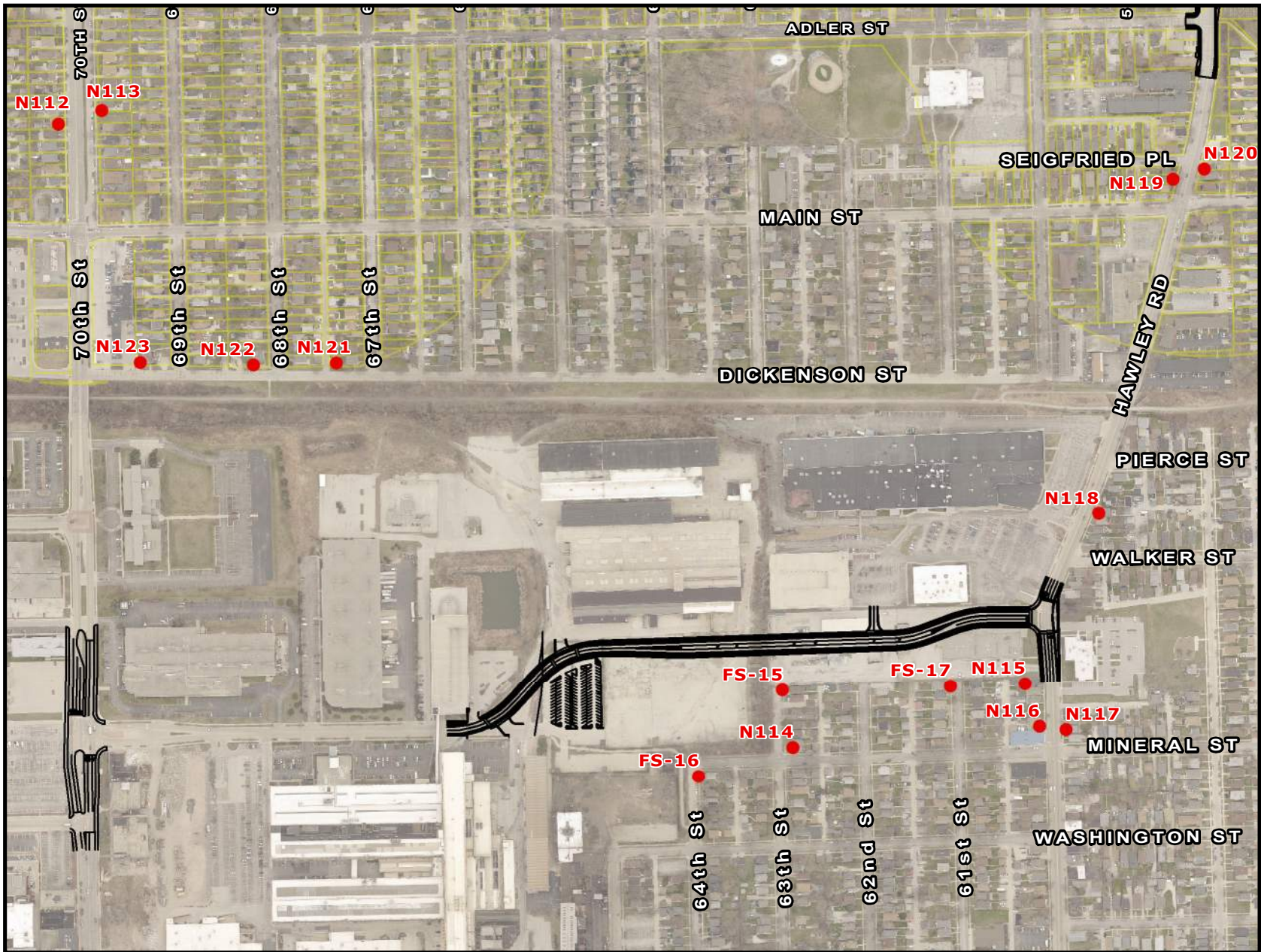


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Federal Highway Administration

Exhibit 4-4

Page 5

Proposed Noise Barriers Six-Lane DDI Alternatives



LEGEND

- N2 Noise Receptors
 - Existing Noise Barrier
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Exhibit 4-4

Page 6

Proposed Noise Barriers Six-Lane DDI Alternatives

Appendix B
Traffic Noise Impact Summary

APPENDIX B-1

Traffic Noise Impact Summary – Eight-lane Hybrid Interchange Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	67	66	1	0	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	65	63	2	-2	N
N2	400	Residence (7)	67	65	62	3	-2	N
N3	384	Residence (2)	67	65	63	2	-2	N
N4	262	Residence (4)	67	67	63	4	0	I
N5	257	Residence (6)	67	66	63	3	-1	I
N6	235	Residence (2)	67	66	62	4	-1	I
N7	227	Residence (6)	67	65	62	3	-2	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	66	64	2	-1	I
N10	190	Residence (4)	67	67	65	2	0	I
N11	190	Residence (3)	67	67	64	3	0	I
N12	212	Residence (6)	67	68	65	3	1	I
N13	206	Residence (7)	67	74	71	3	7	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	68	65	3	1	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	66	63	3	-1	I
N19	111	Residence (3)	67	69	67	2	2	I
N20	540	Residence (2)	67	68	66	2	1	I



APPENDIX B-1

Traffic Noise Impact Summary – Eight-lane Hybrid Interchange Alternative

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N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	67	67	0	0	I
N25	224	Residence (3)	67	69	68	1	2	I
N26	355	Residence (2)	67	68	67	1	1	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	70	70	0	3	I
N29	338	Residence (4)	67	68	67	1	1	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	72	73	-1	5	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	77	77	0	10	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	68	67	1	1	I
N38	169	Residence (6)	67	68	67	1	1	I
N39	133	Residence (1)	67	73	74	-1	6	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	67	68	-1	0	I
N43	225	Residence (2)	67	65	65	0	-2	N
N44	303	Residence (1)	67	64	63	1	-3	N
N45	208	Residence (5)	67	65	66	-1	-2	N
N46	160	Residence (1)	67	70	70	0	3	I
N47	309	Residence (4)	67	66	64	2	-1	I
N48	492	Cemetery	67	65	65	0	-2	N



APPENDIX B-1

Traffic Noise Impact Summary – Eight-lane Hybrid Interchange Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N49	276	Cemetery	67	70	69	1	3	I
N50	75	Cemetery	67	78	77	1	11	I
N51	97	Cemetery	67	69	68	1	2	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	64	64	0	-3	N
N54	671	Cemetery	67	62	62	0	-5	N
N55	518	Residence (4)	67	64	64	0	-3	N
N56	312	Residence (1)	67	68	68	0	1	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	69	69	0	2	I
N59	434	Residence (6)	67	64	63	1	-3	N
N60	182	Residence (2)	67	68	66	2	1	I
N61	249	Residence (2)	67	67	66	1	0	I
N62	299	Residence (2)	67	66	65	1	-1	I
N63	289	Residence (2)	67	64	64	0	-3	N
N64	295	Residence (3)	67	64	63	1	-3	N
N65	296	Residence (3)	67	63	62	1	-4	N
N66	329	Residence (4)	67	62	61	1	-5	N
N67	369	Residence (18)	67	62	62	0	-5	N
N68	182	Residence (1)	67	67	67	0	0	I
N69	118	Residence (2)	67	69	69	0	2	I
N70	87	Residence (1)	67	69	69	0	2	I
N71	270	Residence (6)	67	63	64	-1	-4	N
N72	380	Residence (6)	67	61	61	0	-6	N
N73	202	Residence (1)	67	65	66	-1	-2	N
N74	281	Residence (4)	67	63	64	-1	-4	N
N75	262	Residence (3)	67	62	63	-1	-5	N
N76	184	Residence (3)	67	58	62	-4	-9	N
N77	504	Residence (4)	67	56	56	0	-11	N



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Traffic Noise Impact Summary – Eight-lane Hybrid Interchange Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N78	352	Residence (5)	67	61	61	0	-6	N
N79	385	Residence (6)	67	57	57	0	-10	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	65	66	-1	-2	N
N84	243	Residence (8)	67	62	63	-1	-5	N
N85	181	Residence (1)	67	63	67	-4	-4	N
N86	164	Residence (3)	67	65	68	-3	-2	N
N87	236	Residence (3)	67	67	66	1	0	I
N88	152	Residence (1)	67	69	71	-2	2	I
N89	391	Residence (12)	67	64	63	1	-3	N
N90	186	Residence (2)	67	69	68	1	2	I
N91	232	Residence (5)	67	69	68	1	2	I
N92	555	Residence (10)	67	62	61	1	-5	N
N93	239	Merrill Park Apt. (6)	67	69	69	0	2	I
N94	382	Residence (5)	67	66	65	1	-1	I
N95	153	Residence (3)	67	68	68	0	1	I
N96	197	Residence (10)	67	70	70	0	3	I
N97	389	Residence (7)	67	63	62	1	-4	N
N98	255	Residence (3)	67	67	67	0	0	I
N99	111	Residence (3)	67	72	74	-2	5	I
N100	183	Residence (3)	67	66	65	1	-1	I
N101	186	Residence (14)	67	61	60	1	-6	N
N102	160	Residence (6)	67	65	65	0	-2	N
N103	112	Residence (5)	67	72	75	-3	5	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	72	73	-1	5	I



APPENDIX B-1

Traffic Noise Impact Summary – Eight-lane Hybrid Interchange Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	63	64	-1	-4	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	68	69	-1	1	I
FS-2	195	Residence (1)	67	67	64	3	0	I
FS-3	467	Residence (1)	67	63	61	2	-4	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	68	68	0	1	I
FS-6	150	Cemetery	67	71	72	-1	4	I
FS-7	184	Residence (1)	67	69	67	2	2	I
FS-8	495	Residence (1)	67	63	62	1	-4	N
FS-9	427	Park	67	61	60	1	-6	N
FS-10	117	Residence (2)	67	69	69	0	2	I
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	58	59	-1	-9	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	73	74	-1	6	I

APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	67	66	1	0	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	65	63	2	-2	N
N2	400	Residence (7)	67	65	62	3	-2	N
N3	384	Residence (2)	67	65	63	2	-2	N
N4	262	Residence (4)	67	67	63	4	0	I
N5	257	Residence (6)	67	66	63	3	-1	I
N6	235	Residence (2)	67	66	62	4	-1	I
N7	227	Residence (6)	67	65	62	3	-2	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	66	64	2	-1	I
N10	190	Residence (4)	67	67	65	2	0	I
N11	190	Residence (3)	67	67	64	3	0	I
N12	212	Residence (6)	67	68	65	3	1	I
N13	206	Residence (7)	67	74	71	3	7	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	68	65	3	1	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	66	63	3	-1	I
N19	111	Residence (3)	67	69	67	2	2	I



APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N20	540	Residence (2)	67	68	66	2	1	I
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	67	67	0	0	I
N25	224	Residence (3)	67	69	68	1	2	I
N26	355	Residence (2)	67	67	67	0	0	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	70	70	0	3	I
N29	338	Residence (4)	67	68	67	1	1	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	72	73	-1	5	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	77	77	0	10	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	68	67	1	1	I
N38	169	Residence (6)	67	68	67	1	1	I
N39	133	Residence (1)	67	73	74	-1	6	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	67	68	-1	0	I
N43	225	Residence (2)	67	65	65	0	-2	N
N44	303	Residence (1)	67	64	63	1	-3	N
N45	208	Residence (5)	67	65	66	-1	-2	N
N46	160	Residence (1)	67	70	70	0	3	I
N47	309	Residence (4)	67	66	64	2	-1	I
N48	492	Cemetery	67	66	65	1	-1	I



APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N49	276	Cemetery	67	70	69	1	3	I
N50	75	Cemetery	67	78	77	1	11	I
N51	97	Cemetery	67	69	68	1	2	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	64	64	0	-3	N
N54	671	Cemetery	67	63	62	1	-4	N
N55	518	Residence (4)	67	65	64	1	-2	N
N56	312	Residence (1)	67	68	68	0	1	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	70	69	1	3	I
N59	434	Residence (6)	67	65	63	2	-2	N
N60	182	Residence (2)	67	70	66	4	3	I
N61	249	Residence (2)	67	69	66	3	2	I
N62	299	Residence (2)	67	67	65	2	0	I
N63	289	Residence (2)	67	66	64	2	-1	I
N64	295	Residence (3)	67	65	63	2	-2	N
N65	296	Residence (3)	67	65	62	3	-2	N
N66	329	Residence (4)	67	64	61	3	-3	N
N67	369	Residence (18)	67	60	58	2	-7	N
N68	182	Residence (1)	67	63	62	1	-4	N
N69	118	Residence (2)	67	65	65	0	-2	N
N70	87	Residence (1)	67	70	69	1	3	I
N71	270	Residence (6)	67	60	59	1	-7	N
N72	380	Residence (6)	67	60	58	2	-7	N
N73	202	Residence (1)	67	65	64	1	-2	N
N74	281	Residence (4)	67	64	63	1	-3	N
N75	262	Residence (3)	67	64	63	1	-3	N
N76	184	Residence (3)	67	62	62	0	-5	N



APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N77	504	Residence (4)	67	59	56	3	-8	N
N78	352	Residence (5)	67	62	61	1	-5	N
N79	385	Residence (6)	67	57	57	0	-10	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	67	66	1	0	I
N84	243	Residence (8)	67	63	63	0	-4	N
N85	181	Residence (1)	67	66	67	-1	-1	I
N86	164	Residence (3)	67	67	68	-1	0	I
N87	236	Residence (3)	67	68	66	2	1	I
N88	152	Residence (1)	67	70	71	-1	3	I
N89	391	Residence (12)	67	65	63	2	-2	N
N90	186	Residence (2)	67	70	68	2	3	I
N91	232	Residence (5)	67	70	68	2	3	I
N92	555	Residence (10)	67	63	61	2	-4	N
N93	239	Merrill Park Apt. (6)	67	69	69	0	2	I
N94	382	Residence (5)	67	66	65	1	-1	I
N95	153	Residence (3)	67	68	68	0	1	I
N96	197	Residence (10)	67	70	70	0	3	I
N97	389	Residence (7)	67	63	62	1	-4	N
N98	255	Residence (3)	67	67	67	0	0	I
N99	111	Residence (3)	67	72	74	-2	5	I
N100	183	Residence (3)	67	66	65	1	-1	I
N101	186	Residence (14)	67	61	60	1	-6	N
N102	160	Residence (6)	67	64	65	-1	-3	N
N103	112	Residence (5)	67	72	75	-3	5	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	72	73	-1	5	I



APPENDIX B-2

Traffic Noise Impact Summary – Eight-lane DDI Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	63	64	-1	-4	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	68	69	-1	1	I
FS-2	195	Residence (1)	67	67	64	3	0	I
FS-3	467	Residence (1)	67	62	61	1	-5	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	69	68	1	2	I
FS-6	150	Cemetery	67	72	72	0	5	I
FS-7	184	Residence (1)	67	70	67	3	3	I
FS-8	495	Residence (1)	67	64	62	2	-3	N
FS-9	427	Park	67	62	60	2	-5	N
FS-10	117	Residence (2)	67	66	66	0	-1	I
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	59	59	0	-8	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	73	74	-1	6	I



APPENDIX B-3

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	66	66	0	-1	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	64	63	1	-3	N
N2	400	Residence (7)	67	64	62	2	-3	N
N3	384	Residence (2)	67	64	63	1	-3	N
N4	262	Residence (4)	67	66	63	3	-1	I
N5	257	Residence (6)	67	66	63	3	-1	I
N6	235	Residence (2)	67	65	62	3	-2	N
N7	227	Residence (6)	67	64	62	2	-3	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	65	64	1	-2	N
N10	190	Residence (4)	67	66	65	1	-1	I
N11	190	Residence (3)	67	66	64	2	-1	I
N12	212	Residence (6)	67	68	65	3	1	I
N13	206	Residence (7)	67	73	71	2	6	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	67	65	2	0	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	65	63	2	-2	N
N19	111	Residence (3)	67	69	67	2	2	I

APPENDIX B-3

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N20	540	Residence (2)	67	67	66	1	0	I
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	66	67	-1	-1	I
N25	224	Residence (3)	67	69	68	1	2	I
N26	355	Residence (2)	67	67	67	0	0	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	70	70	0	3	I
N29	338	Residence (4)	67	67	67	0	0	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	72	73	-1	5	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	77	77	0	10	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	67	67	0	0	I
N38	169	Residence (6)	67	68	67	1	1	I
N39	133	Residence (1)	67	73	74	-1	6	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	67	68	-1	0	I
N43	225	Residence (2)	67	64	65	-1	-3	N
N44	303	Residence (1)	67	63	63	0	-4	N
N45	208	Residence (5)	67	66	66	0	-1	I
N46	160	Residence (1)	67	70	70	0	3	I



APPENDIX B-3

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N47	309	Residence (4)	67	65	64	1	-2	N
N48	492	Cemetery	67	65	65	0	-2	N
N49	276	Cemetery	67	69	69	0	2	I
N50	75	Cemetery	67	77	77	0	10	I
N51	97	Cemetery	67	68	68	0	1	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	63	64	-1	-4	N
N54	671	Cemetery	67	62	62	0	-5	N
N55	518	Residence (4)	67	64	64	0	-3	N
N56	312	Residence (1)	67	67	68	-1	0	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	69	69	0	2	I
N59	434	Residence (6)	67	64	63	1	-3	N
N60	182	Residence (2)	67	68	66	2	1	I
N61	249	Residence (2)	67	67	66	1	0	I
N62	299	Residence (2)	67	65	65	0	-2	N
N63	289	Residence (2)	67	64	64	0	-3	N
N64	295	Residence (3)	67	63	63	0	-4	N
N65	296	Residence (3)	67	62	62	0	-5	N
N66	329	Residence (4)	67	62	61	1	-5	N
N67	369	Residence (18)	67	61	62	-1	-6	N
N68	182	Residence (1)	67	67	67	0	0	I
N69	118	Residence (2)	67	69	69	0	2	I
N70	87	Residence (1)	67	69	69	0	2	I
N71	270	Residence (6)	67	63	64	-1	-4	N
N72	380	Residence (6)	67	61	61	0	-6	N
N73	202	Residence (1)	67	65	66	-1	-2	N
N74	281	Residence (4)	67	63	64	-1	-4	N

APPENDIX B-3

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N75	262	Residence (3)	67	62	63	-1	-5	N
N76	184	Residence (3)	67	58	62	-4	-9	N
N77	504	Residence (4)	67	56	56	0	-11	N
N78	352	Residence (5)	67	60	61	-1	-7	N
N79	385	Residence (6)	67	57	57	0	-10	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	65	66	-1	-2	N
N84	243	Residence (8)	67	62	63	-1	-5	N
N85	181	Residence (1)	67	63	67	-4	-4	N
N86	164	Residence (3)	67	65	68	-3	-2	N
N87	236	Residence (3)	67	66	66	0	-1	I
N88	152	Residence (1)	67	69	71	-2	2	I
N89	391	Residence (12)	67	64	63	1	-3	N
N90	186	Residence (2)	67	69	68	1	2	I
N91	232	Residence (5)	67	69	68	1	2	I
N92	555	Residence (10)	67	62	61	1	-5	N
N93	239	Merrill Park Apt. (6)	67	68	69	-1	1	I
N94	382	Residence (5)	67	65	65	0	-2	N
N95	153	Residence (3)	67	67	68	-1	0	I
N96	197	Residence (10)	67	69	70	-1	2	I
N97	389	Residence (7)	67	63	62	1	-4	N
N98	255	Residence (3)	67	67	67	0	0	I
N99	111	Residence (3)	67	72	74	-2	5	I
N100	183	Residence (3)	67	65	65	0	-2	N
N101	186	Residence (14)	67	61	60	1	-6	N



APPENDIX B-3

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N102	160	Residence (6)	67	65	65	0	-2	N
N103	112	Residence (5)	67	72	75	-3	5	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	71	73	-2	4	I
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	62	64	-2	-5	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	69	69	0	2	I
FS-2	195	Residence (1)	67	66	64	2	-1	I
FS-3	467	Residence (1)	67	62	61	1	-5	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	68	68	0	1	I
FS-6	150	Cemetery	67	71	72	-1	4	I
FS-7	184	Residence (1)	67	68	67	1	1	I
FS-8	495	Residence (1)	67	62	62	0	-5	N
FS-9	427	Park	67	61	60	1	-6	N
FS-10	117	Residence (2)	67	69	69	0	2	I
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	58	59	-1	-9	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	72	74	-2	5	I

APPENDIX B-4

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	66	66	0	-1	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	64	63	1	-3	N
N2	400	Residence (7)	67	64	62	2	-3	N
N3	384	Residence (2)	67	64	63	1	-3	N
N4	262	Residence (4)	67	66	63	3	-1	I
N5	257	Residence (6)	67	65	63	2	-2	N
N6	235	Residence (2)	67	65	62	3	-2	N
N7	227	Residence (6)	67	64	62	2	-3	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	65	64	1	-2	N
N10	190	Residence (4)	67	66	65	1	-1	I
N11	190	Residence (3)	67	66	64	2	-1	I
N12	212	Residence (6)	67	68	65	3	1	I
N13	206	Residence (7)	67	73	71	2	6	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	67	65	2	0	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	65	63	2	-2	N



APPENDIX B-4

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N19	111	Residence (3)	67	69	67	2	2	I
N20	540	Residence (2)	67	67	66	1	0	I
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	66	67	-1	-1	I
N25	224	Residence (3)	67	68	68	0	1	I
N26	355	Residence (2)	67	67	67	0	0	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	69	70	-1	2	I
N29	338	Residence (4)	67	67	67	0	0	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	71	73	-2	4	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	76	77	-1	9	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	67	67	0	0	I
N38	169	Residence (6)	67	67	67	0	0	I
N39	133	Residence (1)	67	72	74	-2	5	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	67	68	-1	0	I
N43	225	Residence (2)	67	64	65	-1	-3	N
N44	303	Residence (1)	67	63	63	0	-4	N
N45	208	Residence (5)	67	66	66	0	-1	I
N46	160	Residence (1)	67	70	70	0	3	I

APPENDIX B-4

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N47	309	Residence (4)	67	65	64	1	-2	N
N48	492	Cemetery	67	65	65	0	-2	N
N49	276	Cemetery	67	70	69	1	3	I
N50	75	Cemetery	67	77	77	0	10	I
N51	97	Cemetery	67	68	68	0	1	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	63	64	-1	-4	N
N54	671	Cemetery	67	62	62	0	-5	N
N55	518	Residence (4)	67	64	64	0	-3	N
N56	312	Residence (1)	67	67	68	-1	0	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	69	69	0	2	I
N59	434	Residence (6)	67	64	63	1	-3	N
N60	182	Residence (2)	67	68	66	2	1	I
N61	249	Residence (2)	67	67	66	1	0	I
N62	299	Residence (2)	67	65	65	0	-2	N
N63	289	Residence (2)	67	64	64	0	-3	N
N64	295	Residence (3)	67	63	63	0	-4	N
N65	296	Residence (3)	67	62	62	0	-5	N
N66	329	Residence (4)	67	62	61	1	-5	N
N67	369	Residence (18)	67	58	58	0	-9	N
N68	182	Residence (1)	67	62	62	0	-5	N
N69	118	Residence (2)	67	64	65	-1	-3	N
N70	87	Residence (1)	67	68	69	-1	1	I
N71	270	Residence (6)	67	59	59	0	-8	N
N72	380	Residence (6)	67	58	58	0	-9	N
N73	202	Residence (1)	67	64	64	0	-3	N



APPENDIX B-4

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N74	281	Residence (4)	67	62	63	-1	-5	N
N75	262	Residence (3)	67	62	63	-1	-5	N
N76	184	Residence (3)	67	58	62	-4	-9	N
N77	504	Residence (4)	67	56	56	0	-11	N
N78	352	Residence (5)	67	60	61	-1	-7	N
N79	385	Residence (6)	67	57	57	0	-10	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	65	66	-1	-2	N
N84	243	Residence (8)	67	62	63	-1	-5	N
N85	181	Residence (1)	67	63	67	-4	-4	N
N86	164	Residence (3)	67	65	68	-3	-2	N
N87	236	Residence (3)	67	66	66	0	-1	I
N88	152	Residence (1)	67	69	71	-2	2	I
N89	391	Residence (12)	67	64	63	1	-3	N
N90	186	Residence (2)	67	69	68	1	2	I
N91	232	Residence (5)	67	69	68	1	2	I
N92	555	Residence (10)	67	62	61	1	-5	N
N93	239	Merrill Park Apt. (6)	67	68	69	-1	1	I
N94	382	Residence (5)	67	65	65	0	-2	N
N95	153	Residence (3)	67	67	68	-1	0	I
N96	197	Residence (10)	67	69	70	-1	2	I
N97	389	Residence (7)	67	63	62	1	-4	N
N98	255	Residence (3)	67	67	67	0	0	I
N99	111	Residence (3)	67	72	74	-2	5	I
N100	183	Residence (3)	67	65	65	0	-2	N
N101	186	Residence (14)	67	61	60	1	-6	N

APPENDIX B-4

Traffic Noise Impact Summary—Six-lane Hybrid Interchange with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N102	160	Residence (6)	67	65	65	0	-2	N
N103	112	Residence (5)	67	72	75	-3	5	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	71	73	-2	4	I
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	63	64	-1	-4	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	69	69	0	2	I
FS-2	195	Residence (1)	67	66	64	2	-1	I
FS-3	467	Residence (1)	67	62	61	1	-5	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	68	68	0	1	I
FS-6	150	Cemetery	67	71	72	-1	4	I
FS-7	184	Residence (1)	67	68	67	1	1	I
FS-8	495	Residence (1)	67	62	62	0	-5	N
FS-9	427	Park	67	61	60	1	-6	N
FS-10	117	Residence (2)	67	65	66	-1	-2	N
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	58	59	-1	-9	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	72	74	-2	5	I



APPENDIX B-5

Traffic Noise Impact Summary—Six-lane DDI with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	66	66	0	-1	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	64	63	1	-3	N
N2	400	Residence (7)	67	64	62	2	-3	N
N3	384	Residence (2)	67	64	63	1	-3	N
N4	262	Residence (4)	67	66	63	3	-1	I
N5	257	Residence (6)	67	65	63	2	-2	N
N6	235	Residence (2)	67	65	62	3	-2	N
N7	227	Residence (6)	67	64	62	2	-3	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	65	64	1	-2	N
N10	190	Residence (4)	67	66	65	1	-1	I
N11	190	Residence (3)	67	66	64	2	-1	I
N12	212	Residence (6)	67	68	65	3	1	I
N13	206	Residence (7)	67	73	71	2	6	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	67	65	2	0	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	65	63	2	-2	N
N19	111	Residence (3)	67	68	67	1	1	I



APPENDIX B-5

Traffic Noise Impact Summary—Six-lane DDI with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N20	540	Residence (2)	67	67	66	1	0	I
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	66	67	-1	-1	I
N25	224	Residence (3)	67	69	68	1	2	I
N26	355	Residence (2)	67	67	67	0	0	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	70	70	0	3	I
N29	338	Residence (4)	67	67	67	0	0	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	72	73	-1	5	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	77	77	0	10	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	67	67	0	0	I
N38	169	Residence (6)	67	68	67	1	1	I
N39	133	Residence (1)	67	73	74	-1	6	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	67	68	-1	0	I
N43	225	Residence (2)	67	64	65	-1	-3	N
N44	303	Residence (1)	67	63	63	0	-4	N
N45	208	Residence (5)	67	66	66	0	-1	I
N46	160	Residence (1)	67	70	70	0	3	I



APPENDIX B-5

Traffic Noise Impact Summary—Six-lane DDI with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N47	309	Residence (4)	67	65	64	1	-2	N
N48	492	Cemetery	67	65	65	0	-2	N
N49	276	Cemetery	67	70	69	1	3	I
N50	75	Cemetery	67	77	77	0	10	I
N51	97	Cemetery	67	68	68	0	1	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	63	64	-1	-4	N
N54	671	Cemetery	67	62	62	0	-5	N
N55	518	Residence (4)	67	64	64	0	-3	N
N56	312	Residence (1)	67	67	68	-1	0	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	70	69	1	3	I
N59	434	Residence (6)	67	65	63	2	-2	N
N60	182	Residence (2)	67	69	66	3	2	I
N61	249	Residence (2)	67	68	66	2	1	I
N62	299	Residence (2)	67	67	65	2	0	I
N63	289	Residence (2)	67	66	64	2	-1	I
N64	295	Residence (3)	67	65	63	2	-2	N
N65	296	Residence (3)	67	64	62	2	-3	N
N66	329	Residence (4)	67	63	61	2	-4	N
N67	369	Residence (18)	67	59	58	1	-8	N
N68	182	Residence (1)	67	62	62	0	-5	N
N69	118	Residence (2)	67	65	65	0	-2	N
N70	87	Residence (1)	67	70	69	1	3	I
N71	270	Residence (6)	67	60	59	1	-7	N
N72	380	Residence (6)	67	60	58	2	-7	N
N73	202	Residence (1)	67	65	64	1	-2	N
N74	281	Residence (4)	67	64	63	1	-3	N

APPENDIX B-5

Traffic Noise Impact Summary—Six-lane DDI with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N75	262	Residence (3)	67	64	63	1	-3	N
N76	184	Residence (3)	67	63	62	1	-4	N
N77	504	Residence (4)	67	58	56	2	-9	N
N78	352	Residence (5)	67	62	61	1	-5	N
N79	385	Residence (6)	67	56	57	-1	-11	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	67	66	1	0	I
N84	243	Residence (8)	67	63	63	0	-4	N
N85	181	Residence (1)	67	66	67	-1	-1	I
N86	164	Residence (3)	67	67	68	-1	0	I
N87	236	Residence (3)	67	67	66	1	0	I
N88	152	Residence (1)	67	70	71	-1	3	I
N89	391	Residence (12)	67	64	63	1	-3	N
N90	186	Residence (2)	67	70	68	2	3	I
N91	232	Residence (5)	67	69	68	1	2	I
N92	555	Residence (10)	67	62	61	1	-5	N
N93	239	Merrill Park Apt. (6)	67	69	69	0	2	I
N94	382	Residence (5)	67	66	65	1	-1	I
N95	153	Residence (3)	67	67	68	-1	0	I
N96	197	Residence (10)	67	69	70	-1	2	I
N97	389	Residence (7)	67	62	62	0	-5	N
N98	255	Residence (3)	67	66	67	-1	-1	I
N99	111	Residence (3)	67	71	74	-3	4	I
N100	183	Residence (3)	67	64	65	-1	-3	N
N101	186	Residence (14)	67	61	60	1	-6	N



APPENDIX B-5

Traffic Noise Impact Summary—Six-lane DDI with Half-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N102	160	Residence (6)	67	64	65	-1	-3	N
N103	112	Residence (5)	67	71	75	-4	4	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	71	73	-2	4	I
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	62	64	-2	-5	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	69	69	0	2	I
FS-2	195	Residence (1)	67	66	64	2	-1	I
FS-3	467	Residence (1)	67	62	61	1	-5	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	68	68	0	1	I
FS-6	150	Cemetery	67	71	72	-1	4	I
FS-7	184	Residence (1)	67	69	67	2	2	I
FS-8	495	Residence (1)	67	64	62	2	-3	N
FS-9	427	Park	67	62	60	2	-5	N
FS-10	117	Residence (2)	67	66	66	0	-1	I
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	58	59	-1	-9	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	72	74	-2	5	I

APPENDIX B-6

Traffic Noise Impact Summary—Six-lane DDI with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
R1	157	Single Family	67	61	61	0	-6	N
R2	177	Single Family	67	65	65	0	-2	N
R3	182	Multi Family (3)	67	67	67	0	0	I
R4	128	Single Family	67	65	64	1	-2	N
R5	143	Single Family	67	65	65	0	-2	N
R6	210	Multi Family (2)	67	67	66	1	0	I
R7	340	Single Family	67	66	66	0	-1	I
R8	210	Educational Facility	52	46	46	0	-6	N
R9	301	Recreation Facility	52	43	42	1	-9	N
N1	436	Residence (4)	67	64	63	1	-3	N
N2	400	Residence (7)	67	64	62	2	-3	N
N3	384	Residence (2)	67	64	63	1	-3	N
N4	262	Residence (4)	67	66	63	3	-1	I
N5	257	Residence (6)	67	65	63	2	-2	N
N6	235	Residence (2)	67	65	62	3	-2	N
N7	227	Residence (6)	67	64	62	2	-3	N
N8	212	Active Sports Area	67	64	62	2	-3	N
N9	420	Residence (6)	67	65	64	1	-2	N
N10	190	Residence (4)	67	66	65	1	-1	I
N11	190	Residence (3)	67	66	64	2	-1	I
N12	212	Residence (6)	67	67	65	2	0	I
N13	206	Residence (7)	67	73	71	2	6	I
N14	227	Residence (1)	67	73	72	1	6	I
N15	207	Residence (10)	67	67	65	2	0	I
N16	359	Residence (15)	67	65	62	3	-2	N
N17	188	Residence (5)	67	70	67	3	3	I
N18	267	Residence (2)	67	65	63	2	-2	N
N19	111	Residence (3)	67	69	67	2	2	I

APPENDIX B-6

Traffic Noise Impact Summary—Six-lane DDI with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N20	540	Residence (2)	67	67	66	1	0	I
N21	485	Residence (2)	67	69	68	1	2	I
N22	583	Residence (3)	67	67	65	2	0	I
N23	254	Residence (4)	67	69	68	1	2	I
N24	463	Residence (4)	67	66	67	-1	-1	I
N25	224	Residence (3)	67	68	68	0	1	I
N26	355	Residence (2)	67	67	67	0	0	I
N27	254	Residence (2)	67	68	68	0	1	I
N28	151	Residence (3)	67	69	70	-1	2	I
N29	338	Residence (4)	67	67	67	0	0	I
N30	116	Residence (1)	67	71	72	-1	4	I
N31	227	Residence (9)	67	68	69	-1	1	I
N32	106	Residence (3)	67	71	73	-2	4	I
N33	250	Residence (1)	67	67	69	-2	0	I
N34	68	Residence (1)	67	76	77	-1	9	I
N35	163	Residence (2)	67	73	73	0	6	I
N36	94	Residence (5)	67	69	70	-1	2	I
N37	190	Residence (3)	67	67	67	0	0	I
N38	169	Residence (6)	67	67	67	0	0	I
N39	133	Residence (1)	67	72	74	-2	5	I
N40	207	Residence (5)	67	69	70	-1	2	I
N41	309	Residence (4)	67	64	64	0	-3	N
N42	159	Residence (3)	67	66	68	-2	-1	I
N43	225	Residence (2)	67	64	65	-1	-3	N
N44	303	Residence (1)	67	63	63	0	-4	N
N45	208	Residence (5)	67	66	66	0	-1	I
N46	160	Residence (1)	67	70	70	0	3	I
N47	309	Residence (4)	67	65	64	1	-2	N

APPENDIX B-6

Traffic Noise Impact Summary—Six-lane DDI with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N48	492	Cemetery	67	65	65	0	-2	N
N49	276	Cemetery	67	70	69	1	3	I
N50	75	Cemetery	67	77	77	0	10	I
N51	97	Cemetery	67	68	68	0	1	I
N52	309	Cemetery	67	65	64	1	-2	N
N53	547	Cemetery	67	63	64	-1	-4	N
N54	671	Cemetery	67	62	62	0	-5	N
N55	518	Residence (4)	67	64	64	0	-3	N
N56	312	Residence (1)	67	67	68	-1	0	I
N57	369	Residence (7)	67	66	66	0	-1	I
N58	193	Residence (5)	67	70	69	1	3	I
N59	434	Residence (6)	67	65	63	2	-2	N
N60	182	Residence (2)	67	69	66	3	2	I
N61	249	Residence (2)	67	68	66	2	1	I
N62	299	Residence (2)	67	67	65	2	0	I
N63	289	Residence (2)	67	66	64	2	-1	I
N64	295	Residence (3)	67	65	63	2	-2	N
N65	296	Residence (3)	67	64	62	2	-3	N
N66	329	Residence (4)	67	64	61	3	-3	N
N67	369	Residence (18)	67	59	58	1	-8	N
N68	182	Residence (1)	67	62	62	0	-5	N
N69	118	Residence (2)	67	65	65	0	-2	N
N70	87	Residence (1)	67	70	69	1	3	I
N71	270	Residence (6)	67	60	59	1	-7	N
N72	380	Residence (6)	67	60	58	2	-7	N
N73	202	Residence (1)	67	65	64	1	-2	N
N74	281	Residence (4)	67	64	63	1	-3	N



APPENDIX B-6

Traffic Noise Impact Summary—Six-lane DDI with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N75	262	Residence (3)	67	64	63	1	-3	N
N76	184	Residence (3)	67	63	62	1	-4	N
N77	504	Residence (4)	67	58	56	2	-9	N
N78	352	Residence (5)	67	62	61	1	-5	N
N79	385	Residence (6)	67	56	57	-1	-11	N
N80	301	Residence (6)	67	61	59	2	-6	N
N81	168	Residence (8)	67	69	66	3	2	I
N82	250	Residence (5)	67	61	60	1	-6	N
N83	181	Residence (3)	67	67	66	1	0	I
N84	243	Residence (8)	67	63	63	0	-4	N
N85	181	Residence (1)	67	66	67	-1	-1	I
N86	164	Residence (3)	67	67	68	-1	0	I
N87	236	Residence (3)	67	67	66	1	0	I
N88	152	Residence (1)	67	70	71	-1	3	I
N89	391	Residence (12)	67	64	63	1	-3	N
N90	186	Residence (2)	67	70	68	2	3	I
N91	232	Residence (5)	67	69	68	1	2	I
N92	555	Residence (10)	67	63	61	2	-4	N
N93	239	Merrill Park Apt. (6)	67	69	69	0	2	I
N94	382	Residence (5)	67	66	65	1	-1	I
N95	153	Residence (3)	67	67	68	-1	0	I
N96	197	Residence (10)	67	69	70	-1	2	I
N97	389	Residence (7)	67	62	62	0	-5	N
N98	255	Residence (3)	67	66	67	-1	-1	I
N99	111	Residence (3)	67	72	74	-2	5	I
N100	183	Residence (3)	67	64	65	-1	-3	N
N101	186	Residence (14)	67	61	60	1	-6	N
N102	160	Residence (6)	67	64	65	-1	-3	N



APPENDIX B-6

Traffic Noise Impact Summary—Six-lane DDI with Full-Hawley Alternative

A. Receptor Location	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N103	112	Residence (5)	67	71	75	-4	4	I
N104	105	Residence (5)	67	64	62	2	-3	N
N105	172	Residence (3)	67	71	73	-2	4	I
N106	210	Residence (2)	67	63	65	-2	-4	N
N107	209	Residence (2)	67	62	64	-2	-5	N
N108	209	Residence (8)	67	62	64	-2	-5	N
N109	213	Residence (12)	67	64	65	-1	-3	N
N110	213	Day Care Center (1)	67	69	69	0	2	I
N111	187	Restaurant (1)	72	62	62	0	-10	N
FS-1	113	Residence (1)	67	69	69	0	2	I
FS-2	195	Residence (1)	67	66	64	2	-1	I
FS-3	467	Residence (1)	67	62	61	1	-5	N
FS-4	475	Residence (9)	67	63	61	2	-4	N
FS-5	289	Cemetery	67	69	68	1	2	I
FS-6	150	Cemetery	67	71	72	-1	4	I
FS-7	184	Residence (1)	67	69	67	2	2	I
FS-8	495	Residence (1)	67	64	62	2	-3	N
FS-9	427	Park	67	62	60	2	-5	N
FS-10	117	Residence (2)	67	66	66	0	-1	I
FS-11	126	Residence (4)	67	73	74	-1	6	I
FS-12	517	Residence (9)	67	58	59	-1	-9	N
FS-13	487	Residence (5)	67	63	62	1	-4	N
FS-14	110	Residence (1)	67	72	74	-2	5	I

APPENDIX B-7

Traffic Noise Impact Summary – Washington Street Extension

A. Receptor Location (see Exhibit 4-1)	B. Distance from centerline of near lane to receptor in feet	C. Number of families or people typical of this receptor site	D. Noise Level Criteria (NLC) (dBA)	E. 2050 Future Sound Level (dBA)	F. 2021 Existing sound level (dBA)	G. Difference in Future and Existing Sound Levels (dBA) (E minus F)	H. Difference in Future Sound Levels and Noise Level Criteria (dBA) (E minus D)	Impact (I) or No Impact (N) (dBA)
N112	45	Residence (16)	67	60	63	3	-4	N
N113	69	Residence (26)	67	60	61	1	-6	N
N114	347	Residence (3)	67	60	48	-12	-19	N
N115	85	Residence (1)	67	60	60	0	-7	N
N116	34	Residence (8)	67	60	59	-1	-8	N
N117	24	Residence (8)	67	60	58	-2	-9	N
N118	31	Residence (14)	67	60	65	5	-2	N
N119	34	Residence (11)	67	60	64	4	-3	N
N120	18	Residence (14)	67	60	65	5	-2	N
N121	288	Residence (4)	67	60	43	-17	-24	N
N122	234	Residence (4)	67	60	45	-15	-22	N
N123	239	Residence (1)	67	60	55	-5	-12	N
FS-15	147	Residence (3)	67	60	53	-7	-14	N
FS-16	440	Residence (3)	67	60	46	-14	-21	N
FS-17	188	Residence (4)	67	60	53	-7	-14	N