

MEMORANDUM

Date: Aug. 26 2022

To: Dan Goodman, Mechanical Inspections/Noise Abatement Manager, Seattle
Department of Construction and Inspection

Written By: Moaadh Zaki, Independent Noise Monitor, SR 520/I-5 Express Lanes
Connection Project

On Behalf Of: Margaret Kucharski, Environmental Services Office, Megaprograms Environmental
Manager, WSDOT

Re: MPPCNV Annual Report for Aug. 23, 2021 through Aug. 22, 2022
MPPCNV Permit Number: 6733975-NV
SR 520/I-5 Express Lanes Connection Project
WSDOT Contract No. 009674

INTRODUCTION

This annual report summarizes and evaluates the project's performance under the Major Public Project Construction Noise Variance (MPPCNV) #3030792 issued for the SR 520/I-5 Express Lanes Connection Project (SR 520/I-5 Project), WSDOT contract number 009674. As required by the Director's Rule 3-2009 and the MPPCNV decision, WSDOT is providing this annual report. The report includes noise data collected Aug. 23, 2021 through Aug. 22, 2022 and addresses the overall Design-Bid-Builder noise mitigation performance and its issues and resolutions.

SUMMARY OF PERFORMANCE

WSDOT is committed to ongoing coordination with the City of Seattle Department of Construction and Inspections (SDCI). Coordination includes documentation of nighttime noise levels and complaints as well as management of compliance issues, using best management practices. The following is a performance summary for the period between Aug. 23, 2021 and Aug. 22, 2022:

- Most noise levels that exceeded the MPPCNV noise limits were not related to project work. (See Table B on page 6.)
- During the period of performance covered in this report, the SR 520/I-5 Project worked 185 nights. Of these work nights: (See Table 1.0 on page 2.)
 - 185 were performed under the MPPCNV.
- During this time, the project experienced:
 - 5,432 occurrences of non-project related noise exceedances.
 - 24 occurrences were project-related noise exceedances, all of which were recorded at Monitor 6 at the staging area. (See Table 1.1 on page 2).
 - 11 occurrences where crews were found to be out of compliance with MPPCNV restrictions. (See Tables B and C on page 6 for a summary and Appendix D for a detailed event log).

- The project experienced 11 distinct complaints. (See Table E on page 9 and Appendix E for a detailed log).
- Below are tables with the total of working nights, non-compliances, and public complaints during the project's first year.

Table 1.0 Working nights

Working nights	2021 - 2022	Cumulative
Total MPPCNV days	364	364
Total nights worked	185	185
Nights worked under the MPPCNV	185	185

Table 1.1 Non-compliance events

Non-compliances	2021 - 2022	Cumulative
Total project-related non-compliance	35	35
MPPCNV noise level exceedances	24	24
MPPCNV other non-compliances	11	11

Table 1.2 Public complaints

Public complaints	2021 - 2022	Cumulative
Number of complaints	11	11
Project-related	7	7
Not project-related	4	4
Non-compliance events	3	3

PROJECT AND MPPCNV BACKGROUND

Project Description

The SR 520 Bridge Replacement and HOV Program is a "major public project" as defined in SMC 25.08.168 and is a "public facility" as defined in Seattle Municipal Code (SMC) 23.84.030. SR 520 plays a major role in sustaining the region's economy and maintaining the ability to travel between Seattle and the Eastside. Major construction of project began in summer 2021. Upon completion of the SR 520/I-5 Express Lanes Connection Project, the city will have:

- A new reversible transit/HOV ramp between SR 520 and the I-5 express lanes
- Restriped I-5 express lanes that retain the four existing lanes while adding a reversible transit/HOV lane between the I-5/SR 520 interchange and Mercer Street
- A modified reversible ramp between the I-5 express lanes and Mercer Street
- New bridge abutments across SR 520 at 10th Avenue East and Delmar Drive East

MPPCNV application and decision process

In June 2019, WSDOT applied for a Major Public Project Construction Noise Variance (MPPCNV) from the City of Seattle Department of Construction and Inspections (SDCI). The application was revised in September 2019, and again in October 2019, in response to comments by SDCI. WSDOT requested a

three-year nighttime noise variance for the duration of SR 520/I-5 Project construction to allow necessary work activities to occur during nighttime hours. As part of the MPPCNV, the application proposed nighttime construction noise limits for noise-sensitive receivers near the construction site. WSDOT made this request with the understanding that completing all planned activities during only daytime hours would be unreasonable considering public and worker safety. It would require multiple significant closures of SR 520 and I-5, which would result in:

- Extensive travel delays to the public
- Increased traffic volumes on city streets and nearby highways
- A potential increase in the number of accidents in the project work zone

In November 2019, SDCI issued WSDOT the MPPCNV decision for construction of the SR 520/I-5 Project.

Key decision elements

- Allows for nighttime work and variance to the city noise ordinance
- Limits allowable nighttime noise levels at key locations around the project site
- Restricts nighttime noise and work to specific work activities and practices

Design-Bid-Builder's Noise Management and Mitigation Plan

The Design-Bid-Build contractor, Walsh Construction Co., adopted the Noise Management and Mitigation Plan from WSDOT with additional modifications in summer 2021. Through the review and comment resolution process with WSDOT, SDCI and Walsh, a final plan for managing nighttime noise was completed in August 2021.

COMMUNICATION: INM, WALSH, SDCI AND WSDOT

As required by the MPPCNV decision, the Independent Noise Monitor (INM) oversaw the independent monitoring and reporting of nighttime noise levels from project construction covered by the MPPCNV and reported back to Walsh, WSDOT, and the SDCI coordinator for noise abatement. The INM's responsibilities, organizational reporting chart, and communications protocol are found in Appendix A. The protocol was developed and reviewed with SDCI prior to the start of construction. The purpose of the protocol is to outline the communication chain for reporting exceedances, noncompliance, and complaints.

The INM had regular coordination with Walsh's nighttime crews and phone and email contact with Walsh Superintendents, WSDOT Megaprograms Environmental Manager Margaret Kucharski, and Seattle Department of Construction & Inspections personnel. This regular coordination included:

- A direct telephone number to the Walsh nighttime superintendent in the event nighttime measurements exceed, or have the potential to exceed, established noise-level limits, and to report any noncompliant activity.
- Coordinating with Walsh and the WSDOT communications team on any updates or concerns from the neighborhood and residents.
- Coordinating with SDCI on any questions or concerns from the city regarding project noise.
- Providing weekly noise reports to WSDOT and SDCI.

The INM compiled noise levels, noncompliance events and public complaints into a weekly report and provided them to SDCI by Wednesday of the following week. An example of these reports can be found in Appendix B.

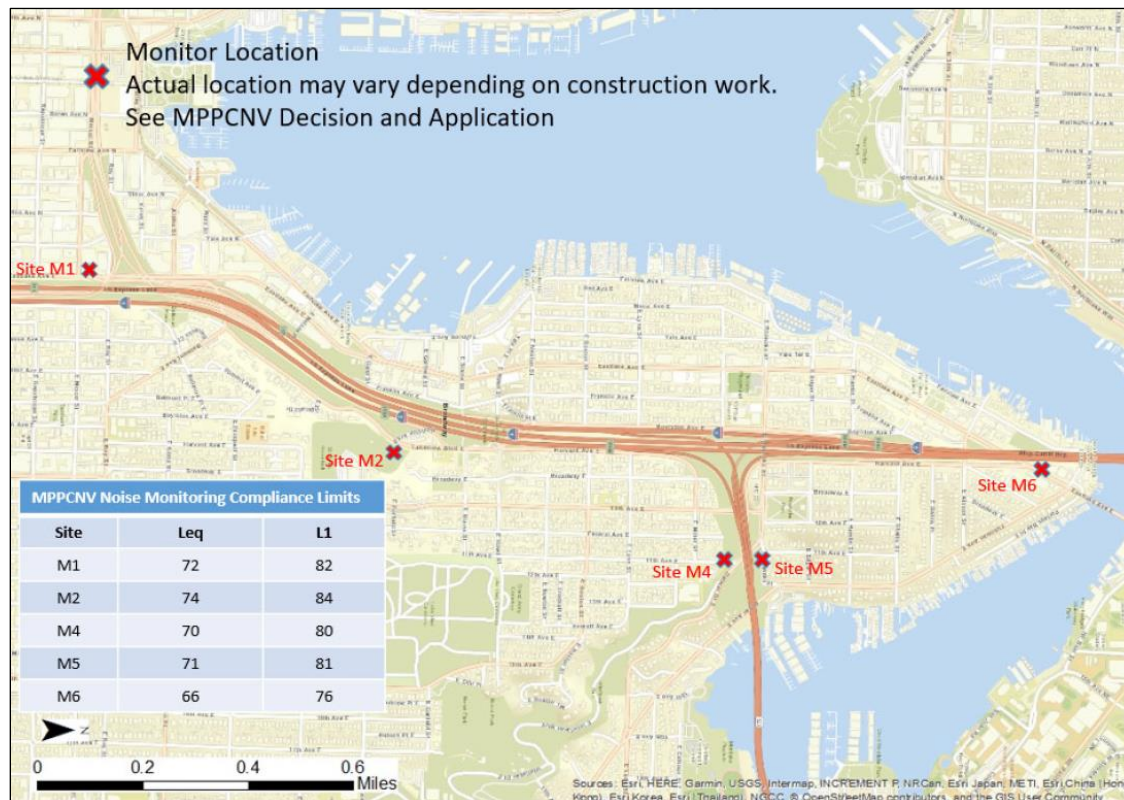
CONSTRUCTION AREA AND EXTERIOR NIGHTTIME CONSTRUCTION NOISE-LEVEL LIMITS

The MPPCNV established noise limits for nighttime noise-sensitive receivers in proximity to the project area. In general, nighttime noise monitors are placed at or near residences where people should expect quiet hours. Table A identifies the noise monitor locations and the associated MPPCNV noise-level limits used to monitor compliance of the MPPCNV.

Table A

Monitoring Sites and Allowable Noise Levels		
Site #	Address	Sound-level limits (Leq) dBA
M1	624 Yale Ave N	69
M2	1547 Boylston Ave E	71
M3 (Mobile)	Variable	Location-dependent
M4	3625 Federal Ave E	67
M5	E Roanoke St & 10th Ave E	68
M6	3125 Eastlake Ave E	63

Noise monitor locations



Mitigation Measures Used During Nighttime Work

The following mitigation measures are required by the project's MPPCNV to minimize construction noise except in case of emergency, as defined by SMC 25.08.110.

Mitigation measures

- The contractor will meet the noise-level limits established in the noise variance.
- The contractor will use broadband or strobe backup warning devices or use backup observers in lieu of backup warning devices for all equipment, in compliance with Washington Administrative Code (WAC), Sections 296-155-610 and 296-155-615. For dump trucks, if the surrounding noise level is so loud that broadband or strobe backup warning devices are not effective, then an observer must be used (WAC 296-155-610). This condition will apply to activities conducted between 10 p.m. and 7 a.m. Monday through Friday, and between 10 p.m. and 9 a.m. on Saturdays, Sundays and legal holidays. No pure-tone backup warning devices will be used after 10 p.m. or before 7 a.m. on weekdays and 9 a.m. on weekends and legal holidays.
- Except as described below, there will be no impact work, such as auger shaking, jack hammering and impact pile driving, during nighttime hours from 10 p.m. to 7 a.m. on weekdays and 10 p.m. to 9 a.m. on weekends and legal holidays. Nighttime impact work will be conducted within the noise level limits established in the variance.
 - There will be impact work for the creation of access and workspace. These activities are expected to occur on up to 25 non-consecutive nights at the 10th Avenue Abutment, 5 non-consecutive nights at the Mercer Ramp and 15 non-consecutive nights in the I-5 Express lanes.
 - There will be impact work for the demolition of the existing retaining wall at the westbound SR 520 northbound I-5 on ramps. This work is expected to occur on 72 nonconsecutive nights.
 - Additional notifications will be sent to residences within 300 feet of any nighttime impact work. Notices will be sent with a minimum of 3 days prior to the start of nighttime impact work.
- The contractor will use temporary noise mitigation shields, enclose, or use low noise-generating stationary equipment, such as light plants, generators, pumps, and air compressors near residences where practical.
- The contractor will securely fasten truck tailgates.
- The contractor will not use compression brakes.
- The contractor will not leave equipment to idle for longer than 5 minutes.

Additional noise mitigation

- Equip nighttime surface equipment with high-grade engine exhaust silencers and engine-casing sound insulation.
- Use electric welders, powered from utility main lines, instead of gas, diesel or internal combustion generators or welders.
- Use critical or double mufflers, where practicable, on machinery for off-road use, such as cranes.
- Use noise blankets, skirts or other available means for mobile equipment to mitigate noise that does not unreasonably interfere with the operation of the engine.
- Use temporary mobile noise barriers in the immediate vicinity of loud activities near residences.

- Use temporary noise barriers.
- Provide earplugs and white noise machines to residents near the project area.
- Install temporary sound-dampening drapes for residents.
- Provide hotel rooms for residents during high-impact or extremely noisy operations.

Non-compliance events

Tables B and C below tabulate the occurrences where the project was out of compliance with the MPPCNV. During this time, the project can account for 24 occurrences where the MPPCNV noise limits were exceeded and 11 occurrences where project crews were found to be out of compliance with MPPCNV noise mitigation measures.

See Tables B and C below and Appendix D for a detailed accounting.

Table B

MPPCNV noise level exceedances			
Site	Non project-related exceedance*	Project-related exceedance	Total
M1	684	0	684
M2	1825**	0	1825
M3 (Mobile)	418	0	418
M4	6	0	6
M5	39	0	39
M6	2460**	24	2484
Total	5432	24	5456

*Non project-related noise exceedances were primarily caused by public traffic adjacent to the noise monitoring site and are not further tabulated or addressed in this report.

** Monitor #2 is located right off the exit of northbound I-5 to Lakeview Boulevard East, where a substantial amount of traffic noise is recorded. Monitor #6 is located right outside the staging area, where the contractor and sub-contractors are constantly entering and exiting throughout the evening. It is also positioned adjacent to the vehicle fuel-pump station.

Table C

Project-related non-compliance event summary	
Project-related noise exceedances	24
Use of pure-tone alarms	5
Bed liners not used	2
Non-permitted equipment	4
Total MPPCNV noncompliance events	35

WSDOT Environmental Compliance Assurance Procedure (ECAP) addressing non-compliance

The ECAP is a WSDOT internal procedure designed to elevate and report noncompliance issues. This may include notifications of regulatory agencies, organization of cleanup activities or further enforcement of the contract up to, and including, suspension of part, or all, of the work causing the non-compliance.

An ECAP was issued to document the incidence and resolution of non-compliance events when, in the opinion of WSDOT, the event could have been anticipated and prevented instead of resolved from previous events of a similar nature, lack of training, care or caution. Examples include:

- Loading concrete debris into unlined truck beds.
- Continued use of pure-tone alarms by same equipment or contractor and failure to turn them off.
- Noise exceedance with no mitigation, such as noise shielding or offering residences hotel rooms.

An ECAP was not issued when, in the opinion of WSDOT, the event could not have been anticipated, caused no exceedance, or a complaint was immediately remedied. Examples include:

- Pure-tone alarms on equipment with operators unfamiliar with the project requirements, such as material delivery, and alarms were immediately disabled with no exceedance or complaints.
- Not using bed liners when loading materials that are soft and do not make noise when being loaded, such as vegetation with no exceedance or complaints.
- Noise level exceedance that was immediately addressed and there were no complaints.

During this period, there were 35 non-compliance occurrences with 0 ECAPS issued for noise limit exceedances. However, 8 ECAPS were issued as a direct violation of the MPPCNV through the use of loud equipment. As noted above, ECAPs were not issued for the remaining non-compliance events when, in the opinion of WSDOT, the event could not have been anticipated, caused no exceedances or complaints and was immediately remedied.

Table D

WSDOT ECAP reports. Full reports are included in Appendix F.	
Date	Non-compliance
9/29/2021	Contractor was observed using unlined dump trucks.
10/6/2021	Contractor sub equipment was observed with a pure tonal backup alarm.
10/12/2021	Contractor sub equipment was observed with pure tonal backup alarms.
1/27/2022	Contractor was observed demolishing a catch basin using a breaker attachment on a mini excavator.
3/24/2022	Contractor's equipment was observed with pure tonal backup alarm. Also, contractor was observed using unlined dump trucks.
5/4/2022	Contractor was observed conducting auger shaking without properly adhering to the MPPCNV in terms of notifying nearby residents and failing to provide notice to the INM.
8/9/2022	Contractor was observed conducting auger shaking without properly adhering to the MPPCNV in terms of notifying nearby residents and failing to provide notice to the INM.
8/20/2022	Contractor was observed conducting auger shaking without properly adhering to the MPPCNV in terms of notifying nearby residents and failing to provide notice to the INM.

MPPCNV non-compliance events and how they were addressed

For all cases in which work is out of compliance with the MPPCNV, the INM has stop-work authority. The INM actively worked with the Design-Bid-Build contractor staff to identify the work and make changes or stop the work altogether.

- Project-related noise level exceedances
 - There were 24 project-related events that exceeded the allowable noise levels stipulated in the MPPCNV. These events occurred at different times, but all occurred at the same location at monitor #6.
 - No ECAPs were issued for exceedances of the allowable noise levels because the INM was able to determine the issue was due to the monitor being placed too close to equipment. The issue was remedied by repositioning the monitor further away from equipment and closer to residential homes, as exceedances were no longer reported upon the adjustment.
 - In all cases:
 - The INM is equipped with a handheld monitor to work with crews to identify noise that may result in an exceedance.
 - Real-time project monitoring allowed the INM to identify the source of the noise and determine the exceedance was caused by the proximity of equipment to the monitor.
- Pure-tone alarms
 - The project INM documented 5 occurrences where the Design-Bid-Builder used pure-tone alarms during nighttime work.
 - WSDOT determined that 3 of these 5 occurrences could have been prevented if the contractor provided better education to equipment operators and rental companies or had been more proactive in checking and deactivating alarms prior to nighttime work. These occurrences were noted in the MPPCNV weekly report.
 - The remaining 2 occurrences typical material or equipment delivery vehicles that were new to the project and unaware of the backup alarm requirements.
 - The project received no public complaints from the use of pure-tone alarms.
 - In all cases, the alarm was either immediately shut off or not allowed to continue or the equipment was removed from the project. The INM informed SDCI, the issue was discussed at the weekly Environmental Task Force meeting and additional training and reminders were sent to crews, subcontractors and suppliers.
- Bed liners
 - The project documented 2 occurrences of material loading without the use of bed liners.
 - Of these, WSDOT determined the contractor could have prevented these occurrences by ensuring that crews and subcontractors were aware of the requirement.
 - The contractor used mitigation measures to reduce the noise caused by loading material. Examples of these mitigation measures include lining truck beds with sand or gravel before loading and placing materials in the bed instead of dropping them.
 - In each of these cases, the work was halted until changes in work operations could be made. The INM informed SDCI, the issue was discussed at the weekly Environmental Task

Force meeting and additional training and reminders were sent to crews, subcontractors and suppliers.

- Non-permitted equipment
 - The project documented 4 occurrences where the Design-Bid-Builder used non-permitted equipment during nighttime work.
 - WSDOT determined that these occurrences could have been prevented if the contractor provided better education to equipment operators and rental companies or had been more proactive in providing accurate schedules.
 - The project received 3 public complaints from the use of non-permitted equipment, which was handled by issuing ECAPs.
 - In all cases, the equipment was either immediately shut off, not permitted to continue, or the equipment was removed from the project. The INM informed SDCI, the issue was discussed at the weekly Environmental Task Force meeting and additional training and reminders were sent to crews, subcontractors and suppliers.

Public complaints

Public complaints can come to the project through a variety of channels:

- Project 24-hour phone hotline; if received at night, these hotline calls are immediately relayed to the field for resolution.
- Project email; these emails are relayed to the contractor for resolution on the following business day.
- Call to project staff or project Ombudsman.
- Call to City staff or other agency representative.

In all cases, complaints are documented in a public correspondence log, and a response and follow-up are made, as needed, to resolve the issue as soon as possible. Below is a summary of complaints. A full detailed list can be found in Appendix E.

Table E

Complaints related to the project	Number
Public complaints for project-related noise associated with non-compliance events	3
Public complaints for project-related noise not associated with non-compliance events	4
Public complaints for noise not project-related	4
Total	11

IMPACT WORK – NIGHTS WORKED UNDER THE MPPCNV

Under the MPPCNV, the project is permitted to conduct impact work, per the following conditions:

- There will be impact work for the creation of access and workspace. These activities are expected to occur up to:
 - 25 non-consecutive nights at the 10th Avenue East abutment
 - 5 non-consecutive nights at the Mercer Street ramp
 - 15 non-consecutive nights in the I-5 express lanes
- There will be impact work for the demolition of the existing retaining wall at the westbound SR 520 northbound I-5 on ramps. This work is expected to occur on 72 nonconsecutive nights.
- Additional notifications will be sent to residences within 300 feet of any nighttime impact work. Notices will be sent a minimum of 3 days prior to the start of nighttime impact work.

Table F

Location:	Days Allowed per MPPCNV:	Days Used:	Days Left:
10th Avenue East abutment	25	0	25
Mercer Ramp	5	1	4
I-5 Express Lanes	15	6	9
SR 520 NB I-5 on ramp	72	2	70

Table G

Impact work report			
Date	Type of impact work	Contractor	Location
9/28/2021	Pneumatic jackhammer	Pivetta	I-5 Express Lanes
11/4/2021	Hydraulic jackhammer	Valley	I-5 Express Lanes
12/13/2021	Pneumatic jackhammer	TransCon	Mercer Ramp
1/27/2022	Hydraulic & pneumatic jackhammer	Walsh	I-5 Express Lanes
4/6/2022	Pneumatic jackhammer	Walsh	I-5 Express Lanes
5/4/2022	Auger shaking	Michels	I-5 Express Lanes
*5/9/2022	None	Walsh	I-5 Express Lanes
*5/10/2022	Breaker arm & hydraulic jackhammer		
*5/11/2022	None		
8/9/2022	Auger shaking	Michels	SR 520 NB I-5 On-Ramp
8/19/2022	Auger shaking	Michels	SR 520 NB I-5 On-Ramp

*Walsh planned and notified residences for 3 consecutive days of impact work from 5/9 to 5/11. However, impact work was only conducted on the night of 5/10.

LIST OF APPENDICES

Appendix A	INM Responsibilities, Organizational Chart and Protocol for Construction Noise
Appendix B	Example of Weekly report
Appendix C	Table of Nights Worked
Appendix D	Table of Noncompliance Events and Resolutions
Appendix E	Table of Public Complaints and Resolutions
Appendix F	Environmental Compliance Assurance Procedure (ECAP) Reports