U.S. Department of Transportation
Federal Highway Administration
and the
Nevada Department of Transportation

RE-EVALUATION

of the

FINAL ENVIRONMENTAL IMPACT STATEMENT AND RECORD OF DECISION BOULDER CITY/US 93 CORRIDOR STUDY (I-11 BOULDER CITY BYPASS)

DE-PLH-093-1(007)
FHWA-NV-EIS-00-02-F
CLARK COUNTY, NEVADA
NOVEMBER 2014

ACRONYMS AND ABBREVIATIONS

ACM	Asbestos Containing Material
ACP	Asbestos Competent Person
AHERA	Asbestos Hazard Emergency Response Act
ARB	Air Resources Control Board
ATCM	Airborne Toxic Control Measures
ATSDR	Agency for Toxic Substances and Disease Registry
BA	Biological Assessment
BCB	Boulder City Bypass Project
BCBRR	Boulder City Branch Railroad
BLM	Bureau of Land Management
BO	Biological Opinion
BOR	Bureau of Reclamation
CARB	California Air Resources Board
cc^{1}	per cubic centimeters
CCR	California Code of Regulations
CEM	Certified Environmental Manager
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CRC	Colorado River Commission
DAQ	Clark County Department of Air Quality
DEIS	Draft Environmental Impact Statement
DMP	Dust Monitoring Plan
EPA	U.S. Environmental Protection Agency
f/cc	fibers per cubic centimeter
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
HEPA	High-efficiency Particulate Air
IARC	International Agency for Research on Cancer
IRIS	Integrated Risk Information System
ISO	International Organization of Standardization
LMNRA	Lake Mead National Recreation Area
NAC	Nevada Administrative Code
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NESHAP	National Emission Standard for hazardous Air Pollutant
Nevada OSHA	Nevada Occupational Health and Safety Administration
NIEHS	National Institute of Environmental Health Sciences
NIOSH	National Institute of Occupational Health and Safety
NMP	NOA Management Plan
NOA	Naturally Occurring Asbestos
NPS	National Park Service
NRS	Nevada Revised Statutes
OSHA	Occupational Health and Safety Administration
PC	Point Counting
PCM	Phase Contrast Microscopy
PCME	Phase Contrast Microscopy Equivalent
PEMP	Personnel Exposure Monitoring Program
PLM	Polarized Light Microscopy
PPE	Personal Protective Equipment
RAM	Real-time Aerosol Dust Particle Monitor

ACRONYMS AND ABBREVIATIONS

RBC	Risk-based Concentration
ROD	Record of Decision
ROW	Right-of-Way
RTC	Regional Transportation Commission of Southern Nevada
s/cc	structures per cubic centimeter
s/g	structures per gram
SAP	Sampling and Analysis Plan
SHPO	State Historic Preservation Officer
SNHD	Southern Nevada Health District
SOP	Standard Operations Procedure
TEM	Transmission Electron Microscopy
TSCA	Toxic Substance Controlling Act
USACE	United States Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
UNLV	University of Nevada, Las Vegas
WAPA	Western Area Power Association

FEDERAL HIGHWAY ADMINISTRATION
NEVADA DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL IMPACT STATEMENT RE-EVALUATION

Project Name: Boulder City/US 93 Corridor Study (I-11 Boulder City Bypass Project)

Project Location: The project is primarily located in Boulder City, Clark County, Nevada. The project consists of a 14.75 mile continuous four-lane, controlled access, divided freeway and highway between a western boundary at the end of I-515 on US 93/US 95 in Henderson, Nevada, and an eastern boundary on US 93, about three-quarters of a mile east of the Hacienda Hotel and Casino near Hoover Dam (Exhibit 1).

Project Identification Numbers:
Nevada Department of Transportation (NDOT) Project ID Number: 73307 (Phase 1), 73320 (Phase 2)
Federal Highway Administration (FHWA) Project ID Number: DE-PLH-093-1(007)

Document Type & Approval Date:
Final Environmental Impact Statement (FEIS) and Section 4(f) Evaluation: April 2005
Record of Decision (ROD): December 8, 2005
Re-evaluations: October 26, 2009, May 10, 2011, March 12, 2013

Date of Last FHWA Major Approval Action:
Phase 1, 093-1(013), September 18, 2014, to proceed for NDOT low-bid contract.
Phase 2, 093-1(008), September 11, 2014, to proceed with RTC design/build contract.
Neither authorization allows ground disturbing activities until this re-evaluation is complete and signed.

1.0 INTRODUCTION

This document is prepared to evaluate the changed conditions of the above reference project and to determine if the original FEIS and ROD remain valid [23 CFR 771.129(c)]. It covers only changes that have occurred since the last re-evaluation of the Boulder City Bypass (BCB) project approved by the FHWA dated March 12, 2013.

2.0 PURPOSE AND NEED

There has been no change in the project purpose and need from what was described in the original environmental document.

The purpose of the project is to provide overall transportation improvements in the US 93 corridor by reducing traffic congestion, increasing safety, and improving regional mobility while maintaining or improving local circulation and access to local businesses. The Boulder City/US 93 transportation improvements address:

- Resolving traffic problems in the vicinity of Boulder City
- Extending freeway status of I-515 to the US 93/95 interchange
- Improving operations at the junction of US 93/95
- Creating a safer transportation corridor
- Accommodating future transportation demand
- Improving system linkage on US 93 and maintaining route continuity

3.0 SELECTED ALTERNATIVE

The alternatives studied in the 2005 FEIS addressed existing US 93 roadway deficiencies and provided system linkage and route continuity for sections of US 93 approaching Boulder City by providing an

alternate freeway route which has better operations through additional capacity, higher design speeds, a more consistent roadway cross section, and a continuous access-controlled facility throughout the project limits.

Alternative D was selected as the alternative to be built. This alternative is a southern bypass of Boulder City between the existing Hoover Dam Bypass and US 95 just north of Railroad Pass in Clark County. It consists of a continuous four-lane, controlled-access, divided freeway passing south of the developed area of Boulder City. In the west the alignment begins at the Foothills/Paradise Hills Drive grade separation, crosses under the existing Boulder City Branch Railroad (BCBRR), and continues just south of the existing highway to a new local access interchange near the Railroad Pass Hotel and Casino. From there, the freeway continues south and east to US 95 at a new interchange approximately 1.2 miles south of the existing US 93/95 interchange. The freeway alignment continues south and east towards Western Area Power Administration's (WAPA's) Mead Substation, running approximately 0.85 mile south of Georgia Avenue, just north of the Mead Substation. It then turns northeast to generally parallel the electric power transmission corridor between the Boulder City Municipal Landfill and the Boulder City Rifle and Pistol Club range. Prior to descending into the upper reaches of Goldstrike Canyon it enters the National Park Service (NPS) Lake Mead National Recreation Area crossing a ridge representing a western extension of the Eldorado Mountains, east of the developed portion of Boulder City. The highway ties into the Nevada Interchange of the US 93 Hoover Dam Bypass project approximately 0.75 mile east of the Hacienda Hotel and Casino.

The project has been assigned two construction phases; Phase 1 extends approximately 2.75 miles from just north of the Foothills/Paradise Hills Drive grade separation to Silverline Road. Phase 2 begins at Silverline Road and extends approximately 12 miles east across the northern portion of Eldorado Valley and through the Eldorado Mountains to the Nevada Interchange of the Hoover Dam Bypass (Exhibit 1). Both phases will be constructed concurrently with planned completion in 2018.

4.0 PROJECT STATUS

The Moving Ahead for Progress in the 21st Century Act (MAP-21) enacted in 2012, designated the planned freeway between Las Vegas and Phoenix as the “Future I-11.” The Boulder City Bypass will be constructed as a portion of Nevada’s Future Interstate 11.

Construction on Phase 1 began in January 2013 with construction of tortoise fencing, cactus salvage, and relocation of WAPA and Colorado River Commission (CRC) electric power transmission lines.

Enactment of AB 413 in July 2013 and subsequent Clark County Commission approval in September 2013 authorized Clark County to collect additional gas tax monies and distribute the proceeds to the Regional Transportation Commission of Southern Nevada (RTC). With the new availability of funds it was agreed upon by FHWA, NDOT and RTC that Phase 2 of the Boulder City Bypass should be funded for immediate design and construction using a design-build method of delivery administered by RTC. NDOT remains responsible for design and construction of Phase 1 improvements (Exhibit 1) and will employ a traditional design-bid-build delivery method. Both phases will be constructed concurrently with planned completion in 2018.

In late November of 2013 NDOT was made aware of the potential presence of naturally occurring asbestos (NOA) in the Eldorado Valley by a University of Nevada, Las Vegas (UNLV) research article (Buck et al. 2013). All further construction activities were halted until the extent and composition of NOA could be characterized for the entire I-11 Boulder City Bypass project area and a re-evaluation of the 2005 FEIS completed.

5.0 PURPOSE OF THIS RE-EVALUATION

The focus of this re-evaluation is to present information and findings on the extent of NOA within the I-11 Boulder City Bypass project area, proposed mitigation measures and the assessment of any potential

environmental impacts related to NOA. This re-evaluation focuses on the new information that NOA is now known to occur in the project area. It does not revisit the evaluation of the other build alternatives presented in the DEIS and FEIS. The reason for this is the preliminary information presented by Buck et al. (Exhibit 2) indicates the entire northern Eldorado Valley may contain rock outcrops and sediment with NOA potential and all of the alternatives studied in the 2005 FEIS fall within those potential NOA areas and would have similar impacts. Therefore, even if all of the proposed alternatives from the 2005 EIS had been subject to testing for the presence of NOA and yielded findings consistent with or below the selected alternative, Alternative D would still be selected as the build alternative for the following reasons:

- It would still best meet the purpose and need of the project compared to the other alternatives.
- It still retains broad public acceptance based on comments received on the DEIS and at public meetings held for three previous re-evaluations and this current re-evaluation.
- It would still have less noise, air quality, and visual impacts to Boulder City compared to the other build alternatives.
- It would still have fewer impacts to cultural resources than the other build alternatives.
- It would still not result in significant fragmentation of the Boulder City community.
- It would still best preserve the quality of life residents of Boulder City have compared to the other build alternatives.
- It would still result in significantly less construction disruption of the existing highway corridor than any of the other build alternatives.
- It would disturb areas with NOA that are at much greater distances from Boulder City residences and businesses than the other build alternatives.

6.0 SCOPE/DESIGN CHANGES

Table 1 lists scope/design changes to the project since the 2013 re-evaluation. All have been reviewed for potential environmental impacts and consulted on with appropriate agencies. None present any significant impacts and none require additional mitigation measures beyond those identified in the 2005 FEIS and ROD and/or further clarified in the 2009, 2011, and 2013 re-evaluations.

Table 1. Design modifications since 2013 Re-evaluation (Exhibit 1 depicts the locations of these items).

Change/Modification	Comment
West Frontage Road Ends at K&L Dirt Company Property (Phase 1)	Current design has the west frontage road terminating at the K&L Dirt Company property, approximately .7 mi. north of its previous termination. This design modification is the result of negotiations between the private landowner and NDOT legal counsels. The west frontage road still provides reasonable access to lands west of the Phase 1 project area. Falls within original EIS study area and is covered by updated environmental surveys, reviews, and agency consultations. Reduces amount of private property needed and reduces the overall impacts of the project.
Removal of Hill Located within Railroad Pass Local Access Interchange (Phase 1)	A small hill, approximately 50 feet in height will be removed to provide additional visibility to the Railroad Pass Hotel and Casino property from the new freeway. This design modification is the result of negotiations between the private landowner and NDOT legal counsels. Falls within original EIS study area and covered by updated environmental surveys, reviews, and agency consultations. Visual impacts will be mitigated by landscape and aesthetic treatments.
CRC Transmission Line Realignment (Phase 2)	Falls outside original EIS study area. Covered in NPS prepared Environmental Assessment and Finding of No Significant Impact (FONSI) approved 10/14/2014.

Change/Modification	Comment
New Access Road Near Nevada Interchange (Phase 2)	Falls within original EIS study area and covered by updated environmental surveys, reviews, and agency consultations. Covered in NPS prepared Environmental Assessment and Finding of No Significant Impact (FONSI) approved 10/14/2014.
Waterline from Lake Mead (Phase 2)	Falls outside original EIS study area. Covered in NPS prepared Environmental Assessment and Finding of No Significant Impact (FONSI) approved 10/14/2014.
Existing WAPA Access Road Connecting Project Area to Boy Scout Canyon Road North of Boulder City Municipal Landfill (Phase 2)	Falls outside original EIS study area. Included in BCB Biological Assessment. If used, will require additional environmental clearance and agency consultations required by WAPA to issue their use permit.
Excess Material Storage Area between the Boulder City Municipal Landfill and Boy Scout Canyon Road (Phase 2)	This area may be used for permanent storage of excess rock and dirt generated by the project. Any use will require consent of City of Boulder City. Any material placed here will be subject to all applicable NOA project mitigation measures. Falls outside original EIS study area. Covered by updated environmental surveys, reviews, and agency consultations.
Designation of Bridge 9 as a Wildlife Undercrossing	Ensures the final design of this bridge will maximize movement of wildlife. Falls within original EIS study area and covered by updated environmental surveys, reviews, and agency consultations.
Wildlife Overcrossing (Phase 2)	New design element added in consultation with Nevada Department of Wildlife (NDOW). Falls within original EIS study area and covered by updated environmental surveys, reviews, and agency consultations. Maximizes compliance with Mitigation Measure O-2 identified in the ROD.

Additional information for key resources:

- Threatened and Endangered Species
  A separate Biological Assessment (BA) was prepared for Phase 2 from US 95 east to the Nevada Interchange and submitted to the US Fish and Wildlife Service (USFWS) on July 3, 2014. The area of Phase 2 west of US 95 is included in a previously issued Biological Opinion (BO) for Phase 1. The Phase 2 BO was issued by USFWS on September 11, 2014. All terms and conditions of the BO will be incorporated into the contract documents.

- Waters of the U.S.
  A Jurisdictional Determination was prepared for Phase 2 and submitted to the United States Army Corps of Engineers (USACE) on April 22, 2014. An approved Jurisdictional Determination was received from the USACE on July 31, 2014. Section 404 Permits will be required at 12 locations determined to be Waters of the U.S. All terms and conditions of the Section 404 permits will be incorporated into the contract documents. The USACE has agreed to the use of in lieu of fees for required mitigation.

- Cultural Resources
  In compliance with the Programmatic Agreement between FHWA, NDOT, the State Historic Preservation Officer (SHPO), NPS, Bureau of Reclamation (BOR), Western Area Power Association (WAPA), and Bureau of Land Management (BLM) for Section 106 compliance for the Boulder City Bypass project executed in July 2003 the following actions shall be completed:
    - Archaeological site 26CK6270 requires mitigation. This site is located in Phase 2.

- Historic transmission towers requiring removal or modification in Phase 2 require documentation in accordance with the standards of the Historical American Engineering Record.
- Site 26CK23/26CK6291, the Sullivan Turquoise Mine, must be assessed for effects once a sufficient level of engineering has been completed to allow a refinement of the Area of Potential Effect. This work shall include the determination of the site boundaries and shall include the assessment of indirect effects to the site. This site is located in Phase 2.

Eligibility determinations, effect determinations and treatment plans have been coordinated in consultation with the SHPO, landowners, and Native American tribes. The Native American tribes consulted with include: Chemehuevi Indian Tribe, Colorado River Indian Tribes, Fort Mojave Indian Tribe, Hopi Tribe, Hualapai Tribe, Kaibab Band of Paiute Indians, Las Vegas Paiute Tribe, Moapa Band of Paiutes, Navajo Nation, Pahrump Band of Paiutes, Paiute Indian Tribe of Utah, and the Pueblo of Zuni.

- Traffic Noise

  The project area includes repaving approximately 1,200' of the existing I-515/US95 mainline north of the E. Paradise Hills/Foothills Drive overpass (H-2032, I-515 CL 57.68) along existing I-515/US95. The area consists of commercial and residential development, and undeveloped property. The existing residential development is setback from I-515/US 95 and is partially shielded by the commercial development. The existing residential development also contains privacy walls around the properties.

  A traffic noise analysis was conducted in the area of existing residential development (Wagonwheel Drive interchange [I-1471, IR515 CL 55.60] and Dawson Avenue). Given the distance of the properties from the roadway, the existing commercial structures, and existing privacy walls, a traffic noise impact was not realized as per regulations. It appears, per City of Henderson ordinance, the existing privacy walls act to provide adequate traffic noise mitigation. Therefore further consideration of an additional traffic noise abatement measure is not allowed or warranted.

7.0 NATURALLY OCCURRING ASBESTOS (NOA)

The following discussion about NOA and the Boulder City Bypass (BCB) project is condensed and modified from a report (CDM Smith 2014) commissioned to synthesize and summarize separate Phase 1 and Phase 2 NOA technical reports produced for NDOT (Tetra Tech 2014b) and RTC (Kleinfelder 2014a).

In late 2013, researchers at UNLV reported the presence of NOA in and around the Boulder City area, including the BCB area (Buck et al. 2013). Buck's findings noted fibrous actinolite structures were detected in all rock and soil samples collected within and near the BCB area. In light of this new information, NDOT has assessed the potential effect NOA may have on the overall environmental impact of the project.

7.1 What is Asbestos?

Asbestos is the generic name for a group of naturally-occurring silicate minerals that crystallize in long thin fibers. Asbestos occurs naturally in at least 35 states. Based on crystal structure, asbestos minerals are usually divided into two groups: serpentine and amphibole.

- Serpentine: The only asbestos mineral in the serpentine group is chrysotile. Chrysotile fibers tend to be curly and flexible. Chrysotile is the most widely used form of asbestos, accounting for about 90% of the asbestos used in commercial products (International Agency for Research on Cancer [IARC] 1977).

- Amphibole: Amphibole fibers tend to be needle-like and straight. There are several minerals in the amphibole group, including actinolite (present in the BCB project area).

The adverse effects of asbestos exposure in humans have been the subject of a large number of studies and publications. Exposure to asbestos may induce several types of both cancer (carcinogenic) and non-cancer effects and U.S. Environmental Protection Agency (EPA) has classified asbestos as a known human carcinogen (EPA 1986). The latency period for lung cancer and mesothelioma is typically around 10 to 40 years (Lanphear and Buncher 1992; ATSDR 2001; Mossman et al. 1996; Weill et al. 2004). Non-cancer effects from asbestos exposure include asbestosis (formation of scar tissue in the lungs) and several types of abnormality in the membrane surrounding the lungs (American Thoracic Society [ATS] 1986; Mossman and Churg 1998; ATSDR 2001).

Asbestos fibers in NOA source materials (rock, soil) are typically not inherently hazardous, unless the asbestos is released from the source material into air where it can be inhaled (EPA 2008a). Asbestos fibers may become airborne in a number of ways. This may include natural forces, such as wind blowing over asbestos-containing soils, or human activities, such as road construction.

7.2 How is Asbestos Analyzed?

The most common technique for measuring asbestos in air is phase contrast microscopy (PCM). In this technique, air is drawn through a filter and airborne particles become deposited on the face of the filter. PCM, performed in accordance with National Institute of Occupational Health and Safety (NIOSH) Method 7400 (NIOSH 1994), is typically used as the primary analysis method for worker air samples collected as part of health and safety monitoring. This is because results for these samples are compared to Occupational Health and Safety Administration (OSHA) exposure limits that are based on PCM. The analysis of air samples by PCM is appropriate for worker health and safety samples collected for OSHA.

Analysis by transmission electron microscopy (TEM) is the preferred technique for measuring asbestos in air for estimating human health exposures and risks (EPA 2008a). This method operates at higher magnification (typically about 20,000x) and hence is able to detect asbestos structures much smaller than can been seen by PCM. In addition, TEM instrumentation enables the analyst to distinguish between asbestos and non-asbestos, and to classify each asbestos structure according to mineral type. Two of the more common TEM analysis methods for air are International Organization of Standardization (ISO) Method 10312:1995(E) (ISO 1995) and the Asbestos Hazard Emergency Response Act (AHERA) method (EPA 1986). The ISO 10312 recording rules are generally preferred for quantifying asbestos exposures and human health risks (EPA 2008a).

Polarized light microscopy (PLM) is the primary analytical method used to quantify asbestos concentrations in soil and other bulk materials (e.g., insulation, building materials). PLM is only applied to bulk samples of soil or construction materials, where many of the fibers can be expected to be fairly large. TEM, which operates at a higher magnification than PLM, may also be used to analyze soil samples and other bulk materials, but results can have high variability and uncertainty when structure counts are low.

7.3 Who Regulates Naturally Occurring Asbestos?

<u>Federal Government</u>

Within the Federal government only the EPA and OSHA have guidance or regulations that specifically pertain to asbestos. The EPA regulates asbestos primarily under three laws; the Clean Air Act (40 CFR 61 Subpart M – National Emission Standard for Hazardous Air Pollutant – Asbestos [NESHAP]; the Toxic Substances Control Act (TSCA) (40 CFR 763 – Asbestos), and the Asbestos Hazard Emergency Response Act (AHERA) which amended TSCA in 1986. None of these rules pertain to regulating NOA and as a result, the EPA does not have regulatory authority over the BCB.

FHWA contacted the EPA to confirm this interpretation of EPA asbestos regulation. The FHWA received correspondence from the EPA stating that regulations promulgated pursuant to the Clean Air Act or TSCA do not apply to the disturbance of NOA during construction of a roadway (Appendix A). However, the EPA recommended that the BCB team disclose potential impacts of NOA to workers and residents prior to and during construction and work with the local Clark County Department of Air Quality (DAQ) Management District to develop mitigation measures and best management practices to minimize NOA exposure.

While there are no NOA-specific regulations within the EPA, the agency has produced a NOA fact sheet, Naturally Occurring Asbestos: Approaches for Reducing Exposure (Appendix B), which provides general information and approaches for reducing exposure to NOA, including construction activities. The fact sheet includes examples of engineering and work practices that reduce exposure to NOA. Information contained in this fact sheet was used, in part, as a guide to develop NOA mitigation measures for the BCB. The EPA also provides guidance for performing sampling and investigation for asbestos.

The EPA's Framework for Investigating Asbestos-Contaminated Superfund Sites (Asbestos Framework) (EPA 2008a) provides guidance for the derivation of risk-based concentration thresholds for asbestos, which are based on the asbestos cancer potency values in the Integrated Risk Information System (IRIS), which are currently the only toxicity values approved by EPA for estimating human health exposures (EPA 2008a). Currently, IRIS does not provide toxicity values for the evaluation of non-cancer effects from asbestos inhalation exposures. The methods discussed in the Asbestos Framework for deriving risk-based thresholds are applicable to any site. This methodology was used to develop a project-specific threshold that will be used to evaluate the efficacy of BCB NOA mitigation measures.

OSHA has regulations to protect workers from the hazards of asbestos. OSHA has three standards regulating asbestos exposure in the workplace. The general industry standard (29 Code of Federal Regulations [CFR] 1910.1001) applies to occupational exposure to asbestos in all industries with the exception of shipyard and construction industries, and 29 CFR 1915.100 applies to work in shipyards. The 29 CFR 1926.1101 standard applies to construction, renovation and demolition of structures or material containing asbestos. OSHA defines asbestos containing material (ACM) as any material containing greater than 1% asbestos. Employers are required to comply with OSHA worker exposure regulations regardless of the source of the asbestos (i.e., natural or processed) or concentration of asbestos in source materials. Due to presence of NOA at various concentrations throughout the BCB area, the construction standard applies to work performed on the BCB. These regulations are listed under 29 CFR 1926.1101 and apply to employee exposure to asbestos during construction activities.

State of Nevada

There are currently no statutes or regulations specifically addressing NOA in the State of Nevada. The State of Nevada is one of 22 states with an OSHA-approved job safety and health program. Nevada's safety and health program, Nevada Occupational Safety and Health Administration (Nevada OSHA), is part of the Division of Industrial Relations, Department of Business and Industry. Nevada OSHA laws pertaining to asbestos abatement are included in the Nevada Administrative Code (NAC) 618.850 through 618.986. These laws do not apply to construction activities associated with NOA. However, worker exposure to asbestos as regulated by OSHA still applies.

NAC 444.965 through 444.976 describes the regulations for the transportation and disposal of asbestos. Transport of NOA material within the project right-of-way (ROW), including the portions of US 95 and US 93 within the project ROW, is considered to be onsite transport and does not require a permit from the Southern Nevada Health District. Any transport of NOA materials, from one part of the BCB to another part of the BCB, which leaves the project ROW at any time, and which has a NOA concentration greater than 1%, will require a permit from the Southern Nevada Health District (SNHD).

Clark County

Clark County does not have specific regulations for NOA, but the Clark County Department of Air Quality (DAQ) has several regulatory requirements for construction-related dust control. Because these regulations are written to limit fugitive dust emissions, following their requirements will consequently minimize exposure to NOA emissions. The Clark County DAQ is the air pollution control agency for all of Clark County (DAQ 2014). Although the Clark County DAQ has no regulatory authority over NOA, it has regulatory authority over dust mitigation measures during the BCB construction. Any construction activities that disturb or have the potential to disturb soils and that emit or have the potential to emit particulate matter into the atmosphere are subject to the Clark County DAQ Air Quality Regulations, Section 94 – Permitting and Dust Control for Construction Activities.

7.4 How did FHWA and NDOT develop NOA standards and Mitigation Measures for the Boulder City Bypass Project?

In the absence of federal and Nevada state specific NOA regulations, nation-wide standards, references, and construction-specific applications for NOA were reviewed and considered in determining the requirements applicable to the specific conditions surrounding the BCB. California and Alaska are the only states with laws pertaining to NOA with California's being the most comprehensive. As such, technical provisions required for mitigation are modeled after California's regulations and best practices for managing NOA-related work. The standards include the Title 17 California Code of Regulations (CCR) 93105-93106. These regulations address using soil and rock with NOA for road construction and quarrying and processing materials with NOA. These are referred to as Airborne Toxic Control Measures (ATCMs) and are promulgated by the Air Resource Control Board (ARB) in the State of California. ATCM 93105 and 93106 reference California ARB (CARB) PLM Test Method 435 for determining the asbestos content of bulk materials. CARB Test Method 435, which is a PLM method, will be used for characterizing materials during BCB construction and will be capable of determining the NOA content of bulk materials.

These NOA-specific regulations have been applied to private development, California Department of Transportation (Caltrans) road construction and maintenance projects, and other municipal construction projects in California.

7.5 What did FHWA and NDOT do to Identify NOA in the Boulder City Bypass Project Area?

In response to the lack of federal or state regulation pertaining to NOA in Nevada, FHWA established an expert panel with specialized experience in the management of NOA. The expert panel was used as a forum to educate and provide recommendations to the BCB project team as sampling and testing efforts for NOA was planned and conducted and as the mitigation measures and contract specifications were being developed. The panel also reviews technical reports and ensures that viable criteria and performance measures are developed that would be consistent with the most recent and best management practices currently utilized across the country. The panel is led by the Volpe National Transportation Systems Center (Volpe Center), which is part of the U.S. Department of Transportation, in cooperation with NDOT, RTC, and FHWA. The following list of agencies and consultants comprise the expert panel:

- Volpe Center
- Federal Highway Administration (FHWA)
- U.S. Environmental Protection Agency (EPA)
- National Institute of Environmental Health Sciences (NIEHS)
- Nevada Department of Transportation (NDOT)
- Regional Transportation Commission of Southern Nevada (RTC)
- California Department of Transportation
- California Geological Survey

- Clark County Department of Air Quality
- CDM Smith
- Kleinfelder
- Tetra Tech
- EMSL Analytical Laboratory, Inc.
- Asbestos TEM Laboratories, Inc.

Field investigations consisting of soil and rock testing, ambient air testing, and limited personal air sampling were conducted to help better understand the nature and extent of NOA within the BCB area and to support the development of appropriate construction mitigation measures (Kleinfelder 2014a; Tetra Tech 2014b).

Subsurface and Surface Soil and Rock Sampling

A total of 611 surface and subsurface soil and rock samples were analyzed for NOA across the entire project area (Exhibit 3). Of these, 300 were collected and analyzed using a sampling and analysis plan (SAP) developed specifically for asbestos testing and 264 samples originally collected for geotechnical purposes were subsequently re-analyzed for NOA when researchers at UNLV reported the presence of NOA in and around the Boulder City area. The remaining 47 samples were collected following the geotechnical investigation but prior to the preparation of an asbestos SAP. The 311 samples collected without an asbestos SAP still provide very useful data as to the potential presence or absence of asbestos, the potential amount of asbestos present, and the type of asbestos that may be present. Mitigation measures to be implemented by the project contractors provide for supplemental testing using a SAP developed specifically for asbestos testing. In areas where only geotechnical sample derived asbestos data are available, during construction, contractor-collected data will ultimately form the basis for worker protection, measures implemented to limit off site migration of NOA during construction and material usage.

The 300 soil and rock samples collected using a SAP developed specifically for asbestos testing were analyzed by PLM using point counting (PLM PC) in accordance with CARB 435; a subset of these samples was analyzed by TEM in accordance with EPA Method 600/R-93/116 (EPA 1993). The 311 soil and rock samples not collected using a NOA SAP were analyzed using EPA Method 600/R-93/116 (EPA 1993) modified for quantitative analysis by TEM; a subset of these samples was also analyzed by PLM PC in accordance with CARB 435.

Each of these analytical methods has inherent advantages and disadvantages. PLM PC analysis is less expensive and faster than TEM, but it is not able to reliably detect low levels of asbestos. TEM analysis can more reliably detect lower levels of asbestos, but results can have high variability and uncertainty when structure counts are low.

Exhibit 3 presents the results of surface and subsurface soil and rock sample locations analyzed for NOA across the entire BCB project area. Smaller area maps are provided in Exhibits 4-1 through 4-18. The sample results depicted in Exhibits 3 through 4-18 use the following classification:

Map Dot Color Classification	Interpretation
Non-detect (green)	No NOA structures detected
<0.25% (yellow)	NOA detected at concentrations less than 0.25% (mass)
≥0.25 to <1% (orange)	NOA detected at concentrations of 0.25% (mass) to less than 1% (mass)
≥1% (red)	NOA detected at concentrations of 1% (mass) or greater

The 0.25% threshold does not represent the transition from either a “safe” or “unsafe” level of asbestos, it only indicates an asbestos concentration value based on the CARB regulations that identifies when NOA materials should be covered or if they may be left uncovered at the surface. The 1% value is important because that is the asbestos concentration level used by OSHA to define asbestos containing material (ACM) and employers must comply with OSHA worker exposure regulations regardless of whether the asbestos is naturally occurring or manufactured. Material with asbestos concentrations between 0.25% and less than 1 % cannot be used for surfacing material as per CARB but are not considered ACM by OSHA.

NOA is present along the entire BCB alignment with the most frequent detection in the Eldorado Mountains and the Railroad Pass area. The highest concentrations of NOA (up to 6%) were found in the Eldorado Mountains samples. All the samples from Phase 1 (Foothills/Paradise Hills Drive to Silverline Road) yielded concentrations of less than 0.25% actinolite asbestos.

A notable observation from these investigations is that the analysis by TEM often was able to detect the presence of NOA in samples ranked as non-detect by PLM PC. This is a consequence of the fact that the NOA levels present within the BCB area are often below the limit of detection by PLM PC (0.25%), when 400 PCs are examined. Thus, even soils ranked as non-detect by PLM have the potential to result in airborne releases of NOA if disturbed.

Ambient Air Sampling

As described above, there is NOA present in soils and rocks at varying levels throughout the BCB area. Therefore, it is likely that there is also NOA in ambient air within the BCB area due to natural processes (e.g., wind events). In order to determine the airborne levels of NOA under pre-construction conditions, an ambient air investigation is in the process of being conducted to measure airborne concentrations of NOA within the BCB area. Ambient air sampling began in May 2014 and there are currently 12 sampling locations (Exhibit 5) near the proposed alignment; locations were selected to ensure data was collected over the entire area of the BCB. Monitoring will continue at least through the completion of construction in 2018. Perimeter air sampling procedures for the BCB were developed based on EPA’s standard operating procedure (SOP) for asbestos sampling (EPA 1994). This SOP includes asbestos industry standard procedures for collecting air samples for asbestos analysis.

Ambient air samples were analyzed by TEM in accordance with the counting and recording rules specified in ISO 10312:1995(E) (ISO 1995). The BCB target analytical sensitivity for the TEM analysis of ambient air filters is 0.00004 structures per cubic centimeter (s/cc); most analyses were able to achieve this target sensitivity. The analytical sensitivity must be sufficient to ensure reliable detection and quantification if risks from outdoor ambient air approach or exceed a cancer risk of 1E-05 (1 in 100,000). The concentrations associated with these risk levels may be estimated as described below.

> For cancer, a simplified equation for computing the risk associated with some specified concentration is:
>
> $$Risk = C * TWF * UR$$
>
> Risk = risk of lung cancer or mesothelioma from the exposure being evaluated
> C = long-term average concentration of asbestos (structures per cubic centimeter [s/cc])
> TWF = time weighting factor (percent of full time that exposure occurs)
> UR = unit risk for lifetime exposure
>
> The target analytical sensitivity is then computed by rearranging the equation as follows:
>
> $$\text{Target Analytical Sensitivity} \leq 1E\text{-}05 / (TWF * UR)$$

For planning purposes, it is conservatively assumed the TWF is 1.0. This corresponds to exposure to outdoor ambient air for 24 hrs/day for a lifetime (actual exposures are likely to be lower than this for most people). Based on EPA's currently recommended risk model (IRIS 2006), the UR factor for lifetime exposure is 0.23. Thus, the level of concern for asbestos in the air would be about:

Target Analytical Sensitivity ≤ 1E-05 / 0.23 = 0.00004 s/cc

Concentrations of phase contrast microscopy equivalent (PCME) structures in ambient air samples to date ranged from non-detect to 0.0014 structures per cubic centimeter (s/cc) with a running average (across all stations) of about 0.0001 s/cc. To provide context, these levels are based on data gathered in close proximity to the BCB project area and not from any residential location and the ambient air concentration is within the range of baseline residential air action levels identified in EPA (2008a), which range from 0.00001 to 0.001 PCME s/cc depending upon the target cancer risk (1 in 1,000,000 to 1 in 10,000 respectively). However, the currently available ambient air dataset is too limited to provide reliable risk estimates of potential long-term ambient air concentrations. The majority of the asbestos structures in these ambient air samples were actinolite, although some samples reported other regulated asbestos types (chrysotile, amosite, tremolite, anthophyllite, and crocidolite) and non-regulated asbestiform amphiboles (Tetra Tech 2014b). During the initial monitoring rounds, Station 4 (see Exhibit 5) had the highest NOA air concentrations and is believed to be a consequence of the station proximity to the Eldorado Playa.

Personal Air Sampling

The amount of asbestos that could be released to air and inhaled will vary depending upon a number of factors, including the level and type of asbestos in the source materials, the nature, intensity, and duration of the disturbance activity, meteorological conditions (e.g., relative humidity, wind direction and speed), conditions of the source material (e.g., intact or weathered rock), and the effectiveness of any mitigation measure that may be employed. Because of this, predicting the asbestos levels in air based on measured NOA levels in soil and rock is extremely difficult.

In an effort to better understand potential worker exposure to NOA, very limited personal air sampling was performed. These samples are not intended to correlate directly with construction activities, but to provide insight, albeit limited, into some of the expected construction related exposures.

Seventeen personal air samples collected during the collection of soil and rock samples along the Phase1 alignment between Foothills/Paradise Hills Drive and Silverline Road were analyzed to evaluate airborne NOA concentrations during activities that disturbed the soil or rock (Tetra Tech 2014b). Each sample was analyzed by TEM in accordance with ISO 10312:1995(E) counting and recording rules (ISO 1995). Eight of those samples had NOA detected with the highest NOA air concentration measuring 0.0069 s/cc. This high concentration was measured during surface soil sampling in the south-central portion of the Phase 1 area; this concentration is about 30 times higher than average ambient air concentrations within the BCB area. These eight samples involved individuals conducting surface soil sample collection/mixing/storing, shallow surface soil sample collection/mixing/storing, hollow stem auger drilling, and driving on gravel/dirt roads. Actinolite was the predominant asbestos type present in the personal air samples. The remaining nine personal air samples did not observe any asbestos structures during the TEM analysis. These nine samples involved individuals conducting surface soil sample collection/mixing/storing, shallow surface soil sample collection/mixing/storing, backhoe pit excavation and filling, hollow stem auger drilling, subsurface soil sample collection/mixing/storing, driving on gravel/dirt roads, core drilling and core sampling. Water was used to minimize dust particulate dispersal only for the backhoe pit excavations and drilling activities.

Twelve personal air monitoring samples were also collected during sampling activities conducted in the Eldorado Mountains area (Kleinfelder 2014b). Activities performed during the air sampling period included driving on unpaved roads, walking on natural and disturbed ground, sampling rock, and

sampling soil from test pits excavated using a backhoe. Except for rock sampling, water was used to minimize dust particulate dispersal during sampling activities. In accordance with OSHA requirements, these collected air samples were initially analyzed by PCM in accordance with NIOSH Method 7400. Although PCM air concentrations were below the OSHA asbestos exposure limit of 0.1 fibers per cubic centimeter (f/cc) for all samples, subsequent analysis by TEM found that asbestos was present in all samples. TEM air concentrations were usually about 5 to 50 times higher than average ambient air concentrations within the BCB area. In general, TEM air concentrations were about five times lower than PCM concentrations, which suggests that a portion of the fibers identified during the PCM analysis were not asbestos (PCM does not distinguish between asbestos and non-asbestos particles). The asbestos structures observed during the TEM analysis were predominantly actinolite.

Asbestos tended to be detected more frequently and at higher NOA concentrations in the Phase 2 personal air samples compared to Phase 1. This observation is consistent with the fact that NOA concentrations in soil and rock within the Phase 2 section of the ROW tended to be higher than in Phase 1; however, due to inherent limitations in the analytical methods for soil and the variability in personal air data sampling, it is not possible to quantitatively correlate the relationship between NOA concentrations in soil and air.

Recognizing the small sample size and limited types of sampled activities, results show that detectable levels of NOA can occur in air during soil and rock disturbances within the BCB area under activities that are similar to some of the types of activities that may be performed during construction. These data also demonstrate that disturbances of soil and rock samples with low levels of NOA (i.e., below 0.25%), such as what would be encountered within the BCB area, have the potential to result in detectable levels of NOA in air. More intensive disturbance activities such as rock crushing and blasting have the potential for even greater releases of NOA into the air.

7.6 How do FHWA and NDOT Plan to Mitigate Potential Exposure to NOA?

The following activities are anticipated as part of the BCB construction and have the potential to disturb NOA:

- Sampling & testing
- Utility relocation
- Clearing & grubbing
- Blasting operations
- Crushing & material processing
- Topsoil salvage
- Landscaping & re-vegetation
- Grading
- Hauling
- Dumping
- Loading
- Material delivery & stockpiling
- Backfilling
- Compaction
- Paving operations
- Construction traffic
- Excavating
- Installation of appurtenances
- Bridge foundation construction

In order to reduce NOA exposure during construction activities associated with the BCB, specific mitigation measures were identified and developed to minimize NOA from becoming airborne during construction activities and an overview of them is presented in Appendix C. These measures will be implemented project wide throughout construction include project-specific sampling and analyses procedures that will be applied to evaluate the effectiveness of these measures and stipulate material usage.

The expert panel assembled by FHWA was used to provide recommendations to the BCB project team as the mitigation measures and contract specifications were developed. The BCB team worked closely with federal, state, and local agencies and their contractors to develop these mitigation measures.

Because Nevada does not have its own regulatory requirements, requirements related to NOA were largely modeled after the State of California. Mitigation measures were developed for the BCB to

minimize potential NOA exposures to workers and the general public during construction activities. As such, NOA mitigation measures were established for the following:

- Worker exposure – exposure to NOA during construction activities
- Offsite migration – offsite migration of NOA during construction activities
- Material usage – material containing NOA used onsite for construction

Contract specifications have been prepared to establish specific requirements for the implementation of mitigation measures to address NOA. These specifications provide the framework for the contractors to implement measures to mitigate NOA emissions during construction (Appendix D and E). Each contractor will provide the following personnel during construction specifically to implement and manage NOA mitigation measures:

- A Certified Industrial Hygienist (CIH), certified by the American Board of Industrial Hygiene with a minimum of 3 years of experience working with NOA or commercially-processed asbestos.
- An Asbestos Competent Person (ACP), as defined in 29 CFR §1926.1101 (b). These persons shall be on site when NOA mitigation measures are being implemented and at all times when construction activities are taking place and in sufficient number to properly manage and supervise the project.
- A Dust Control Monitor, as defined in Clark County Air Regulations, Section 94 (DAQ 2004), shall be onsite at all times when work is taking place and shall be provided in sufficient numbers to monitor all simultaneous work.
- A Geologist meeting the requirements of Nevada Revised Statutes (NRS) 514.005 with field mapping experience, which includes 3 years of experience with NOA.
- A State of NV certified environmental manager (CEM), as defined in NRS 459.485, 459.500) and Nevada Administrative Code (NAC) 459.9704.and pursuant to NAC 459.972 or 459.9724.

Worker Exposure

Mitigation measures related to worker exposure to asbestos adhere to the requirements set forth in 29 CFR 1926.1101 and are summarized in Appendix C “Worker Exposure”. The contractors will be required to develop exposure assessment and monitoring plans in accordance with 29 CFR 1926.1101(f). This program may be summarized in a long-term monitoring program, such as a personnel exposure monitoring program (PEMP) or included in a Health and Safety plan. Worker protection for federal, state, county, and municipal employees is addressed in the EPA Toxic Substances Control Act (TSCA), Worker Protection Rule under 40 CFR Part 763 Subpart G, which adopts by reference the requirements contained in 29 CFR 1926.1101.

Offsite Migration

Due to the intrusive nature of construction activities, NOA may become airborne during BCB construction. In order to minimize potential NOA exposures during construction to individuals beyond the project area, the contractor will employ appropriate measures to prevent potential NOA-containing dust from becoming airborne (Appendix C “Offsite Migration”).

These measures may include, but are not limited to, the application of water during all phases of construction activities, performing work only when rock/soils have been adequately wetted, modifying work practices (e.g., restricted vehicle and excavation speed), modifying work hours (e.g. conducting work at night when winds are low), and decontaminating site equipment prior to leaving the ROW. The effectiveness of these measures will be evaluated by collecting perimeter air samples, monitoring real-

time dust at the project ROW perimeter, performing visual observations for dust, and performing visual equipment inspections.

Perimeter air will be monitored along the extent of the ROW at regular intervals, to measure NOA concentrations in the air during construction activities. Sampling Zones will be established along both sides of the alignment at regular intervals (approximately every 2,500 feet). Within each Sampling Zone, two perimeter air stations will be placed, one on each side of the alignment immediately adjacent to the project ROW where the highest dust generating activity is anticipated to occur. Once construction activities begin within a Sampling Zone, 24-hour perimeter air samples will be collected from each station. Collection of perimeter air samples within the Sampling Zone will continue until all construction activities within the Sampling Zone are complete. A detailed Sampling and Analysis Plan (SAP) will be prepared prior to construction activities that describes the specifics of the perimeter air monitoring program, including selected monitoring station locations, sampling techniques, and analytical methods.

Air concentrations measured at these perimeter monitoring stations will be compared to a project-specific air concentration threshold. This threshold is a risk-based level, derived to ensure that any construction-related airborne NOA that may migrate offsite would not result in an unacceptable increase in potential cancer risks to the nearby residential community. This threshold will be calculated using the approach for deriving risk-based action levels for asbestos in air presented in the Asbestos Framework (EPA 2008a).

In brief, a risk-based concentration (RBC) in air is back-calculated using the cancer risk equation, assuming a baseline residential exposure scenario for a 4-year project construction duration (EPA 2008a). To account for a reasonable amount of construction delays, a four year construction duration was used in the equation instead of the projected 3 year construction period noted in Section 4.0 of this document. The calculated RBC is then adjusted using a site-specific attenuation factor. This attenuation factor is developed using air modeling to determine the expected relative decrease in NOA air concentrations, due to wind dispersion (i.e., dilution of the air concentration as it travels through the air), from the ROW to the closest residential community area. The resulting preliminary perimeter air monitoring threshold is designed to minimize exposure to offsite receptors (e.g., nearby residents) from exposures to airborne NOA and maintain an acceptable level of excess cancer risk.

It is important to note that this threshold is not to be interpreted as a “not to exceed” limit; occasional exceedances of the threshold are not expected to result in an unacceptable cancer risk, provided that the long-term average concentration is below the threshold. Even so, for the BCB, if ongoing perimeter air data monitoring results indicate that NOA concentrations for individual air samples exceed the threshold level, appropriate engineering and administrative controls will be revised to minimize further offsite migration of asbestos.

Real time asbestos air sample analysis is not possible, therefore any monitoring and exceedance awareness will be reflective of past activities. Perimeter air sample results will be evaluated by the contractor as soon as analytical data are available (within 3-5 days of the collection date). The contractor may elect to establish an on-site laboratory to further reduce sample analysis turnaround times. Results will be made available to NDOT/RTC as soon as analytical data are available. For each perimeter air sampling location, if the results exceed the perimeter air threshold, the contractor will intensify dust mitigation measures within the Sampling Zone where the exceedance was observed. If the perimeter air sample result for the same location exceeds the threshold on the next day, the contractor will intensify mitigation measures even further. If there is a third consecutive threshold exceedance, the contractor will be given the opportunity to modify work practices to mitigate the exceedance. If there is a fourth consecutive threshold exceedance, the contractor will stop work within the Sampling Zone of concern until a written modified plan that includes additional mitigation measures is accepted by NDOT/RTC.

As previously noted, NOA already occurs in the air in the vicinity of Boulder City. The goal of the BCB mitigation measures is to minimize NOA disturbed by construction of the BCB from becoming airborne. Disturbances of NOA by projects or activities not associated with the BCB will still contribute to the amount of asbestos in the air and it is likely, depending upon weather conditions, the BCB perimeter air monitoring could be capturing NOA generated away from the BCB area. If it can be demonstrated that an exceedance was the result of non-BCB project generated NOA contributions to the air, no corrective action may be required on the part of the BCB contractors.

Perimeter air sampling will be initiated once the contractor deploys real-time aerosol dust particle monitors (RAMs) along the project ROW. The RAMs will be used where the highest dust generating activities are anticipated to occur. There is no established threshold for evaluating RAM data, so the contractor will establish an appropriate site-specific airborne dust threshold. RAMs are not able to distinguish asbestos fibers and dust particulate levels do not necessarily correlate to airborne NOA levels. This threshold will serve only to alert the contractor, NDOT, and the RTC that potentially NOA-containing dust may be migrating offsite.

In accordance with DAQ's Air Quality Regulations, Section 94 – Permitting and Dust Control for Construction Activities, the contractor will maintain the project in a condition that will result in no more than 20% opacity using the Time Averaged Method or the Intermittent Emissions Method at the point of dust generation and zero visible dust at the project ROW during construction activities. The DAQ will not impose an opacity limit on blasting activities for the BCB but will work closely with the contractor to implement measures to minimize dust from leaving the site.

To minimize track out and minimize offsite migration of NOA from equipment accessing and leaving the site, the contractor will be required to perform inspections of vehicles prior to leaving the site and to utilize equipment washing stations and HEPA filter vacuuming to remove dust and other material. Visual inspections will be used to evaluate and confirm the performance of the decontamination efforts.

The Contractor will also ensure that employees follow appropriate decontamination practices, in accordance with 29 CFR 1926.1011(i) and (j), to ensure that asbestos contamination does not migrate offsite on worker clothing or in personal vehicles.

Material Usage

A threshold level of "less than 0.25% NOA" has been established for determining if rock and/or soil can be placed at the surface. This threshold is based on the requirements adapted from the state of California and specified in the Asbestos ATCM for Surfacing Applications. This threshold is not a risk-based threshold, but is set equal to the 400 PC detection limit of the CARB 435 method. All excavated material will be used onsite within the project area to prevent the offsite placement of material containing NOA. Material with NOA concentrations of 0.25% or higher will be covered with asphalt or concrete paving or surfacing material with NOA concentrations of less than 0.25%. Consistent with the CARB regulations, asphalt and concrete may utilize aggregates containing NOA concentrations of 0.25% or higher as long as the aggregates are completely incorporated into these products. The surfacing material will have a minimum thickness of 3 inches. Material samples will be collected and analyzed to verify that the surfacing materials within the limits of construction are below the 0.25% threshold. Details of the material usage sampling program will be modeled after CARB 435 and included in the project SAP. Because NOA concentrations in the soils within the Phase 1 BCB limits are likely to be below the 0.25% threshold, the contractor for Phase 1 is not expected to have to bury any materials.

In case the contractor encounters materials at or above the threshold, a specification will be provided to the contractor to ensure the proper placement and/or disposal of the material consistent with the project wide BCB mitigation measures.

For both phases material containing less than 0.25% NOA can be placed in non-detect areas and requires no further mitigation after final placement and material containing 0.25% or greater NOA may also be placed in non-detect areas, but must be covered with material containing less than 0.25% NOA. Excess excavated material may be permanently stored on land owned by Boulder City located between Boy Scout Canyon Road and the Boulder City Landfill (depicted in Exhibit 1), but only material containing NOA concentrations of less than 0.25% will be permanently stored there. Although outside of the ROW, this storage area has been subject to environmental surveys and review and is considered part of the of the BCB project area. Any material placed at this location will become the property of Boulder City and may be used by Boulder City at its discretion.

The National Park Service, Lake Mead National Recreation Area (LMNRA) currently requires topsoil to be salvaged and reused as surfacing material, regardless of NOA content for that portion of the BCB project within the LMNRA boundary.

7.7 How will FHWA and NDOT Monitor Contractor Compliance with NOA Mitigation Measures?

To ensure compliance with the various mitigation measures that will be employed by the contractors, NDOT, in cooperation with the RTC and the DAQ, will monitor the work performed through daily inspection and assurance testing. NDOT and RTC will each have their own Certified Industrial Hygienist (CIH) as part of their teams to manage and monitor the implementation of NOA mitigation measures by the project contractors.

A NOA Management Plan (NMP) will be developed by the contractors that include details of the mitigation measures, engineering controls, sampling and analyses, and the monitoring and response protocol. It shall include all actions planned as part of the work, to protect workers, visitors, and the public from potential exposure to NOA due to dust generating activities. The NMP shall include any required DAQ permit approvals and conditions. In addition, both phases will require the following plans, reporting, and documentation:

- Sampling and Analysis Plan
- Asbestos Dust Mitigation Plan
- DAQ Dust Control Permit
- Respiratory Protection Plan
- Daily NOA Summary Reports
- Monthly NOA Summary Reports
- NOA Post-construction Report

As described previously, the Clark County DAQ requires a Dust Mitigation Plan for all construction activities that disturb or have the potential of disturbing soils and create dust. This plan will require compliance with DAQ's Air Quality Regulations, Section 94 – Permitting and Dust Control for Construction Activities and be incorporated into and become part of the dust control permit and the NMP.

The provisions of the Dust Mitigation Plan and permit will be enforced by the DAQ while the oversight for the Project Specifications and Plans will be monitored and enforced by the RTC and NDOT in their respective contract administration roles for each phase. In addition to project wide dust control

measures, the contractor's Dust Mitigation Plan will also include measures to minimize dust emissions specifically applicable to the blasting of soil and rock.

The contract documents prepared for each phase of the project are written with sufficient parameters and controls, that the contractors will be aware of the NOA mitigation measures and their responsibility in implementing them.

7.8 Will Mitigation Measures be Needed for Maintenance Activities After Construction?

After the BCB project is completed and open to traffic, activities with the potential to disturb NOA include:

- Grading or reshaping of the shoulders, ditches or other areas and or any excavation required to repair or replace damaged, substandard or deficient facilities or conditions
- Repair work that involves the sawing or grinding of pavement
- Other routine and major maintenance as required by NDOT's Maintenance Management System that could disturb the surfacing material or existing rock cut slopes
- Rehabilitation and reconstruction of facilities, should the routine maintenance efforts not be sufficient or as the facility elements approach the end of their useful lives

The more intrusive activities will require mitigation measures similar to those that are required for construction of the BCB to provide protection for worker exposure, material usage, and offsite migration.

The material placement mitigation measures required during the construction of the BCB will help to limit future releases of NOA during operation and maintenance activities. Excluding pavement, the graded and compacted surfacing materials (top 3 to 6 inches) will contain lower concentrations of NOA (<0.25%) than the material placed beneath the surfacing material. Material with asbestos concentrations of 0.25% or greater can be used in concrete and pavement as long as they are thoroughly incorporated into these products. Project specifications also require the contractors to provide as-built plans that include the location and concentration of NOA in placed material used within the project limits. This mapping will inform future work crews as to the location of this material which would then guide the implementation of appropriate mitigation measures and use of personal protective equipment.

Mitigation measures will be employed for all activities with the potential to disturb NOA. NDOT will develop operation and maintenance procedures, as well as construction and permitting specifications, for future maintenance and construction work to limit the potential release of NOA. The information contained in the NOA Post-Construction Report will serve as valuable documentation for completing the procedures and specifications and may also help to support the development of state-wide regulations for future construction projects in areas with NOA.

8.0 AGENCY COORDINATION

Since the last re-evaluation, project coordination for both phases has been maintained between affected federal and local entities. This includes, BLM, BOR, NPS, USFWS, WAPA, CRC, and the Cities of Boulder City and Henderson and Clark County.

On September 4, 2014 a teleconference was held between FHWA and NDOT and the cooperating agencies to the original EIS (BLM, BOR, NPS, WAPA, RTC, City of Boulder City, the City of Henderson, and Clark County) to discuss the NOA studies and information available to date and identify any issues or concerns they may have had regarding NOA and the I-11 Boulder City Bypass project. NDOT and RTC consultant technical staff provided detailed answers to NOA related questions. The cooperating agencies have reviewed an administrative draft of this document.

Comments/questions raised during this teleconference and summarized responses are as follows:

- Would all resources be reviewed as part of the re-evaluation?
  Yes, although the re-evaluation would not go into detail for all non-NOA changes to the project since the 2013 reevaluation, it will note that they have been subject to applicable environmental review and agency coordination and had no or minimal impact to the environment.

- What types of personal and air monitoring have/would be done?
  There is currently ambient air monitoring being conducted on both phases and that will continue through construction. Limited activity-based sampling and testing has been done as part of our initial studies. There will be substantial personal and air monitoring and testing done during construction based on construction activity areas, as well as additional perimeter air monitoring, approximately every 2,500 feet along the alignment.

- Was a risk assessment prepared?
  The limited data did not support the development of a formal Risk Assessment. Instead a Risk Estimate was prepared.

- How will exceedances of threshold values be handled?
  Exceedances 1-3 will be handled using adaptive corrective process. A fourth exceedance will result in shut down and a formal re-evaluation of asbestos/dust control measures in use.

- Will exceedances be handled differently based on concentrations of NOA?
  No, a single asbestos based threshold will be applicable project wide regardless of the level of asbestos present in an area.

Additionally, as noted above, an expert panel of federal, state, and local agencies and private entities was established by FHWA to educate and provide recommendations to the BCB team as the mitigation measures and contract specifications were developed. The expert panel also had an opportunity to review and comment on an administrative draft of this document.

9.0 PUBLIC INVOLVEMENT

On September 18, 2014, NDOT and RTC, at the request of Boulder City presented general project information, including preliminary NOA information, as part of a City of Boulder City open house event for the general public. Noticing of the event was done in accordance with standards and practices established by Boulder City for such events. Display boards were used to convey information and representatives from NDOT and RTC were present to answer project related questions. Approximately 60 members of the general public attended.

NDOT, in cooperation with the FHWA and RTC, held a public information meeting using an open house format with a formal presentation on October 21, 2014 at the Elaine K Smith Center in Boulder City between 4-7 p.m. The meeting was advertised in the *Las Vegas Review Journal* (10/6, 10/20, and 10/21/2014), *Boulder City Review* (10/9 and 10/16/2014), *Henderson Views* (10/9 and 10/16/2014) and *El Tempo* (10/17/2014). The online versions offered digital banner ads between 10/6 and 10/21/2014. Approximately 8600 mailings noticing the meeting were sent to residents and business in Boulder City and Henderson. In addition, stakeholders and federal, state, and local agency personal were also noticed. A press release was also disseminated to numerous local news and information entities. The focus of the public meeting was to present information on NOA and the BCB project and to gather public comments/concerns regarding the information presented and about the project in general. About 152 members of the public attended the meeting. A panel of NOA experts and project staff answered questions during the Q&A following the presentation.

A transcript (Appendix F) of the October 21 meeting captures the questions and comments received and answered at that meeting. Questions and comments submitted by the public at the information meeting and also received as part of the 30 day comment period are classified and responded to in Appendix G.

10.0 CHANGES IN ENVIRONMENTAL COMMITMENTS OR MITIGATION MEASURES

There are additional environmental commitments and mitigation measures that will be implemented as part of the project to address NOA. However, since the mitigation measures detailed in the 2005 ROD and FEIS already include measures for air quality and hazardous materials, the current mitigation measures and commitments remain valid and do not need to be revised or amended (Table 2). The additional NOA mitigation measures provide finer detail to strengthen already existing mitigation measures and commitments and will be incorporated in the project contract documents.

Table 2. Construction Mitigation Measures from 2005 ROD and FEIS

Mitigation Measure ROD	Mitigation Measure FEIS	Description
C-1	AQ, pp. 4-2, 4-6	Construction contractors will be required to obtain and maintain all applicable Air Quality control permits. Dust control permits will be acquired from DAQ prior to construction.
C-2	AQ, pp. 4-5, 4-6	Dust abatement measures as specified in a dust mitigation plan will be used, and the project will follow the DAQ BMP manual for construction activities. These BMPs are designed to decrease PM_{10} emissions, and include: • Minimize land disturbances by initiating construction in phases, where possible • Use watering trucks to minimize dust • Cover trucks when hauling dirt • Use dust suppressants on traveled paths that are not paved • Stabilize the surface of dirt piles, if not removed immediately • Use windbreaks to prevent any accidental dust pollution • Limit vehicular paths and stabilize temporary roads within the construction area • Minimize dirt track-out by cleaning trucks before leaving the construction site or by paving a few hundred feet of the exit road just before entering the public road • Revegetate or rock-mulch any disturbed land not paved • Remove unused material and dirt piles • Revegetate all vehicular paths created during construction
C-3	AQ, p. 4-6	Excavation and grading operations will be suspended when constant wind speed attains 25 miles per hour (mph) or if instantaneous wind speeds (gusts) are measured to be at least 40 mph. Wind speeds shall be determined at the DAQ air quality monitoring station in Boulder City. Suspension will continue until 1 hour after the wind speed falls below the constant or gust maximum.
C-4	AQ, p. 4-2	Appropriate emissions permits will be obtained for the mobile and stationary construction equipment required for this project. These permits will specify additional BMPs that must be followed to assure that emissions of hydrocarbons, nitrogen and sulfur oxides, and carbon monoxide remain within acceptable limits.
C-33	VR, p. 4-98; AQ, p. 4-5	Impacts to visual resources from fugitive dust emission during construction will be reduced by the implementation of a dust mitigation plan incorporating DAQ BMPs. This will include the use of dust suppression techniques, such as watering and applying chemical stabilizers, control of construction traffic, and other measures to minimize dust generation.
C-39	HW. p. 4-	The generators of hazardous waste (e.g., petroleum byproducts from

Mitigation Measure ROD	FEIS	Description
	137	equipment maintenance) will acquire an Environmental Protection Agency (EPA) generator identification number. Hazardous wastes will be managed according to appropriate procedures and disposed of at EPA-permitted facilities in accordance with applicable laws and regulations.
C-40	HW, p.4-137	Transporters of hazardous waste and disposal sites will have the required permits in place.

11.0 OUTSTANDING COMMITMENTS

Mitigation Measure O-10 from the ROD states that "a Wildlife Preserve will be established through the City of Boulder City zoning process in the Eldorado Ridge area to help maintain the continuity of bighorn utilization across this area". The general location of said preserve is identified in the EIS (p.6-34). At present the Boulder City Master Plan does not identify the existence of the preserve area. FHWA and NDOT require Boulder City to fulfill this commitment prior to the completion of the Boulder City Bypass. Establishment of this preserve is critical to maximizing the benefits of the wildlife crossings that are part of the project.

12.0 APPROVAL

FHWA regulations [23 CFR 771.130(c)] state "where the Administration is uncertain of the significance of the new impacts, the applicant will develop appropriate environmental studies…to assess the impacts of the changes, new information, or new circumstances. If, based upon the studies, the Administration determines that a supplemental EIS is not necessary, the Administration shall so indicate in the project file".

FHWA and NDOT have developed "appropriate environmental studies" to characterize the presence of NOA in the BCB project area and have also developed mitigation measures in consultation with federal and state regulatory agencies and asbestos experts. It is concluded the changes in the project and environmental conditions and any potential adverse impacts associated with those changes can be mitigated enough to where there will not be a significant impact. Further, though NOA was not explicitly studied in the 2005 EIS, it did include air quality and hazardous waste mitigation measures of which the proposed NOA mitigation measures for the BCB project fall under and further strengthen.

FHWA regulations (23 CFR 771.129) also allow for a re-evaluation process of NEPA documents to address changes in the project and/or environmental conditions to determine if the original FEIS and ROD remain valid. Based on the information provided in this re-evaluation, the 2005 EIS and ROD remain valid and a supplemental EIS will not be prepared for this project.

Approved by: _____ Date: 12/9/14

Susan Klekar
FHWA Division Administrator

Approved by: _____ Date: 12-8-14

Rudy Malfabon
NDOT Director

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EXHIBITS
(1-5)

APPENDICES
(A-G)