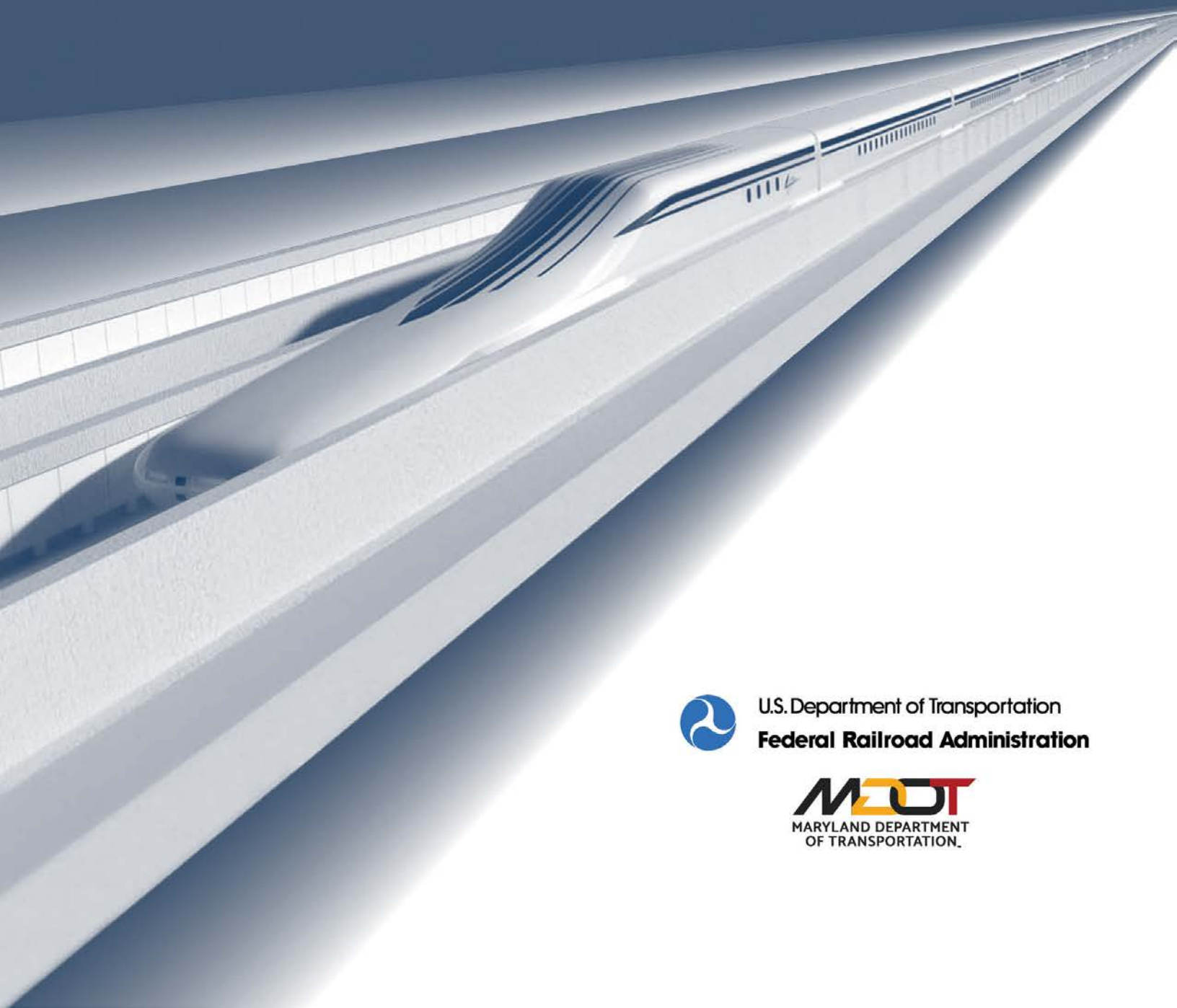
Section 4.21

Public Health and Safety

BALTIMORE-WASHINGTON SUPERCONDUCTING MAGLEV PROJECT

DRAFT ENVIRONMENTAL IMPACT STATEMENT AND SECTION 4(f) EVALUATION



U.S. Department of Transportation
Federal Railroad Administration

MARYLAND DEPARTMENT OF TRANSPORTATION

4.21 Public Health and Safety

4.21.1 Introduction

This section provides a qualitative summary of potential public health and safety risks for the Superconducting Magnetic Levitation Project (SCMAGLEV Project) that may result from the construction and operation of each Build Alternative. This summary considers the potential of the Build Alternatives to result in impacts to human health and safety.

4.21.2 Regulatory Context and Methodology

4.21.2.1 Regulatory Context

In accordance with the National Environmental Policy Act (NEPA), 42 U.S.C. § 4321 et seq., the Council on Environmental Quality (CEQ) regulations, 40 C.F.R. Parts 1500 - 1508, and the Federal Rail Administration's (FRA) Procedures for Considering Environmental Impacts, 64 Fed. Reg. 28545 (May 26, 1999) FRA considered impacts to public health and safety from construction and operation of the SCMAGLEV Project. In addition, the following Federal and state laws, and international guidance provide the regulatory context for FRA's public health and safety analysis:

- 33 USC § 1251 et seq., Clean Water Act
- 42 USC § 300f et seq., Safe Drinking Water Act
- 29 USC § 651 et seq., Occupational Health and Safety Act
- 42 USC § 6901 et seq., Resource Conservation and Recovery Act
- 42 USC § 7401 et seq., Clean Air Act
- 42 USC § 12101 et seq., Americans with Disabilities Act
- International Commission on Non-Ionizing Radiation Protection and World Health Organization Guidelines
- Code of Maryland Regulations (COMAR) 10.19.04 (concerning indoor smoking in public areas)
- COMAR 26.04.02 and 26.04.03 (issuance of building permits; public water and sewer plan review and final plat review)

4.21.2.2 Methodology

FRA qualitatively considered potential public health-related effects that may occur from implementation of the Build Alternatives on public health resources and access (Section 4.4); water resources (Section 4.10); hazardous materials and solid waste (Section 4.15); air quality (Section 4.16); geology (Section 4.13); noise and vibration (Section 4.17); and electromagnetic fields and interference (EMF/EMI) (Section 4.18). Impacts to these resources may also result in potential public health and safety risks. The SCMAGLEV Project Affected Environment for public health and safety includes all of

the SCMAGLEV Affected Environment areas analyzed in the resource sections listed above.

Based on the analysis presented for each resource area in the sections referenced above, FRA identified impacts that could pose a direct risk to public health and safety. For example, degradation of water quality could affect potable water sources which could have an impact on public drinking water and public health. Long-term exposure to noise and vibration could also have an effect on public health. Specific avoidance and minimization measures to reduce or eliminate potential impacts to these resources, thus to public health and safety, have been summarized in this section. FRA assumes that current conditions continue under the No Build Alternative and the effects to public health and safety remain unchanged. Section 4.22 Safety and Security provides information on the safety and security of passengers using the system.

4.21.3 SCMAGLEV Project Affected Environment

The SCMAGLEV Project Affected Environment includes many public health and safety resources identified in the individual resource sections identified in Section 4.21.2.2 Methodology above. These public health resources are located throughout the Affected Environment and include water resources such as aquifers, air quality, public health facilities, and access to these facilities through transportation infrastructure. Potential risks to public health that are located within the Affected Environment include disturbance of hazardous materials, naturally occurring asbestos and radon gas. Certain receptors located within the Affected Environment also have the potential to experience public health and safety related effects from the generation of noise and vibration and electromagnetic field/electromagnetic interference. For further descriptions of these resources within the Affected Environment, refer to Sections 4.4.3, 4.10.3, 4.13.3, 4.15.3, 4.16.3, 4.17.3, and 4.18.3.

4.21.4 Environmental Consequences

4.21.4.1 Public Health Facilities

Impacts to public health facilities include displacement of two resources under each Build Alternative. The Adams Place Emergency Shelter would be displaced under each Build Alternative due to the construction of a substation and FA/EE facility. Under Build Alternatives J-01 through J-03 and J1-01 through J1-03, the Medmark Treatment Centers would be displaced, and under Build Alternatives J-04 through J-06 and J1-04 through J1-06, the Concentra Urgent Care facility would be displaced. The Cherry Hill Station would require displacement of the Medmark Treatment Center while the Camden Yards Station would require displacement of the Concentra Urgent Care. Displacement of these facilities would reduce access to health facilities for surrounding communities. For further information about these effects and the location of these facilities, refer to Section 4.4 Neighborhoods and Community Facilities.

4.21.4.2 Water Resources

The public health and safety impacts to water resources include the degradation or change to the public drinking water supplies as described in Section 4.10 Water Resources. The Build Alternatives would have similar potential risks as with the introduction of new impervious surfaces, resulting in the clearing of vegetation, and having the potential for downstream impacts within the watershed. The runoff from facilities associated with the SCMAGLEV Project could carry pollutants such as heavy metals and bacteria. Impacts to groundwater from the Build Alternatives, particularly Build Alternatives J1-01 through J1-06, could occur in locations of tunnel constructed in both the Patapsco aquifer and Patuxent aquifer (i.e., important sources of water supply in Maryland) in Anne Arundel County, particularly in or near wellhead protection areas (WHPA) (see Sections 4.10.4.2 Water Resources and 4.13 Geology). The most substantial potential impacts could occur in Anne Arundel and Prince George's Counties where tunnel construction is within or near WHPAs, located within the same aquifer. Figure 4.10-2 within Section 4.10 Water Resources illustrates data on WHPAs in aquifers within a one-mile radius of the Build Alternatives. Tunneling below the groundwater table has the potential to induce localized changes to the water table and water pressures within the aquifers, with the potential for a loss of groundwater recharge to these WHPAs.

In addition, access to public drinking water could be disrupted if underground public water distribution piping must be re-routed or temporarily shut-off to accommodate construction of the SCMAGLEV Project. For station excavation, utilities will be relocated, replaced, or, in some cases, supported in place. The above-ground station alternative at Cherry Hill and the TMF sites could also require some utility relocation work, particularly for building foundations. These construction impacts for the above-ground construction are anticipated to be less extensive than for underground facilities. Proposed parking garages associated with the Baltimore-Washington International Thurgood Marshall Airport (BWI Marshall Airport) and elevated Cherry Hill Stations could also affect existing utilities.

4.21.4.3 Hazardous Materials and Solid Waste

Public health and safety risks from contamination associated with hazardous materials could arise as a result of an exposure pathway to the contaminants and a sufficient dose to produce adverse health effects. Risks to workers and to public health could result from an accidental disruption of an existing contaminated site or accidental spill (see Section 4.15 Hazardous Materials and Solid Waste for additional detail on hazardous materials). Health and safety risks would be dependent on the media affected by the release or spill, but could result in airborne contaminants, leaching of contaminants into water and groundwater resources, and direct exposure to humans. The quantity and nature of the use and storage of hazardous materials and generation of solid waste during SCMAGLEV Project construction would be greater in areas that require a higher degree of earth-moving, such as tunnel excavation sites, portals, and underground station construction sites. Build Alternatives J1-01 through J1-06 include a longer tunnel portion than Build Alternatives J-01 through J-06. However, excavations

conducted for Build Alternatives J may have a slightly greater potential to encounter hazardous materials than Build Alternatives J1 due to the higher number of medium-high risk sites, including National Priority List (NPL) sites, identified along the alignment.

4.21.4.4 Air Quality

In Section 4.16 Air Quality, FRA found that during operation of the SCMAGLEV Project, emissions concentrations would be well below the National Ambient Air Quality Standards, which are thresholds for a potential public health concern.

Furthermore, construction activities would be temporary (less than five years at a specific site), and thus potential air quality impacts from construction activities are considered temporary and a quantitative air quality hot spot analysis is not warranted. The predicted worst-case annual construction emissions are below the applicable de minimis levels for each respective pollutant during each construction year. FRA has, concluded that no formal conformity determination is required, and no significant air quality impact will result from the implementation of each Build Alternative during the construction period as well as the period when construction and operation activities would overlap. Any emissions from on-site construction equipment and on-road construction-related vehicles would be mitigated.

4.21.4.5 Geology

The SCMAGLEV Project has the potential to encounter naturally occurring asbestos, most specifically in areas of underground construction where there is bedrock in Washington, D.C. and Baltimore City, (Mount Vernon Square East Station and Camden Yards Station, respectively). According to the Agency for Toxic Substances and Disease Registry (ATSDR), should naturally occurring asbestos be encountered and disturbed during construction, asbestos fibers could be inhaled, putting those who come in contact with these fibers at risk for cancerous and non-cancerous disease involving the lungs.

USEPA recommends reducing concentrations of radon gas that may accumulate in the air in poorly ventilated enclosed spaces. According to the Centers for Disease Control and Prevention (CDC), radioactive particles from radon gas can be breathed in and can get trapped in lungs, which over time, increases the risk of lung cancer. The Build Alternatives pass through only one ZIP Code designation where radon gas concentrations exceed 4 pCi/L3 (i.e., the level at which the United States Environmental Protection Agency recommends mitigating structures). However, this part of the alignment is above ground on elevated track. Furthermore, in Washington, D.C., no radon gas tests near the alignment exceeded 3.1 pCi/L. Thus, it is unlikely that the SCMAGLEV Project would encounter radon gas and affect public health. Details regarding naturally occurring asbestos and radon gas can be found in Section 4.13 Geology.

4.21.4.6 Noise and Vibration

Prolonged exposure to noise pollution and vibration could have an adverse public health effect, such as interrupted sleep, hearing loss, and annoyance. FRA's analyses presented in Section 4.17 Noise and Vibration, identified areas where noise and vibration levels during operation of each Build Alternative would exceed allowable limits within the SCMAGLEV Project Affected Environment. FRA assessed noise and vibration impacts from the SCMAGLEV Project with respect to applicable Federal, state, and local noise standards, including 49 CFR part 210 (FRA noise regulations) and 40 CFR part 201 (USEPA noise regulations), and used FRA's *High-Speed Ground Transportation Noise and Vibration Impact Assessment* guidelines. The public health effects from the proposed Project are addressed with the FTA noise criteria for both long-term operations and short-term construction activities.

Potential sources of noise and vibration include train operations including track, propulsion and aerodynamic noise, general noise at elevated passenger stations, fresh air and emergency egress facilities, electrical power substations, trainset maintenance facility (TMF) sites, and maintenance of way (MOW) facilities. As described in Section 4.17 Noise and Vibration, the primary differences between the Build Alternatives are the different paths and the length of the viaduct. Build Alternatives J1 would have fewer noise impacts than the Build Alternatives J as the majority of the noise impacts are due to aerodynamic train noise along the viaduct which is longer for Build Alternatives J. However, Build Alternatives J1 would have more ground-borne vibration and ground-borne noise impacts than Build Alternatives J as Build Alternatives J1 have a longer tunnel portion and a higher number of residences within 250 feet of the Build Alternatives J1 than the Build Alternatives J.

In addition, construction methods and equipment could result in temporary increases in noise and vibration levels at nearby sensitive receptors described in Section 4.17 Noise and Vibration. FRA predicts no vibration exceedances of FRA Category I or Category II damage thresholds for any of the Build Alternatives. However, FRA predicts that maximum one-hour construction noise levels would range from below the ambient background (less than 45 dBA) to 85 dBA for FA-EE facilities to 91 dBA for the staging/laydown area at tunnel portals to 94 dBA for the viaduct construction to 96 dBA for the station excavation activities. Since construction could occur day or night depending on the activity and urgency to complete, FRA predicts that several of these levels would exceed the daytime limit of 90 dBA and the nighttime limit of 80 dBA. Construction noise levels vary by activity type and location for each of the Build Alternatives. For example, for Build Alternatives J-01, J-02, J-03, J1-01, J1-02, and J1-03, FRA predicted four daytime noise impacts and 21 nighttime noise impacts. For Build Alternatives J-04, J-05, J-06, J1-04, J1-05, and J1-06, FRA predicted four daytime noise impacts and 20 nighttime noise impacts.

4.21.4.7 EMF/EMI

FRA's analysis of EMF/EMI impacts identified that the generation of EMF/EMI from the SCMAGLEV system can result in induced currents in nearby metal structures. These

currents can lead to shock hazards to humans and animals if the metal is ungrounded and touched.

In addition, FRA did not identify any sensitive receptors that may be impacted from EMF/EMI and could pose a risk to public health. However, representatives from, Maryland Department of Transportation Maryland Aviation Administration (MDOT MAA)/ BWI Marshall Airport, National Security Agency (NSA), Fort George G. Meade, National Aeronautics and Space Administration (NASA), and the United States Secret Service (USSS) Rowley Training Center raised concerns regarding sensitive equipment on their properties that could be affected. When the SCMAGLEV system is in operation, the Build Alternatives J-01 through J-06 will be in closer proximity to some of these self-identified government properties and facilities. Additionally, Build Alternatives J-02, J-05, J1-02, and J1-05 have the potential to affect the NASA Goddard Space Flight Center (GSFC) and Goddard Geophysical and Astronomical Observatory (GGAO) due to proximity of the BARC Airstrip TMF. Depending on the type and location of equipment housed within these resources, the facilities may be impacted by operation the SCMAGLEV system. Additional coordination will be required with these agencies to identify impacts, develop appropriate mitigation strategies, and ensure no impacts would have public health effects.

4.21.4.8 Public Safety

Public safety may be at risk temporarily during construction. The design provisions and mitigation strategies outlined in the DEIS for the Build Alternatives would address public safety concerns related to construction activities such as increased construction traffic, equipment, construction methods, changes in traffic patterns that could affect first responder routes or access to critical safety infrastructure such as fire hydrants, changes to pedestrian and bicycle facilities, Americans with Disabilities Act (ADA) compliant detours, and accidental releases of hazardous materials.

Section 4.22 Safety and Security addresses long-term safety of passengers as well as individuals the SCMAGLEV system.

4.21.5 Potential Mitigation Strategies

The Project Sponsor would implement the following measures to avoid, minimize, and mitigate potential risks to public health and safety as a result of implementation of the SCMAGLEV Project.

4.21.5.1 Public Health Facilities

As part of the design process, the Project Sponsor will examine ways to reduce or eliminate property acquisitions where feasible. The Project Sponsor will coordinate with property owners affected by displacement of public health facilities. If the construction of the SCMAGLEV Project receives Federal funding, all activities related to acquisitions and displacements would be conducted in conformance with the Uniform Relocation and Real Property Acquisition Policies Act of 1970 (42 U.S.C. 4601), as amended (the Uniform Act). This statute mandates that certain relocation services and payments be

made available to eligible residents, businesses, and nonprofit organizations displaced as a direct result of projects undertaken by a Federal agency or with Federal financial assistance. The Uniform Act provides for uniform and equitable treatment for persons displaced from their homes and businesses, and it establishes uniform and equitable land acquisition policies. If the SCMAGLEV Project is fully privately funded, the Project Sponsor will be responsible for compensating property owners impacted by property acquisitions.

4.21.5.2 Water Resources

Typical project construction best management practices (BMP) to prevent impacts during construction activities would include the use of erosion and sediment controls such as silt fencing as well as specific techniques such as tunnel boring. Similarly, environmental site design for stormwater management facilities would be used with the goal of avoiding and minimizing impacts to water quality. The Project Sponsor would conduct further groundwater studies and develop construction methods aimed to avoid dewatering, minimize the loss of potential groundwater recharge, and avoid or minimize potential impacts to WHPAs. With regard to potential impacts to water utilities, the Project Sponsor is in ongoing dialogue with the relevant utility companies to determine whether utility conflicts will be removed, relocated, re-routed, adjusted vertically, or otherwise modified in the final engineering design. The Project Sponsor is coordinating with the relevant utility companies to avoid, minimize, and mitigate impacts to utilities through engineering design. Detailed mitigation strategies are listed in Section 4.10 Water Resources and 4.20 Utilities.

4.21.5.3 Hazardous Materials and Solid Waste

With the implementation of all appropriate hazardous material and waste management plans (e.g., Construction Contingency Plan and Hazardous Materials and Solid Waste Management Plan) and mitigation actions documented in Section 4.15 Hazardous Materials and Solid Waste, substantial impacts to workers and public health and safety from hazardous materials during construction activities or operations would be avoided. Additional activities would include conducting environmental site assessments, further site investigations, and consultation with regulatory agencies and other governmental agencies. Mitigation would include but is not limited to remediation activities such as removal of contamination and Activity Use Limitations (AULs), use of design features that provide protection against the potential effects of contamination (e.g., BMPs such as silt fencing), establishment of procedures for proper storage and maintenance of equipment and hazardous materials (including hazardous materials training and RCRA training for SCMAGLEV Project personnel), frequent and routine documented inspections of construction sites, and designation of special storage areas for hazardous materials and hazardous waste.

4.21.5.4 Air Quality

To mitigate the temporary air quality impacts during construction period, to extent practicable, the Project Sponsor would implement various control measures listed in

Section 4.16 Air Quality, including but not limited to dust control, idling restrictions, use of clean fuel, and best available tailpipe (BAT) reduction technologies.

4.21.5.5 Geology

The Project Sponsor would implement proper protections, training, and engineering controls for handling and monitoring naturally occurring asbestos, if found, during SCMAGLEV Project construction. The Project Sponsor will minimize exposure to geologic hazards during construction by conducting future geotechnical investigations, adhering to appropriate building codes, Occupational Safety and Health Administration (OSHA) regulations, and engineering controls. In construction areas where potential naturally occurring asbestos is encountered in bedrock, implementation of proper protection and engineering controls to protect and educate workers on handling and monitoring would be necessary and would be described in a Health and Safety Plan prepared for the SCMAGLEV Project during the design-build phase.

Although the SCMAGLEV Project has low potential to encounter radon gas and affect public health, the use of a tunnel boring machine (TBM), a water-tight segmental lining, and constant ventilation helps ensure that there is no accumulation of radon gas during construction and during the post-construction lifespan of the structures. Radon gas will be monitored in tunnels during construction and, if necessary, additional ventilation or personal protective equipment will be used to minimize health risk. Additional evaluation of radon content of sediments and groundwater will also be conducted at later design phase. Tests will also include the presence of other gases such as methane and hydrogen sulfide.

4.21.5.6 Noise and Vibration

In the impacted areas, appropriate mitigation strategies and measures would be required to reduce public health and safety risks related to exposure to operational noise and vibration. The Project Sponsor has proposed several design features to potentially eliminate most, if not all, operational noise and vibration impacts, identified in Section 4.17 Noise and Vibration. Some of these mitigation measures include sound attenuation hoods or shrouds, sound attenuation walls, and augmented parapet walls. A full list of potential measures to mitigate noise and vibration impacts attributed to operation of the SCMAGLEV Project is provided in Section 4.17 Noise and Vibration. During final design, the Project Sponsor would assess the feasibility and reasonableness of potential mitigation strategies; the final design would incorporate and refine the measures that prove to be effective.

Regarding temporary increases in noise and vibration attributed to construction, the Project Sponsor would prepare and implement noise and vibration control measures during construction to manage and monitor noise and vibration levels, such as installing acoustical curtains or temporary noise shields, placing containers or other barriers between construction activities and nearby residences, and using regional roadways rather than local streets for excavation of spoils and new deliveries. A full list of potential measures to mitigate noise and vibration impacts attributed to the construction of the SCMAGLEV Project is provided in Section 4.17 Noise and Vibration. The control plan

may enable the Project Sponsor to eliminate impacts and minimize extended disruption of normal activities during construction.

4.21.5. 7 EMF/EMI

The Project Sponsor would ensure the SCMAGLEV Project design specifications prescribe a continuous grounding system (electrical continuity) and monitoring the integrity of the grounding systems for all metal equipment surrounding the SCMAGLEV system (such as metal fencing). The Project Sponsor would routinely inspect and replace as necessary the external fencing and any other grounded metallic objects within the system. This would avoid or minimize any corrosion. If, for example, the external metal fencing corrodes and not replaced, it would no longer be effectively grounded and electric shock could become an issue of concern for people or animals.

4.21.5.8 Public Safety

The Project Sponsor would develop and implement a Public Safety Plan as part of the SCMAGLEV Project Construction Plan. The Public Safety Plan would include safety practices such as protective fencing around work areas and designated ingress/egress, strategies to adhere to Federal, state, and local government standards, and specific design/construction techniques to protect public safety. The Project Sponsor would use the Public Safety Plan to ensure that potential risks to public safety are considered and addressed through the construction planning and implementation processes. As part of the SCMAGLEV Project Construction Plan, the Public Safety Plan will incorporate, implement, and manage commitments made in the forthcoming Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for the SCMAGLEV Project to avoid or minimize potential impacts to public safety.