U.S. Department of the Interior
Bureau of Land Management

Libra Solar Project

Final Environmental Impact Statement

July 2024

Volume 1

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Prepared by:

U.S. Department of the Interior
Bureau of Land Management

In Cooperation with:

U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
Nevada Department of Wildlife
Mineral County, Nevada
Lyon County, Nevada
U.S. Department of Defense, Hawthorne Army Depot

FINAL EIS

DOI-BLM-NV-C000-2023-0001-EIS

Libra Solar Project

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July 2024

MISSION STATEMENT

The Bureau of Land Management's mission is to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.

ENVIRONMENTAL IMPACT STATEMENT FOR THE LIBRA SOLAR PROJECT

Responsible Agency: United States Department of the Interior, Bureau of Land Management

Document Status: Draft ( ) Final (X)

Abstract: Libra Solar, LLC, is proposing to construct, operate, maintain, and decommission an approximately 700-megawatt photovoltaic solar electric generating facility and ancillary facilities (Project) on 5,778 acres of federal lands administered by the United States (U.S.) Department of the Interior, Bureau of Land Management (BLM). The Project site is in Mineral County and Lyon County, Nevada, approximately 55 miles southeast of the Reno metropolitan area and 11 miles southeast of the town of Yerington. The expected life of the Project is 30 years.

The BLM has prepared this Final Environmental Impact Statement (EIS) with input from cooperating agencies and American Indian Tribes to analyze potential impacts of the Project. The cooperating agencies include the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Nevada Department of Wildlife, Mineral County, and Lyon County. This EIS evaluates the Proposed Action, three alternatives to the Proposed Action, and the No Action Alternative. The Proposed Action and the alternatives involve development within a requested right-of-way that includes the same solar site; however, each action/alternative differs in how the facility would be constructed, the components that would be constructed including the generation-tie (gen-tie) line, and the site access routes used during construction. The Proposed Action would involve solar development utilizing traditional development methods, which include disk and roll to remove vegetation in the solar array areas. Alternative 1 would reduce disturbance to major washes, vegetation, and soils within the solar array areas by locating development areas outside of the major washes and providing guidelines to limit vegetation disturbance during construction. Alternative 1 includes alternative construction methods such as drive and crush to maintain vegetation root structures and to promote restoration over the lifespan of the Project. Alternative 2 would provide supplemental access during construction to disperse some of the concentrated vehicle trips anticipated under the Proposed Action. Alternative 3 entails connecting the gen-tie line from the Project to the proposed Greenlink West Transmission Project through a new switching station under the Greenlink West line, removing the need for approximately 23.6 miles of gen-tie, when compared to the Proposed Action. The No Action Alternative would be a continuation of existing conditions. The alternatives were developed using input from the public, stakeholders, Tribes, and cooperating agencies. The EIS evaluates environmental and planning issues including impacts to recreational off-highway vehicle access, grazing allotments, transportation, environmental justice, and other social and environmental resources. A comprehensive list of resource topics analyzed in detail within the EIS are included in Table 1.7-1.

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT

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July 19, 2024

Dear Reader:

Enclosed for your review and comment is the Final Environmental Impact Statement (EIS) for the Libra Solar Project (Project). The Final EIS was prepared by the United States Department of the Interior, Bureau of Land Management (BLM) pursuant to the Federal Land Policy and Management Act of 1976 and the National Environmental Policy Act of 1969. The Project includes the construction, operation, maintenance, and decommissioning of an approximately 700-megawatt photovoltaic solar electric generating facility and ancillary facilities on approximately 5,778 acres of federal lands administered by the BLM.

The BLM has developed a range of alternatives to resolve resource conflicts by considering: (1) issues raised through public scoping and consultation and coordination with cooperating agencies and American Indian Tribes, (2) issues raised by agency resource specialists, and (3) applicable land use plan management prescriptions. This process has resulted in the development of three alternatives in addition to the Proposed Action. The No Action Alternative is also addressed, which constitutes a continuation of current land management in the application area. These alternatives are described in Chapter 2 of the Final EIS. The BLM has designated all elements of Alternative 1, Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance combined with Alternative 2, Supplemental Access During Construction, as the preferred alternative. As described in the Final EIS, these alternatives would reduce ground disturbance, promote restoration over the lifespan of the project, and provide supplemental transportation routes during construction. Chapter 3 presents the affected environment and analyzes the potential impacts on resources or resource uses from implementation of the alternatives. Chapter 4 describes the BLM's consultation and coordination efforts throughout the process.

The Final EIS has been revised in response to comments received and the BLM's internal review of the Draft EIS. A summary of the public involvement, consultation, and coordination that was conducted since the Draft EIS has been added to the Executive Summary and Chapter 4: Consultations, Coordination, and Public Involvement of the Final EIS. Responses to public comments and revisions to the Draft EIS are detailed in Appendix E: Public Comment, Responses, and Revisions to the Draft Environmental Impact Statement.

The Final EIS is available on the BLM National NEPA Register website at: https://eplanning.blm.gov/eplanning-ui/project/2022592/510. Thank you for your continued interest in the Libra Solar Project.

Sincerely,

Kimberly D. Dow

Kimberly D. Dow
District Manager
Carson City District

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ES. Executive Summary

ES-1 Introduction

Overview

This Final Environmental Impact Statement (EIS) has been prepared by the United States (U.S.) Department of the Interior (DOI), Bureau of Land Management (BLM). This EIS analyzes effects of and alternatives to the Libra Solar Project (Proposed Action or Project) described in the Plan of Development (POD) submitted by Libra Solar, LLC (Applicant). The BLM has prepared this EIS in accordance with the National Environmental Policy Act of 1969 (NEPA) (Title 42 of the *United States Code* [U.S.C.] 4321 *et seq.*) and the Council on Environmental Quality (CEQ) NEPA Implementing Regulations (Title 40 of the Code of Federal Regulations [CFR] Parts 1500-1508), revised as of May 20, 2022. The BLM is the Lead Agency for this EIS pursuant to 40 CFR 1501.7.

Section 3104 of the Energy Act of 2020 (codified at 43 U.S.C. § 3004) directs the Secretary of the Interior to issue permits that, in total, authorize production of at least 25 gigawatts (GW) of electricity from wind, solar, and geothermal projects by 2025. Additionally, Executive Order 14082 requires federal agencies to prioritize promoting construction of clean energy generation, storage, and transmission, and enabling technologies through efficient, effective mechanisms that incorporate community engagement.

Purpose and Need

The need for the action (processing the Applicant's Application) is to respond to the Applicant's request for a right-of-way (ROW) authorization to construct, operate, maintain, and decommission the proposed Project in accordance with BLM's responsibility under the Federal Land Policy and Management Act (FLPMA) and 43 CFR Part 2800. The need for the action is also created by BLM's obligation to contribute towards the achievement of the goals established in Section 3104 of the Energy Act of 2020 and Executive Order 14057 through the development of renewable energy production on federal public land.

The purpose of BLM's action is to determine if the Applicant's project and alternatives are consistent with relevant laws, regulations, and policies, and to consider whether to grant, grant with modifications, or deny the ROW.

Decisions to be Made

The BLM will decide whether to deny the proposed ROW, grant the ROW, or grant the ROW with modifications. A ROW, if granted, would include terms, conditions, and stipulations that the BLM determines to be in the public interest and may include modifying the proposed use or changing the location of the proposed facilities (43 CFR 2805.10(a)(1)).

ES-2 Proposed Action and Alternatives

Introduction

In accordance with the CEQ's NEPA Regulations (40 CFR § 1502.14), an EIS must present the environmental consequences of a proposed action, no action, and other reasonable action alternatives, as well as provide a comparison of the impacts by alternative. The EIS must define the issues such that the public and decision makers can readily understand them, thus contributing to a basis for an informed and reasoned decision.

Alternatives to the Proposed Action were developed by the BLM to avoid or reduce various resource conflicts. Resource conflicts include loss of habitat for wildlife species, changes to drainages and hydrology, loss of grazing land for rangeland permittees, traffic, socio-economic impacts from an influx of workers to construct the facility, and dust generation during construction.

Three alternatives to the Proposed Action were developed in response to issues raised by the public and agencies during scoping. One alternative addresses alternative methods to construct the facility to preserve vegetation and site hydrology. Another alternative specifically addresses adding supplemental construction access. The last alternative presents an option for reducing effects of the Project's method for connecting to the regional transmission system.

Several other alternatives were identified and considered but were eliminated from detailed analysis. Additional information on the development and details of the alternatives to the Proposed Action is provided in Section 2, including other alternatives considered but eliminated from further analysis and the rationale for eliminating them from detailed analysis. The following sections provide an overview of the Proposed Action and the alternatives carried forward for analysis in this EIS.

Proposed Action

The Applicant is requesting BLM authorization to construct, operate, maintain, and decommission a 700-megawatt (MW) photovoltaic solar electric generating facility and ancillary facilities. The proposed on-site solar facilities include 34.5 kilovolt (kV) above ground or underground collector lines, a 2.8-acre operation and maintenance (O&M) facility, an 8.3-acre substation facility, a battery energy storage system, internal access roads, access roads along a generation tie line (gen-tie) line, a perimeter road, perimeter fencing, a water storage tank for fire protection, drainage control features, and an on-site water well. The Project would result in the permanent disturbance of approximately 3,420 acres within the 5,778-acre ROW application area. The Project site is in Mineral County and Lyon County, Nevada, approximately 55 miles southeast of the Reno metropolitan area and 11 miles southeast of the town of Yerington.

Alternatives

Several potential alternatives were identified and considered by the Applicant and the BLM. Of the various alternatives considered, the No Action, the Proposed Action, and three additional alternatives were identified for analysis in the EIS, listed here:

1. Alternative 1: Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance
2. Alternative 2: Alternative Supplemental Access During Construction
3. Alternative 3: Alternative Gen-tie Connecting to Greenlink West

Each action alternative includes approval of a ROW grant by BLM. The Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance Alternative would modify the Proposed Action to reduce disturbance to major washes and vegetation and soils within the solar site by avoiding and establishing development areas outside of the major washes and providing guidelines for limiting vegetation disturbance during construction. The Supplemental Access During Construction Alternative would also modify the Proposed Action to provide supplemental access during construction to disperse some of the proposed vehicle trips concentrated on East Walker Road under the Proposed Action. The Gen-tie Connecting to Greenlink West Alternative would connect the gen-tie line from the Project to the proposed Greenlink West Transmission Project through a new switching station under the Greenlink West line. This alternative requires authorizations that are not guaranteed at this time. NV Energy must support this alternative in consideration of system operation and integration.

No Action Alternative

CEQ regulations (40 CFR 1500–1508) for implementing NEPA require that an EIS alternatives analysis include a No Action Alternative. In accordance with this requirement, under the No Action Alternative, BLM would deny the ROW grant, the Project would not be constructed, and the BLM would continue to manage the land consistent with the 2001 Carson City Field Office Consolidated Resource Management Plan (CRMP). Under the No Action Alternative, the Project area would remain open for future solar development or other uses consistent with the BLM statutory, regulatory, and planning guidance and policies.

ES-3 Consultation and Coordination

Public Participation

Numerous opportunities for public input have occurred during BLM's NEPA decision-making process. The BLM published a Notice of Intent (NOI) to prepare an EIS for the Project in the *Federal Register* on April 24, 2023, which initiated a 30-day public scoping period for the Project, ending on May 24, 2023. The BLM hosted a virtual public scoping meeting for the Project on May 8, 2023. Agencies and stakeholders were notified by postcard of the public scoping meeting opportunity. The BLM received 25 emails and letters during the scoping period. A Scoping Report was prepared to summarize the comments received (BLM 2023) and can be found at the BLM's National NEPA Register website: https://eplanning.blm.gov/eplanning-ui/project/2022592/570. External scoping also included meetings with the grazing permit operator, meetings with off-highway vehicle (OHV) users, and feedback from interested parties including the Los Angeles Department of Water and Power (LADWP) and Nevada Copper.

Publication of the U.S. Environmental Protection Agency's (USEPA) Notice of Availability (NOA) of the Draft EIS in the *Federal Register* initiated a 45-day public review and comment period under NEPA. The BLM held two additional public meetings during the 45-day public review and comment period to present the analysis of the Proposed Action and alternatives. An in-person meeting was held at the Mason Valley Boys and Girls Club in Yerington, Nevada on February 6, 2024, and a virtual meeting was held on February 7, 2024. The BLM received a total of 177 written, verbally recorded, and transcribed comments from 34 entities, including federal, State and local agencies, Native American Tribes, non-governmental organizations, private companies, and individual members of the public. Consistent with 40 CFR 1503.4, BLM provided responses to each substantive comment in the *Public Comment, Responses, and Revisions to the Draft Environmental Impact Statement Report*, included as Appendix E. No major modifications to the Proposed Action or alternatives were made in response to public comments. Additional information about the comments received during the public review and comment period is included in Chapter 4: Public Involvement Process.

Interagency Consultation and Coordination

Cooperating Agencies

In July 2022, the BLM sent Cooperating Agency invitation letters for the Project to federal, state, and local agencies. The Cooperating Agencies that accepted the invitation include USEPA; Hawthorne Army Depot; U.S. Fish and Wildlife Service (USFWS) Migratory Bird Program; Nevada Department of Wildlife; Mineral County, Nevada; and Lyon County, Nevada.

Tribes

The BLM has initiated government-to-government consultation with Indian Tribes, pursuant to Executive Order 13175 of November 6, 2000 (Consultation and Coordination With Indian Tribal Governments); American Indian Religious Freedom Act (AIRFA); and Executive Order 13007, Indian Sacred Sites; and consistent with the Programmatic Agreement for the Western Solar Plan (2012). In a separate process, Indian Tribes have also been invited to participate specifically in the NEPA review and under Section 106 of the National Historic Preservation Act (NHPA).

The BLM is conducting on-going government-to-government consultation with Bridgeport Indian Colony, Fallon Paiute-Shoshone Tribe, Pyramid Lake Paiute Tribe, Reno-Sparks Indian Colony, Walker River Paiute Tribe, Washoe Tribe of Nevada and California, Yerington Paiute Tribe, and Yomba Shoshone Tribe. Key concerns include potential impacts to the Pistone-Black Mountain Conservation Area and other nearby sensitive cultural sites, particularly along the gen-tie line. In a process separate from the government-to-government consultation, the BLM also invited the following Tribes, which are within an extended regional area, to participate in scoping to inform the NEPA and NHPA Section 106 reviews: Moapa Band of Paiutes, Las Vegas Paiute Tribe, Kaibab Band of Paiutes, Paiute Indian Tribe of Utah, Ely Shoshone Tribe, and Duckwater Shoshone Tribe. The Moapa Band of Paiutes provided scoping comments on topics such as biological resources, vegetation removal, viewshed analyses, Project water use, and cultural resources.

On June 26, 2023, and July 12, 2023, the BLM hosted virtual tribal meetings to present the proposed action, show maps of the Project facilities, and provide an overview of key resource findings based on the completed technical studies. Representatives from the Walker River Paiute Tribe, Reno-Sparks Indian Colony, and Fallon Paiute Shoshone Tribe participated in the meetings.

The BLM has identified potential impacts to cultural resources in this EIS and is continuing discussions with Tribes through formal and informal consultation. BLM hosted two virtual tribal meetings on April 4, 2024, to review the BLM's preferred alternative, review potentially affected and avoided cultural resources, and discuss the development of a Historic Properties Treatment Plan and Cultural Resources Monitoring and Post-Review Discovery Plan, for the Project. A draft Historic Properties Treatment Plan, and Cultural Resources Monitoring and Post-Review Discovery Plan, are included in Appendix D. The final plans, including any revisions made during consultation with Tribes and other consulting parties after the publication of the FEIS, will be included in the ROD.

State Historic Preservation Office Consultation

Section 106 of the NHPA requires that all federal agencies consider the effect of undertakings they conduct, license, approve, or fund on historic properties. The Section 106 implementing regulations at 36 CFR 800.8(c), allow a Federal agency to use the NEPA environmental review process to comply with Section 106 of the NHPA in lieu of the procedures set forth in 36 CFR 800.3 - 800.6. The BLM initiated Section 106 consultation with the Nevada State Historic Preservation Office (SHPO) and the Advisory Council of Historic Preservation (ACHP) on April 14, 2022. This Section 106 consultation process is integrated with the NEPA process for the Project; see Chapter 4 regarding additional information on coordination and consultation. The BLM has consulted with the SHPO and ACHP regarding the EIS consistent with the standards set forth in 36 CFR 800.8(c)(1). The BLM's cconsultation with the SHPO is ongoing, the results of which will be disclosed in the ROD for the Project.

ES-4 Issues

Table Executive Summary (ES)-1 summarizes issues raised during scoping and review of the Draft EIS by the public and agencies . All issues described in Table ES - 1 have been analyzed in detail within the EIS. Further detail is included in each respective resource sub-section within Chapter 3. Several other resource topics in addition to those listed in the table are analyzed in the EIS, including Geology, Soils, and Mineral Resources; Native American Concerns; and Transportation.

Table ES - 1 Issues Raised During Scoping and Analyzed in Detail

Resource or EIS topic	Topic
Land use and realty	Commenters raised questions about whether the gen-tie would impact existing ROWs. An existing deenergized distribution-line ROW owned by NV Energy doing business as Sierra Pacific Power is located within the Project solar site and would need to be realigned and LADWP operates a transmission line in the vicinity of the Project.
Minerals	Commenters raised questions about whether the Project would impact access to the Pumpkin Hollow Mine, located adjacent and north of the Project site. The gen-tie would cross unpatented mining claims held by Nevada Copper.
Rangelands/grazing	Commenters raised questions about whether the Project could impact two active grazing allotments and pasture fences, pipelines, wells, and troughs within the Project area.
Recreation	Commenters raised questions about whether the Project would impact OHV usage and race routes located in the Project area. The Nevada Off-Road

Resource or EIS topic	Topic
	Association expressed support for the Project given that key special recreational permitting (SRP) OHV routes would remain open.
Visual resources	The Project is in an unclassified visual resource management (VRM) class but was assigned an interim VRM of Class IV. Commenters raised questions about the visibility of the site from Pistone-Black Mountain National Conservation Area.
Water resources	The Project would have water needs that may be sourced by groundwater. Commenters raised questions about groundwater uses, drainage pattern changes and the need to avoid significant drainages with a buffer.
Vegetation and noxious weeds	Invasive species can be spread by off-road vehicles and contaminate formerly weed-free areas. Commenters raised questions about weed control and integrated weed management planning, given the scale of disturbance.
General wildlife; special status species; and threatened, endangered, and candidate species	Commenters raised questions about potential impacts to big game species, small mammals, and migratory birds, as well as loss of habitat and the loss of movement corridors through the solar site. Several commenters raised questions about potential impacts to Bi-State sage grouse, a special status species under consideration for listing as endangered or threatened under the Endangered Species Act (ESA). The Project site does not support suitable habitat for Bi-State sage-grouse and it is not located within any mapped habitat identified in the 2016 Record of Decision and Land Use Plan Amendment for the Nevada and California Greater Sage Grouse Bi-State Distinct Population Segment in the Carson City and Tonopah Field Office (2016 Bi-State Sage Grouse Plan Amendment) (BLM 2016). This species is addressed in the EIS, given questions and concerns, despite it not being present nor having any potential to be directly or indirectly affected. The USFWS raised concerns regarding yellow-billed cuckoo, a federally listed endangered species. This species has not been documented in or near the Project area during recent surveys, nor in the past. The species could, theoretically, migrate along the Walker River corridor. A single crossing of the gen-tie occurs over the Walker River. As such, this species is addressed in the EIS to identify the means of avoidance.
Cultural resources	Commenters raised questions about potential impacts to traditional and cultural resources and uses (including natural resource values encompassing water resources, wildlife, and big game; and other spiritual values), archaeological resources, and historic resources. Tribes also raised questions about whether the Project would impact accessibility to Pistone-Black Mountain National Conservation Area from the site.
Air quality and greenhouse gases/ climate change	Project construction would result in air quality impacts including exhaust emissions as well as dust generation. Commenters raised questions about dust control as well as quantification of potential air quality impacts.
Socioeconomics	Commenters raised questions about potential socioeconomic impacts including impacts to housing demand, including transient housing; economic conditions; property values; community services; and tax revenues.

Resource or EIS topic	Topic
Environmental justice	The Project region includes low-income, minority, and Native American populations. Commenters raised questions about potential disproportionate and adverse impacts to these populations.
Public health and safety	Commenters raised questions about potential impacts to wildfire risk and disposal of hazardous wastes and wastes such as batteries, transformers, semiconductors, and inverters.
Soils	Commenters raised questions about potential soils impacts from dust and erosion.
Transportation and traffic	Multiple commentors raised questions about potential traffic and safety impacts due to increased Project construction traffic on East Walker Road.

ES-5 Comparison of Effects

Table ES - 2 compares the anticipated effects of the Proposed Action and each alternative on the resources analyzed in this EIS. The No Action Alternative would have no effects to any of the environmental resources listed, as the Project would not be built.

Table ES - 2 Comparison of Impacts between Proposed Action and Alternatives – Major System Features

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
Recreation: Access to existing recreation opportunities or areas	Up to 5,141 acres of land open for recreational use would be removed from use for a period of approximately 30 years. Direct access to Old State Road 2C and other designated OHV routes would remain open through construction and for the life of the Project. The Proposed Action would result in loss of approximately 14 miles out of 12,357 total miles of OHV trails within the Carson City District (approximately 0.1 percent).	Reduced compared with the Proposed Action. Approximately 2.25 miles of additional drainages would be unfenced as compared with the Proposed Action, allowing for continued OHV access. Impacts to designated trails would be the same as the Proposed Action.	Same as Proposed Action.	Reduced compared with the Proposed Action because trails and race routes would not be crossed by the gen-tie.	No change, existing recreational access and opportunities would remain.
Soils: Erosion and topsoil	The solar site would result in 3,306 acres of new ground disturbance and the gen-tie would result in 104 acres of new ground disturbance. Surface disturbances and removal of vegetation during construction would increase the potential for soil erosion. Potential adverse effects	Reduced compared with the Proposed Action, with 1,807 acres of estimated ground disturbance compared with 3,306 for the Proposed Action. Minimizing soil disturbance, avoiding large drainages, and maintaining vegetation would reduce erosion and	Same as Proposed Action.	Reduced compared with the Proposed Action since approximately 11.8 acres of new ground disturbance would result for the gen-tie, as compared with 104 acres for the Proposed Action.	No change to existing soil conditions.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	would be minimized with implementation of the Storm Water Pollution Prevention Plan (SWPPP) during construction and through mitigation, including erosion stabilization, during O&M. Grading for site preparation could result in loss of topsoil and would be minimized through best management practices (BMPs), including topsoil salvage.	loss of topsoil over the life of the Project.			
Land Use and Realty: Grazing	The Project would result in the loss of 5,141 acres of grazing lands operated by a permit holder due to development of the solar site and impacts to 104 acres for the gen-tie. The Applicant would work with the grazing permit holder to provide infrastructure improvements and a new water source to allow for grazing in other portions of the allotment west of the Project site. Due to the removal of all	The impacts would be reduced as compared with the Proposed Action, by allowing for faster restoration of grazing land after decommissioning.	Same as Proposed Action.	Similar but reduced as compared with the Proposed Action. Rangeland is located along the gen-tie and construction would result in some impacts to 104 acres of grazing land under the Proposed Action for the gen-tie, which would be reduced to 11.8 acres under this alternative.	No change to existing grazing operations.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	vegetation on the solar site and the slow revegetation process of desert landscapes, the loss of grazing land could persist for decades to century or more after decommissioning.				
Water resources: Sedimentation and flooding	The Proposed Action would involve surface disturbance through traditional construction methods, which could increase erosion and sedimentation during construction and O&M. The Proposed Action is not anticipated to increase the likelihood of on- or off-site flooding, which is further reduced through inclusion of detention basins, and major drainage features would remain undeveloped. Stormwater flows level out in the mid-valley and would not impact any other land uses. Implementation of the SWPPP BMPs and other	Reduced compared with the Proposed Action. Minimizing soil disturbance, avoiding large drainages, and retention of existing vegetation would reduce sediment loss and erosion and would reduce the increases in off-site flow volumes and velocities such that they would be similar to pre-Project conditions.	Same as Proposed Action	Reduced compared with the Proposed Action. By reducing the gen-tie from 24.1 miles to 0.54-mile, fewer impacts to drainages from the gen-tie and gen-tie access road construction would occur.	No change to existing sedimentation or flooding regimes.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	measures would further minimize the impact.				
Water resources: Groundwater quality or quantity	The Proposed Action would have no impact on groundwater quality. If a groundwater well were developed, groundwater pumping would not have direct impacts to water quantity available to surrounding water users (i.e., East Walker River) or other beneficial uses. The project could use water for dust control. Cumulative impacts to groundwater use and surface manifestations of groundwater would be minimized or avoided through the water appropriation review process.	Similar to the Proposed Action. A reduction in the need for dust-control water may be possible for this alternative.	Similar to the Proposed Action, although approximately 10 to 15 percent more water may be needed for dust control.	Similar to the Proposed Action. Less dust-control water would be needed for this alternative since the gen-tie would be reduced from 24.1 miles long to 0.54 mile long.	No change to existing groundwater resources.
Vegetation and plants: Native vegetation communities and plants and wildlife habitat	Approximately 3,420 acres of previously undisturbed native vegetation would be permanently removed.	Reduced compared with the Proposed Action. With the application of less intensive and less disturbing construction methods within the solar array blocks, on-site vegetation would experience a higher	Same as Proposed Action.	Reduced compared with the Proposed Action since 11.8 acres of new disturbance to native vegetation would occur for the gen-tie, as compared with	No change to existing vegetation or wildlife habitat.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
		likelihood of survival and regrowth during and after construction as well as during O&M. Minimizing soil disturbance and retention of existing vegetation would reduce impacts to natural vegetation communities and plants.		104 acres for the Proposed Action.	
Vegetation and plants: Special status plant species	A few populations or individuals of sensitive plant species are present in areas proposed for disturbance, including an estimated 22 individuals of sand cholla and one location of Tonopah milkvetch, which would be permanently lost. Special status plant distribution is anticipated to be similar outside of the Project area and, although impacts would be adverse, the Proposed Action would not be expected to jeopardize the viability of the species in the region. Implementation of mitigation measures and	Reduced compared with the Proposed Action. With the application of less intensive and disturbing construction methods within the solar array blocks, special status plant species would experience a higher likelihood of survival and regrowth during and after construction as well as during O&M. Minimizing soil disturbance and retention of existing vegetation would reduce impacts to special status plant populations.	Same as Proposed Action.	Reduced compared with the Proposed Action since 11.8 acres of new disturbance to native vegetation would occur for the gen-tie, as compared with 104 acres for the Proposed Action.	No change to existing special status plant species.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	BMPs that include avoidance and worker education would reduce impacts.				
Vegetation and plants: Invasive noxious species	Vegetation removal and use of construction equipment and vehicles could facilitate the spread of invasive weeds. The Site Restoration and Revegetation Plan and Integrated Weed Management Plan would control propagation of invasive species, but invasive species may persist, resulting in an adverse impact to habitat and wildlife.	Reduced compared with the Proposed Action. Minimizing soil disturbance and retention of existing vegetation within solar array blocks would reduce the opportunity for the spreading of existing and introduction of new invasions of noxious weeds.	Greater potential for adverse impacts due to introduction of more vehicle trips to supplemental routes, which could spread weeds, although no new ground disturbance would be associated with this alternative as compared with the Proposed Action.	Reduced as compared with the Proposed Action by reducing the length of the gen-tie, which can be a vector for noxious weeds, from 24.1 miles to 0.54 mile.	No change to existing invasive noxious species.
Wildlife: Special status wildlife species	The Project Area is not within a migratory corridor for big game species although pronghorn antelope have been seen on the site and in the valley, no roosting habitat for bats occurs on the solar site but forage over the site occurs, and the solar site does not contain suitable nesting habitat for golden eagles.	Reduced compared with the Proposed Action. With the application of less intensive and disturbing construction methods under the solar arrays, there would be reduced impact on special status wildlife habitat. Separately fenced solar array blocks that allow for wildlife to move between them through the	Same as Proposed Action.	Reduced as compared with the Proposed Action by reducing overall disturbance from 104 acres to 11.8 for the gen-tie and switching station. The largest reduction in impacts would be to migratory birds, particularly in proximity to the	No change to existing special status wildlife species.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	Surveys found potential occurrence of desert kangaroo rats; however, occurrences were so few, it is unlikely they are present in large numbers, and the Proposed Action is not anticipated to impact species viability although it would result in loss of habitat for these wildlife species.	solar site would also reduce impacts as compared with the Proposed Action.		Mason Valley Wildlife Management Area (WMA) and the Walker River.	
Air quality and climate change: Dust and vehicle emissions	The Proposed Action would involve ground disturbance through the use of construction vehicles, which would generate fugitive dust and vehicle emissions during construction and decommissioning. The Proposed Action would not result in violations of air quality standards with the application of dust control measures. Project would reduce greenhouse gas emissions by replacing more highly polluting energy generation sources with solar energy generation.	Similar to the Proposed Action. Minimizing soil disturbance and retention of existing vegetation could result in increases of fugitive dust and vehicle emissions during construction and O&M, since in areas where vegetation is left the soils would not be compacted.	With the inclusion of one or more supplemental access routes during construction, air quality emissions from vehicle combustion engines would be dispersed across multiple roadways. While regional air quality impacts would be similar to those for the Proposed Action, emission concentrations during construction along East Walker Road could be reduced.	Reduced by reducing the length of the gen-tie from 24.1 miles to approximately 0.54 mile. A new road would be constructed that would result in approximately 1.4 acres of new disturbance as compared with 64 acres under the Proposed Action. Air quality impacts would be reduced.	No beneficial impact of reduction in greenhouse gas emissions. No fugitive dust and vehicle emissions related to the Project.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
Visual resources: Contrasting visual elements	The Proposed Action would create, at most, moderate contrast when viewed from identified *key observation points* (KOPs). The Proposed Action would meet the objectives associated with VRM Class IV from all KOPs, which is the interim assigned class. Since the area is assigned the interim Class IV rating, the Project would be in conformance with the CRMP.	Reduced as compared with the Proposed Action since vegetation would be maintained under the panels. Visual impacts would also be reduced at decommissioning since up to 65 percent of the original application area would be expected to be maintained, as compared with 35 percent under the Proposed Action.	Same as Proposed Action.	Reduced as compared with the Proposed Action by eliminating over 24 miles of new gen-tie through the valley and concentrating all impacts at and adjacent the solar site.	No change to existing visual resources.
Socioeconomics and environmental justice (EJ)	Vacant housing and temporary accommodations would accommodate the potential influx of workers during construction, although the Project would put pressure on local housing availability, cost, and rental rates. It is anticipated that most construction workers would be transient or would commute from the nearest population centers in Reno and Carson City.	Impacts from construction, including on housing availability and cost, would be increased since construction would take approximately two months longer under this alternative.	Same as Proposed Action.	Decreasing the length of the gen-tie would reduce potential effects on the communities and reduce the workforce needed to construct the Project under this alternative.	No change to existing socioeconomic conditions.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	Impacts to the housing market from permanent workers would be adverse to EJ communities. A Workforce Housing and Transportation Plan could mitigate the worker influx impacts on housing and EJ communities.				
Transportation: Roadway operations	During peak construction activity, the Project under the Proposed Action would result in increased traffic volumes through Yerington. Implementation of any requirements identified by the Nevada Department of Transportation (NDOT), as well as Lyon County, and the Traffic and Transportation Plan are expected to reduce impacts related to roadway operations and traffic hazards, but impacts could remain adverse.	Impacts from construction traffic would be increased since construction would take approximately two months longer under this alternative.	The supplemental access route(s) would reduce traffic impacts to East Walker Road but increase impacts along the supplemental route(s).	Reducing the length of the gen-tie from 24.1 miles to 0.54 mile would reduce impacts from construction traffic and from crossing US 95A, compared with the Proposed Action.	No change to existing roadway operations.
Public health and safety: Fire risk	The Project area is within a moderate-risk area for wildfire. Removal of on-	Potentially greater as compared to the Proposed Action. Maintenance of	Same as the Proposed Action.	Reducing the length of the gen-tie from 24.1 miles to 0.54	No change to existing fire risk.

Potential Impact	Proposed Action	Alternative 1	Alternative 2	Alternative 3	No Action
	site vegetation and implementation of a Fire Prevention and Safety Plan would minimize adverse impacts related to wildfire. Battery storage facilities would require special measures to minimize fire risk and coordination with the local fire response teams to ensure they can address electrical fires.	vegetation in the solar array blocks could nominally increase risk of a fire spreading in the facility if one were to ignite, but the risk would be similar to existing conditions.		mile would reduce fire risk compared to the Proposed Action, since electrical transmission can be a source of accidental fire ignition in the event of a failure.	
Cultural Resources	The Proposed Action would have the potential to physically impact one National Register of Historic Places (NRHP)-eligible historic property, and to visually impact six historic properties. Implementation of mitigation would reduce potential impacts through the efforts outlined in the Historic Properties Treatment Plan.	Impacts from Alternative 1 would be the same as the Proposed Action.	Impacts from Alternative 2 would be the same as the Proposed Action.	Impacts to cultural resources would be reduced. Under this alternative, the physical impacts to one resource would still occur; however, visual impacts would only occur to six resources (one resource is also physically impacted).	No change to historic properties or other cultural resources would occur.

Chapter 1 Introduction, Purpose, and Need

1.1 Introduction

This EIS, prepared by the United States (U.S.) Department of the Interior (DOI), Bureau of Land Management (BLM) analyzes effects of and alternatives to the Libra Solar Project (Proposed Action or Project) described in the Plan of Development (POD) submitted by Libra Solar, LLC (Applicant) (Arevia 2023). The EIS has been prepared in accordance with the National Environmental Policy Act (NEPA) (Title 42 of the *United States Code* [U.S.C.] 4321 *et seq.*) and the Council on Environmental Quality (CEQ) NEPA Implementing Regulations (Title 40 of the Code of Federal Regulations [CFR] Parts 1500-1508), revised as of April 20, 2022. The BLM is the lead agency, authorized through the Federal Land Policy and Management Act of 1976 (FLPMA), as amended.

1.2 Background and Project History

The Applicant applied to the BLM's Carson City District Office (CCDO) for a right-of-way (ROW) grant to provide the necessary land and access for the construction and operation of the proposed solar facility and interconnection to the regional transmission system. The Project would include up to a 700-megawatt alternating current (MWac) solar photovoltaic (PV) power generating facility with an up to 700 MW battery energy storage system (BESS) on approximately 5,141 acres of BLM-managed public land located to the east of Yerington, Nevada, in Mineral County, immediately adjacent the county line. The Project includes a new 24.1-mile-long generation tie-line (gen-tie) extending to the Fort Churchill substation in Lyon County, of which 22.9 miles would be on BLM-managed lands. The total ROW requested for the solar facility, gen-tie, and access road is 5,778 acres.

The Project is located within a designated solar variance area under the BLM's 2012 Approved Resource Management Plan Amendments/Record of Decision (ROD) for Solar Energy Development in Six Southwestern States (Western Solar Plan) (BLM 2012). The BLM completed the variance process for the Project in coordination with appropriate federal, State, and local agencies and Tribes in December 2021. BLM decided to continue processing the application and proceed with NEPA.

Nevada legislation (Nevada Revised Statute (NRS) 704.7316) requires utilities to reduce coal-fired electric generation emissions and replace that generation capacity with renewable energy. Additionally, Nevada's Renewable Portfolio Standards (NRS 704.7801) currently require 29 percent of renewable energy in 2023; 34 percent in 2024 through 2026; 42 percent in 2027 through 2029; and finally, 50 percent in 2030 and each year thereafter. The Project would generate electricity that is cost-competitive with electricity from other types of renewable projects and would complement the body of large transmission projects operated by NV Energy, helping to meet State goals.

1.3 BLM Purpose and Need

The need for the action (processing the Applicant's application) is to respond to the Applicant's request for a ROW authorization to construct, operate, maintain, and decommission the proposed Project in accordance with the BLM's responsibility under the FLPMA and 43 CFR Part 2800. The need for the action is also created by the BLM's obligation to contribute towards the achievement of the goals established in Section 3104 of the Energy Act of 2020 and Executive Order 14057 through the development of renewable energy production on federal public land.

The purpose of the BLM's action is to determine if the Applicant's project and alternatives are consistent with relevant laws, regulations, and policies, and to consider whether to grant, grant with modifications, or deny the ROW.

1.4 Authorizing Laws, Regulations, Permits, and Guidelines

Applicable laws, regulations, and policies were considered in the development of the EIS. Implementing the Project would also require authorizing actions from other federal, State, and local agencies with jurisdiction over certain aspects of the Project, as shown in Table 1.4-1. Note that the list is not all inclusive. The Applicant is responsible for applying for and acquiring permits, as needed.

Table 1.4-1 Authorizing Laws, Regulations, Permits, and Guidelines

I. Federal permits, authorizations, or inter-agency consultations
U.S. Department of the Interior, BLM: • ROW grant under Title V of the FLMPA • EIS and ROD to support issuance of ROW grant • Modifications to existing BLM grazing permit
Federal Aviation Administration (FAA) • Obstruction Evaluation with FAA in coordination with the U.S. Air Force
U.S. Army Corps of Engineers • Section 404 Nationwide Permit enrollment for impacts to jurisdictional waters, if any
State Historic Preservation Office • National Historic Preservation Act Compliance, Section 106 (54 USC § 306108)
II. State of Nevada permits or authorizations:
Nevada Division of Environmental Protection • Surface Area Disturbance Permit • General Stormwater Permit for Construction Activities (Notice of Intent and General Permit) • Section 401 of the Clean Water Act Water Quality Certification • General Stormwater Discharge Permit • Working in Waters Permit • Wastewater Discharge Permits
Nevada Public Utilities Commission • Nevada Utility Environmental Protection Act Permit
Nevada Division of Water Resources • Groundwater Well Permit
Nevada Department of Motor Vehicles and Public Safety • Longer Combination Vehicle Permit • Nevada State Hazardous Materials Storage Permit
Nevada Department of Transportation (NDOT) • ROW Occupancy Permit (NRS §§ 408.423, 408.210; NAC § 408)
III. Mineral County permits or authorizations:
Mineral County Building Inspector Department • Building Permit • Renewable Energy Special Use Permit (Mineral County Code Chapter 17.37)
IV. Lyon County permits or authorizations:
Lyon County Community Development Department • Site Development Permit • Drainage Study/Floodplain Development Permit

1.5 Relationship of the Project to BLM Policies, Plans, and Programs and Land Use Plan Conformance Determination

1.5.1 BLM Carson City Field Office Consolidated Resource Management Plan

The proposed Project would be located primarily on federal lands administered by the BLM under the 2001 Carson City Field Office Consolidated Resource Management Plan (BLM 2001) (the CRMP). The CRMP is a consolidated decision document produced as guidance for BLM land use decisions and management of natural resources within the Carson City District. The BLM reviews proposed projects to ensure that a project is in conformance with the CRMP objectives and management directions.

The BLM has reviewed the Project and has determined that the proposed Project is in conformance with the CRMP, as it meets or exceeds the standard operating procedures (SOPs) listed for each applicable resource area and aligns with the CRMP identified desired outcomes. The CRMP SOPs applicable to the Project are identified in detail in Appendix B. Conformance is summarized in the following table.

Table 1.5-1 Summary of Project Conformance with the 2001 CRMP

Resource or resource area	Applicable objective, policy, goal, or requirement summary	Summary of conformance
Rangeland	Maintain or improve public rangelands to enhance productivity for rangeland and watershed values and manage livestock at existing levels.	The grazing permit holder was notified of the Project's potential to preclude livestock grazing per 43 CFR 4110.4-2. In accordance with the BLM Instruction Memorandum (IM) 2011-181, the Applicant coordinated directly with the permit holder to develop mitigation that funds improvements to existing livestock water conveyances to underutilized existing pastures. Although 222 animal unit months (AUMs) out of a total of 7,150 AUMs in the two affected allotments would be reduced, with implementation of the mitigation, the permit holder would be able to maintain grazing in conjunction with the Project. Further detail on mitigation measure (MM) RG-1 is included in Section 3.11.
Riparian Management	Protect and maintain existing and potential fisheries and riparian areas in good or better condition.	The gen-tie would cross over the Walker River and a riparian area with open water, although transmission structures would be sited to minimize effects to riparian habitat. A stormwater pollution prevention plan (SWPPP) would apply during construction. A Clean Water Act Section 404 Nationwide Permit and a Section 401 Certification may also apply to the Project and would reduce potential effects. Under MM WR-1, road drainage and maintenance would be coordinated with Lyon County to address any erosion to reduce potential adverse effects from sedimentation to the East Walker River.

Resource or resource area	Applicable objective, policy, goal, or requirement summary	Summary of conformance
Wildlife	Manage habitats to provide forage for a reasonable number of big game. Protect fisheries and riparian habitats in good or better condition. Maintain or improve wildlife habitat, reducing conflicts while providing appropriate resource use. Maintain or improve aquatic and meadow habitats. Maintain or improve public rangelands to enhance rangeland values, including for wildlife.	The solar field would be excluded for large game foraging although the Project would incorporate permeable fencing for small game access. Implementation of MM WILD-8 requires the Applicant to provide funding to support restoration of a spring south of the Project site and installation of a water guzzler for the benefits of big game, including pronghorn, as compensatory mitigation. Implementation of MM VG-1, additionally, would require revegetation of disturbed areas to restore wildlife habitat within the solar site. CRMP conformance regarding riparian and rangeland resources is addressed above.
Soils, Watershed, and Air	Reduce soil loss and associated flood and sediment damage on public lands and maintain air quality through case-by-case reviews of activities on public lands.	The SWPPP would include site-specific erosion control BMPs, which would comply with the Western Solar Plan Project Design Feature (PDF) SR2-1 to reduce stormwater runoff. MM SOILS-1 would reduce the amount of ground disturbance happening at one time (see Section 3.9 for details). Project activities would not cause emissions that would violate State or federal ambient air quality standards (National Ambient Air Quality Standards [NAAQs]), as required by the Clean Air Act. The Applicant would implement best management practices to manage fugitive dust. Project activities would follow applicable local, State, tribal, and federal air quality requirements (see Section 3.3 for details).
Water Resources	Maintain or enhance water quality and availability on public lands.	The Applicant would incorporate Western Solar Plan PDFs and MM SOILS-1 to the Project to reduce erosion and sedimentation and maintain the quality of waters crossing the Project site.
Recreation	Provide a wide range of quality recreation opportunities on public lands	No Special Recreation Management Areas (SRMAs) are located in the vicinity of the Project area. OHV use in the Project area is limited to existing roads, trails, and dry washes and certain race routes would be left open through the solar site to facilitate access. The Project would remain in compliance with the applicable recreation objective of the CRMP.

Resource or resource area	Applicable objective, policy, goal, or requirement summary	Summary of conformance
Visual Resources (VRM)	Protect the visual resource values of Bureau managed public lands against unnecessary and undue degradation.	The lands affected by the Project do not have an assigned VRM Class. The BLM Manual H-8410-1 guidance was followed to assign an interim VRM class to the Project area, based on several factors. A Class IV was assigned, which allows for major modification of the landscape. The Project would be consistent with VRM Class IV management objectives.
Minerals and Energy	Encourage development of energy and mineral resources in a timely manner to meet national, regional, and local needs consistent with the objectives for other public land uses.	The Project includes renewable energy development that is consistent with State of Nevada and federal energy goals and the CRMP. The Project would not impact any known mineral resources.
Cultural Resources	Protect cultural and paleontological resources to the maximum extent practicable and manage for the public benefit.	The Project design avoids NRHP-eligible Native American resources but could impact six NRHP-eligible historic properties, as well as other cultural resources. Mitigation to ensure full avoidance of eligible Native American resources and to document eligible historic resources would reduce effects. The Western Solar Plan PDFs CR1-1, 2-1, 3-1, 3-3 would be implemented, as well as a Cultural Resources Monitoring and Discovery Plan developed, to further protect cultural resources.

1.5.2 Final Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States

The BLM and the U.S. Department of Energy released the Final Programmatic Environmental Impact Statement for the Western Solar Plan in June 2012 (BLM and DOE 2012) and in October 2012, the Approved Resource Management Plan/ROD was signed (BLM 2012). The Western Solar Plan facilitates the permitting of solar energy development projects on federal lands in a more efficient, standardized, and environmentally responsible manner as compared with prior solar energy policies. The Project area is within a variance area and, thus, the Project was subject to the variance approval process. The Project is in conformance with the Western Solar Plan.

The NEPA analysis process includes a review of the Project to ensure it is consistent with and incorporates the management prescriptions and relevant design features from the Western Solar Plan. An NOI to update the Western Solar Plan was published in the *Federal Register* on December 8, 2022 (BLM 2022), and the Draft EIS was released in January 2024. The existing Western Solar Plan prescriptions are currently valid and, thus, analyzed in this EIS.

1.5.3 Final Programmatic Environmental Assessment Integrated Weed Management Plan and Final Programmatic Environmental Impact Statement for Vegetation Treatment Using Herbicides in 17 Western States

Herbicide applications on federal lands administered by the BLM in the Carson City District are guided by the 2015 Integrated Weed Management Plan Final Programmatic Environmental Assessment (PEA) (BLM 2015). This EIS conforms with the PEA, requiring a Pesticide Use Proposal (PUP) prior to any type of herbicide application. The PEA tiers to the 2007 Vegetation Treatments Using Herbicide on Bureau of Land Management Lands in 17 Western States PEIS (BLM 2007).

This EIS also conforms with the 2007 Vegetation Treatments Using Herbicide on Bureau of Land Management Lands in 17 Western States PEIS (BLM 2007), as well as to the 2016 Final Vegetation Treatments Using Aminopyralid, Logotypy, and Rimsulfuron on BLM Lands in 17 Western States PEIS (BLM 2016). The 2007 and 2016 Final PEIS documents address a wide range of issues, including the effect of these herbicides on the health of humans, vegetation, fish and wildlife, livestock, and wild horses and burros. The Final PEISs also consider water quality and Native American use of resources, and evaluate the cumulative impacts of herbicide use. Both Final PEISs include design features that must be adhered to when using the herbicides. The analysis of herbicide uses in this EIS is tiered from the PEA and PEIS.

1.6 Interagency Coordination

1.6.1 Cooperating Agencies

The CEQ regulations (40 CFR § 1501.8) emphasize agency cooperation early in the NEPA process and allow a lead agency (in this instance, the BLM) to request the assistance of other agencies that have either jurisdiction by law or special expertise regarding topics considered in an EIS. Cooperating agencies for this Project include the U.S. Fish and Wildlife Service (USFWS); the U.S. Environmental Protection Agency (USEPA); the Nevada Department of Wildlife (NDOW); Mineral County, Nevada; Lyon County, Nevada; and the U.S. Department of Defense, Hawthorne Army Depot. See Chapter 4 for more information on consultation and coordination.

1.6.2 U.S. Fish and Wildlife Service

Section 7(a)(2) of the Endangered Species Act of 1973 (ESA) requires federal agencies to ensure that actions they fund, authorize, permit, or conduct will not jeopardize the continued existence of any federally listed species or adversely modify designated critical habitats. No federally listed or threatened species have potential to occur in the Project area or be affected by the Project and, thus, formal consultation is not required for the Project.

1.6.3 State Historic Preservation Office

Section 106 of the National Historic Preservation Act (NHPA) requires that all federal agencies consider the effect of undertakings they conduct, license, approve, or fund on historic properties. The BLM will comply with the Section 106 process under 36 CFR § 800.8(c), which permits federal agencies to integrate Section 106 and NEPA. The BLM is consulting with the SHPO, and will continue to consult, regarding the EIS and decision, consistent with the standards set forth in 36 CFR § 800.8(c)(1).

1.7 Scoping and Public Involvement

1.7.1 Overview

The purpose of the scoping process is to identify relevant topics that influence the scope of the EIS, including alternatives. Internal scoping involves the use of BLM and cooperating agency staff to assist in determining topics to be analyzed in the NEPA document. External scoping involves notification and

opportunities for feedback from other agencies, organizations, Tribes, local governments, and the public to also determine topics to be analyzed.

The analysis topics identified during Project scoping are presented in Table 1.7-1. Some topics identified during internal and external scoping did not warrant detailed analysis in the EIS; those topics are described in Table 1.7-2. Overall public involvement associated with the Project is summarized in Chapter 4 of this EIS.

1.7.2 Internal Scoping

Internal scoping was conducted among the BLM interdisciplinary team and cooperating agencies to identify issues prior to public scoping. Interdisciplinary team members with specific expertise provided early input through completion of a Baseline Data Needs Assessment Form to refine the resource areas requiring further analysis and the approach to the environmental analysis.

1.7.3 External and Public Scoping

1.7.3.1 *External Scoping*

External scoping included meetings with the grazing permit holder, meetings with OHV users, and feedback from interested parties including LADWP, Nevada Copper, and the grazing permit operator. Tribal outreach was also conducted as part of the external scoping process and included workshops with the Tribes.

1.7.3.2 *Public Scoping*

The BLM initiated the public scoping process for the Project with the publication of an NOI to prepare an EIS for the Project in the *Federal Register* on April 24, 2023, which initiated a 30-day public scoping period for the Project that ended on May 24, 2023 (BLM 2023a). BLM also issued a press release following the publication of the NOI in the *Federal Register,* which announced a virtual public scoping meeting for the Project on May 8, 2023. The meeting was attended by 15 people. The BLM received 25 emails, letters, or individual verbal comments during the scoping period. A Scoping Report was prepared to summarize the comments received and is available in the Project Record (BLM 2023b).

1.7.3.3 *Public Comment and Review*

The Notice of Availability (NOA) for the Draft EIS for the Libra Solar Project was issued in the Federal Register on January 19, 2024, which initiated a 45-day public comment and review period that ended on March 4, 2024 (BLM 2024). Following the NOA publication, BLM issued a press release announcing two public meetings, one in-person in Yerington, Nevada on February 6, 2024, and one virtual on February 7, 2024. The in-person meeting was attended by 24 people, and included local individuals and a Lyon County representative. The virtual meeting had 21 attendees. A *Public Comment, Responses, and Revisions to the Draft Environmental Impact Statement Report* was prepared and is available in Appendix E to this Final EIS.

1.7.3.4 *Issues Identified*

The analysis topics presented in Table 1.7-1 were identified during the public scoping period, through internal BLM interdisciplinary team scoping, and public comment and review of the Draft EIS. Resources analyzed in detail have been identified as those topics that are significant and/or are necessary to make a reasoned choice between alternatives. All resource topics described in Table 1.7-1 were analyzed in detail within the EIS. Further detail is included in each respective resource sub-section within Chapter 3.

Other topics raised during scoping included the development of alternatives to leave vegetation and hydrology in place, similar to other recent projects in southern Nevada, and to address cumulative impacts from the numerous solar and energy projects proposed in the region and throughout Nevada. Alternatives and cumulative impacts are analyzed in detail in this EIS.

Table 1.7-2 discusses the resource topics that are addressed but not analyzed in detail in the EIS.

Table 1.7-1 Resource Topics Analyzed in Detail

Resource or EIS topic	Consideration
Land use and realty	Commenters raised questions about whether the gen-tie would impact existing ROWs. An existing deenergized distribution-line ROW owned by NV Energy doing business as Sierra Pacific Power is located within the Project solar site and would need to be realigned. LADWP operates a transmission line in the vicinity of the Project.
Minerals	Commenters raised questions about whether the Project would impact access to Nevada Copper's Pumpkin Hollow Mine, located adjacent and north of the Project site. The gen-tie would cross unpatented mining claims owned by Nevada Copper.
Rangelands/grazing	Commenters raised questions about whether the Project could impact two active grazing allotments and pasture fences, pipelines, wells, and troughs within the Project area.
Recreation	Commenters raised questions about whether the Project would impact OHV usage and race routes located in the Project area. The Nevada Off-Road Association expressed support for the Project given that key special recreational permitting (SRP) OHV routes would remain open. Commentors expressed concerns over increased traffic on East Walker Road and impacts to the access at the Walker River State Recreation Area.
Visual resources	The Project is in an unclassified visual resource management (VRM) class but was assigned an interim VRM of Class IV. Commenters raised questions about the visibility of the site from Pistone-Black Mountain National Conservation Area.
Water resources	The Project would have water needs that may be sourced by groundwater. Commenters raised questions about groundwater uses, drainage pattern changes, and the need to avoid significant drainages with a buffer. Commentors questioned potential impacts from groundwater usage to nearby springs, wells, and the Walker River.
Vegetation and noxious weeds	Invasive species can be spread by off-road vehicles and contaminate formerly weed-free areas. Commenters raised questions about weed control and integrated weed management planning, given the scale of disturbance.
General wildlife; special status species; and threatened, endangered, and candidate species	Commenters raised questions about potential impacts to big game species, small mammals, and migratory birds, as well as loss of habitat and the loss of movement corridors through the solar site. Commentors raised concerns about potential bird strikes to transmission line infrastructure near the Mason Valley WMA. Several commenters raised questions about potential impacts to Bi-State sage grouse, a special status species under consideration for listing as endangered or threatened under the ESA. The Project site does not support suitable habitat for Bi-State sage-grouse and it is not located within any mapped habitat identified in the 2016 Record of Decision and Land Use Plan Amendment for the Nevada and California Greater Sage Grouse Bi-State Distinct Population Segment in the Carson City and Tonopah Field Office (2016 Bi-State Sage Grouse Plan Amendment) (BLM 2016). This species is addressed in the EIS, given questions and concerns,

Resource or EIS topic	Consideration
	despite it not being present nor having any potential to be directly or indirectly affected. The USFWS raised concerns regarding yellow-billed cuckoo, a federally listed endangered species. This species has not been documented in or near the Project area during recent surveys, nor in the past. The species could, theoretically, migrate along the Walker River corridor. A single crossing of the gen-tie occurs over the Walker River. As such, this species is addressed in the EIS to identify the means of avoidance.
Cultural resources	Native American tribal commenters raised questions about potential impacts to prehistoric (pre-contact) Native American resources that would be directly impacted by the Project, potential increased accessibility to the Pistone-Black Mountain National Conservation Area from the solar site, and requested clarification regarding the BLM's determination of effects to prehistoric (pre-contact) resources. SHPO comments included concerns about the BLM's delineation of the APEs (particularly the visual effects APE), and the adequacy of the BLM's identification efforts under Section 106. One commenter raised a question regarding mitigation to reduce adverse effects to Y Hill.
Air quality and greenhouse gases/ climate change	Project construction would result in air quality impacts including exhaust emissions as well as dust generation. Commenters raised questions about dust control as well as quantification of potential air quality impacts.
Socioeconomics	Commenters raised questions about potential socioeconomic impacts including impacts to housing demand, including transient housing; economic conditions; property values; community services; and tax revenues.
Environmental justice	The Project region includes low-income, minority, and Native American populations. Commenters raised questions about potential disproportionate and adverse impacts to these populations.
Public health and safety	Commenters raised questions about potential impacts to wildfire risk and disposal of hazardous wastes and wastes such as batteries, transformers, semiconductors, and inverters.
Soils	Commenters raised questions about potential soils impacts from dust and erosion.
Transportation and traffic	Lyon County and residents expressed concern about potential traffic and safety impacts due to increased Project construction traffic on East Walker Road and throughout Yerington.

Table 1.7-2 Topics Not Further Analyzed in the EIS

Resource topic	Rationale for dismissal from detailed analysis
Wild horses and burros	The Project area is not within any herd management areas. The Wassuk herd is located to the south. Impacts to wild horses and burro management would not occur.
Acoustics	No sensitive noise receptors (e.g., residences) are located within 5.5 miles of the solar site. Acoustic impacts to humans would not occur. Impacts to wildlife from noise would be temporary and would not result in long-term disturbance or avoidance; however, these noise-related impacts are addressed under biological topics.
Paleontology	Based on the geological resources underlying the site, and in accordance with the BLM's Potential Fossil Yield Classification System, there is a low to very low potential for significant paleontological resources to be present; as such, impacts to paleontological resources are not anticipated.
Wilderness	No wilderness areas nor wilderness study areas nor areas with wilderness characteristics are in the Project area, and wilderness areas would not be impacted by the Proposed Action or the alternatives.
Area of Critical Environmental Concern (ACEC)	There are no ACECs in the Project vicinity.
Farmlands	No soils designated as prime or unique farmlands are located within the solar site. Some areas of prime or unique farmlands are located along the gen-tie; however, the limited disturbance footprint of the gen-tie of approximately 104 acres distributed over 24.1 miles (or approximately 4.3 acres per mile) would result in minimal, temporary impacts, and thus, impacts would not be adverse. Neither the Proposed Action nor the alternatives would impact soils as to irreversibly convert farmlands to nonagricultural use.
Wild and scenic rivers	There are no designated/eligible/suitable wild and scenic rivers within the Project vicinity.
Cave and karst resources	There are no cave or karst areas within the Project site.
Fuels / Fire Management	The Proposed Action would not change the fire management in the analysis area. Under Alternative 1, where a portion of the original vegetation will be maintained, the potential for a wildfire from outside the Project area to enter the Project area may exist, as vegetation continuity would be maintained. However, the Proposed Action would not change he fire management in the analysis area, and fire occurrence has been historically rare in the Project Area.
Trails and travel management	No Travel Management Plans or designated trails are located within the Project area.
Woodland or forestry	No woodland or forestry products are in the Project area. Cacti are addressed under vegetation and sensitive plant species.
Native American Concerns	Commenters raised questions about potential impacts of the Project on wildlife and big game, potential impacts from audible and vibrational energy

Resource topic	Rationale for dismissal from detailed analysis
	emitted from gen-tie line, and accessibility to Pistone-Black Mountain National Conservation Area from the solar site.

Chapter 2 Proposed Action and Action Alternatives

2.1 Introduction

2.1.1 Right-of-Way Application and Proposed Action

Libra Solar, LLC, filed an application to construct, own, operate, and decommission the Project, consisting of a 700 MWac solar PV power generating facility and 700 MW BESS, a gen-tie, and an access road within a ROW of approximately 5,778 acres of BLM-administered land located in Mineral and Lyon counties, Nevada. The Project would be constructed using PV solar modules mounted on single-axis, horizontal tracker structures combined with an integrated BESS. The power produced by the Project would be conveyed to the NV Energy transmission system via interconnection with the NV Energy grid at the Fort Churchill substation.

The Project as presented in the ROW application POD is considered the Proposed Action in this EIS. The Project solar site is in Mineral County, Nevada, approximately 55 miles southeast of the Reno metropolitan area and 11 miles southeast of the town of Yerington. U.S. Route 95 (US 95) is 7 miles east of the solar site and State Route 208 (SR 208) is 8 miles west. The gen-tie line and access road would extend into Lyon County. The regional context of the Project area is shown in Figure 2.1-1 and Figure 2.1-2. Figure 2.1-3 includes the solar development areas within the solar site and the Project elements that comprise the Proposed Action.

2.1.2 Development of Action Alternatives

Reasonable alternatives to the Proposed Action were developed by the BLM to avoid or reduce resource conflicts and meet the purpose and need, in accordance with the BLM NEPA Handbook §6.6.1. Details on the development of the alternatives to the Proposed Action and their impacts are provided in the *Alternatives Report* (Panorama 2023), which includes descriptions of other alternatives considered but eliminated from further analysis.

Three alternatives (Alternative 1, Alternative 2, and Alternative 3) were developed in response to issues raised by the public and agencies (see the *Scoping Report for the Libra Solar Project* (BLM 2023c)). Alternative 1, as described in Section 2.4, proposes the use of specific construction methods that would reduce impacts to vegetation, drainage, and topography. Alternative 2, as described in Section 2.5, is focused on reducing impacts associated with the Project's access road during construction. Alternative 3, described in Section 2.6, would reduce many of the impacts associated with the gen-tie, but the feasibility of this alternative remains uncertain and would depend on the approval and construction of the proposed Greenlink West Transmission Project, which is currently undergoing NEPA review (BLM 2023b). Alternative 3 is fully analyzed in this EIS but is not the preferred alternative due to its dependence on a currently unapproved project. Section 2.8 identifies additional alternatives considered but eliminated from further analysis and provides the rationale for their elimination.

Figure 2.1-1 Regional Context of the Proposed Project

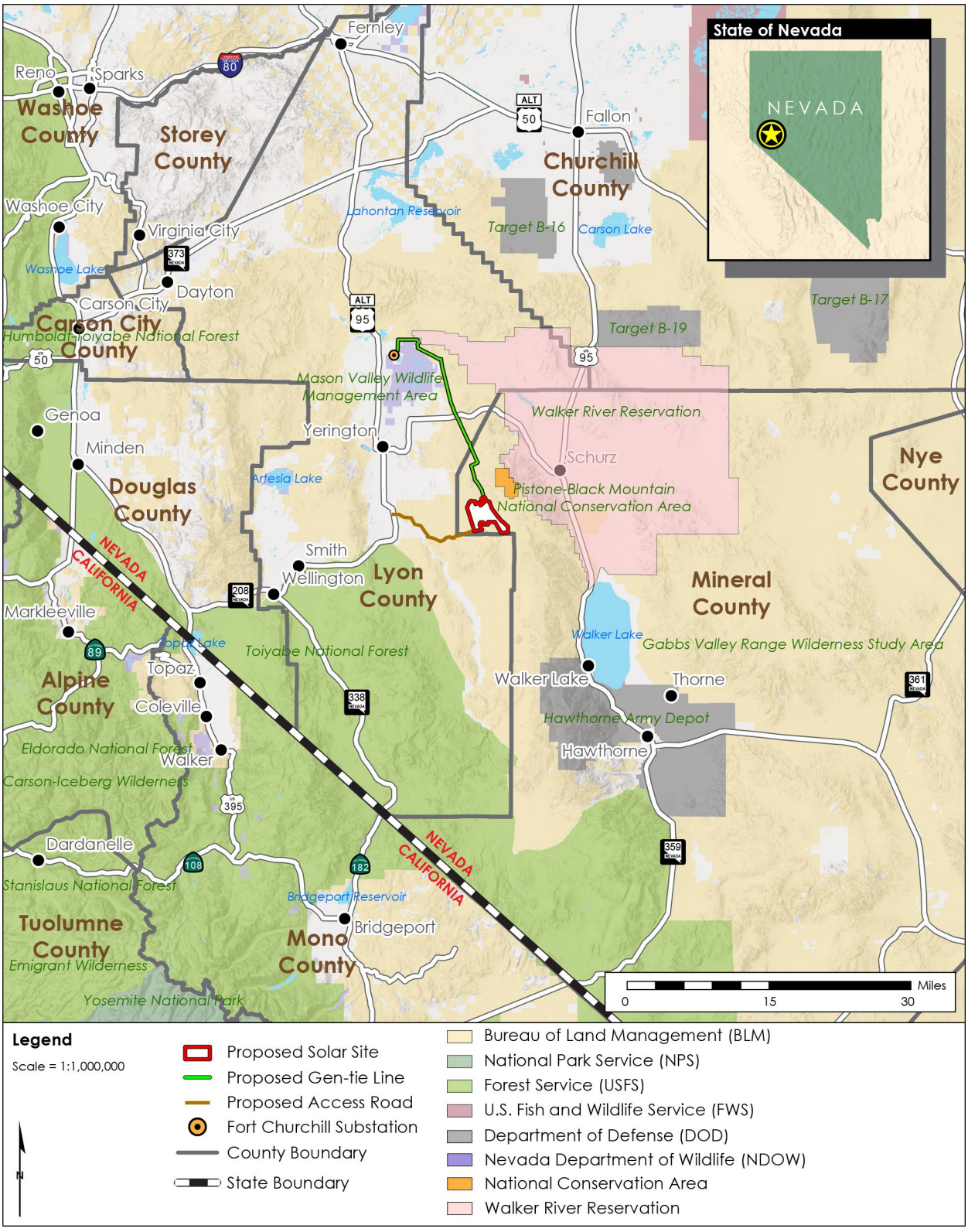


Figure 2.1-2 Proposed Project Location

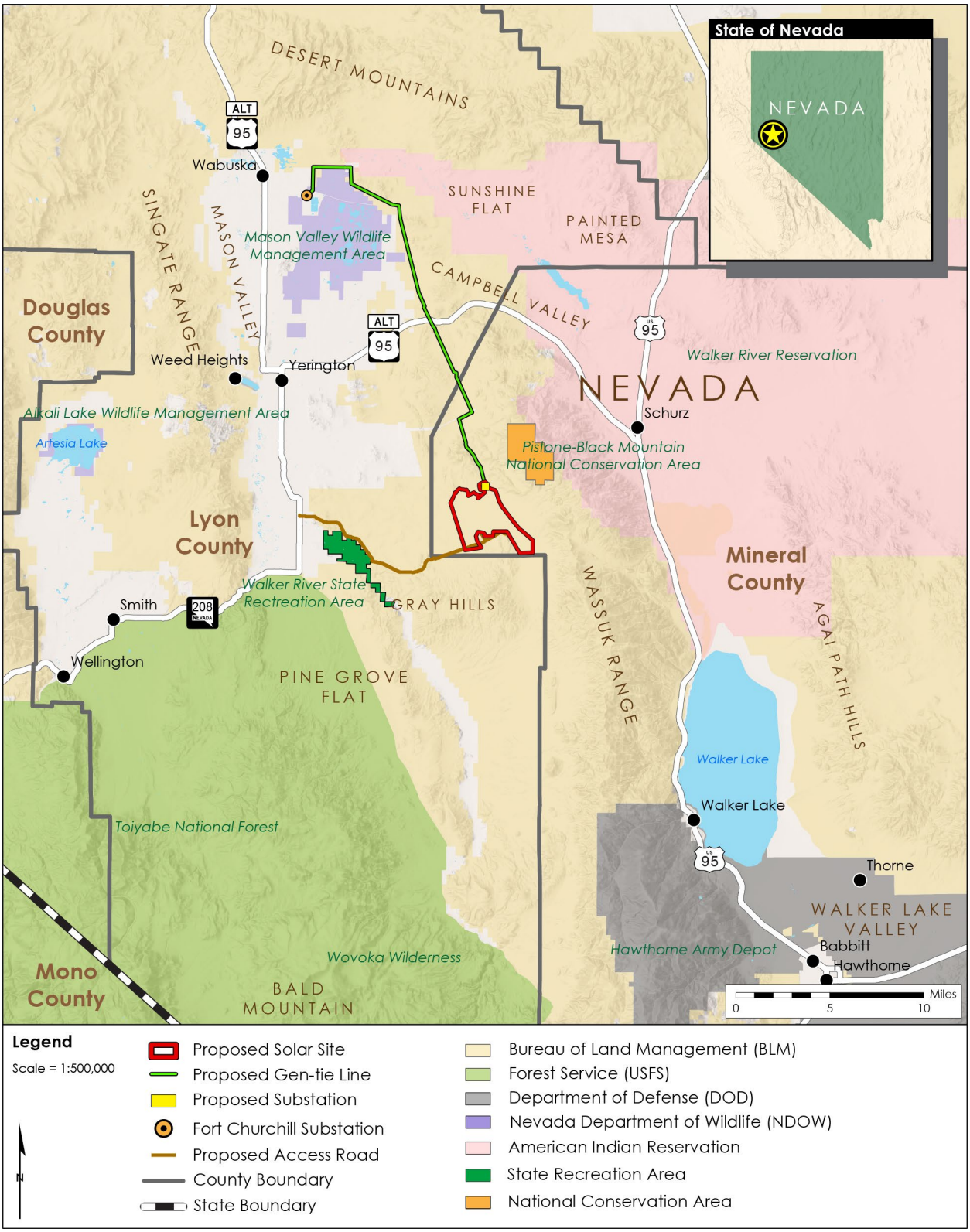
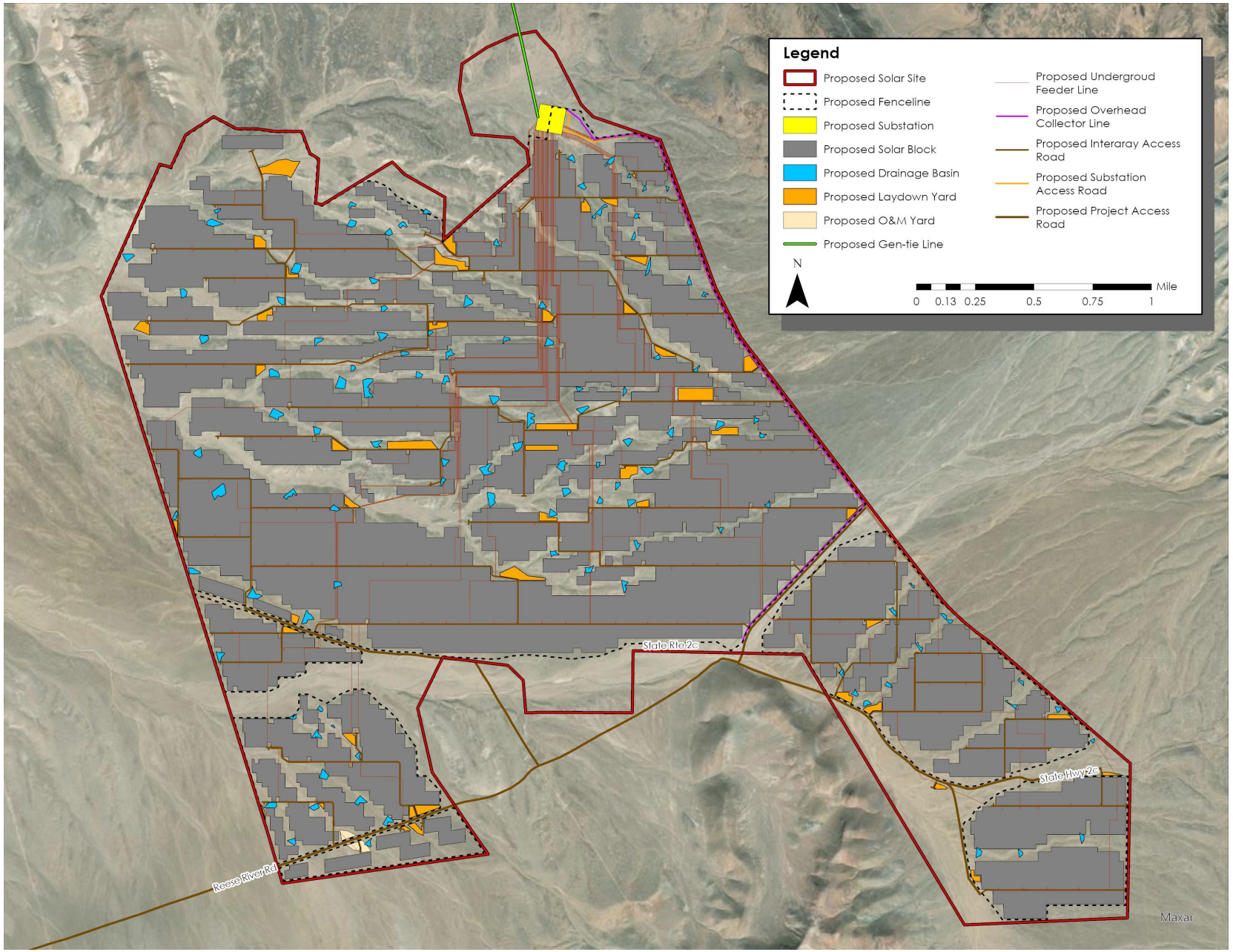


Figure 2.1-3 Proposed Solar Site Facilities



2.2 Proposed Action

2.2.1 Overview

The Proposed Action includes obtaining a ROW for and the construction, operation and maintenance (O&M), and decommissioning of the Project. The Project includes the following primary components: 1) a 700 MWac solar PV power generating facility; 2) a 700 MW BESS; 3) linear and ancillary facilities, including access roads, electrical distribution lines, and communication cables; 4) O&M facilities; and 5) a substation and a 24.1-mile-long 345 kilovolt (kV) or 525 kV gen-tie line into the Fort Churchill substation, of which 22.9 miles would be on the BLM-managed lands.

2.2.2 Proposed Action Project Components

2.2.2.1 *Overview*

This section provides a summary of the Proposed Action. A detailed explanation of each component and its corresponding construction requirements is provided in the Draft Libra Solar Project POD, dated November 2023, which is incorporated by reference. The POD is available on the Project page on the BLM's National NEPA Register website.

The Project includes the solar site ROW (5,141 acres) and a gen-tie ROW including gen-tie access (603 acres). A ROW would also be established along an existing access road to the solar site, which comprises 34 acres along 11.6 miles on the BLM lands. The total acreage requested for the ROW is 5,778 acres. The Project would interconnect with the NV Energy transmission grid at the Fort Churchill substation in Lyon County.

2.2.2.2 *Solar PV Modules/Array*

The Project would be a solar PV power generating facility. PV modules convert sunlight into direct current (DC) electricity that would be collected and converted to alternating current (AC) electricity though a system of inverters. Medium-voltage transformers would convert the AC electricity to 34.5 kV then transfer the energy to the on-site substation, where it would then be converted and transferred. The electricity would be stepped up with high-voltage transformer(s) to 345 kV or 525 kV and then delivered to the Fort Churchill substation (also known as the point of interconnection [POI]) via a new 345 kV or 525 kV gen-tie line (see Figure 2.1-2, page 2-3, above).

Panels would be mounted on single-axis trackers in north–south oriented rows. Spacing between rows would be set in the final design but would allow for clearance for maintenance vehicles and panel access. An above-ground or under-ground DC electrical collection system would connect each solar array to a power conversion station (PCS), that steps up the voltage to 34.5 kV. The Project could include solar arrays of 2 MWac or more. Inverters may be installed on raised platforms to minimize ground disturbance and hydrologic alterations, if determined feasible during final design. An AC electrical collection system would be installed above ground or underground within the solar array blocks to deliver the energy from the PCSs to the solar site substation. Collection line poles may be steel or wood and could have multiple circuits on poles with insulating conductors.

Current PV technology could generate 1 MW of electricity per 6 to 9 acres of land suitable for construction of PV arrays and associated facilities. However, PV technology is rapidly improving, and the potential MW/acre may increase prior to the start of Project construction. For purposes of this EIS, a 700 MW project is assumed. The exact final Project output may be higher or lower depending on the procured panel technology.

2.2.2.3 *Battery Energy Storage System*

The Project would include a BESS of up to 700 MWdc. Approximately 392 equipment areas, each with approximately 23 to 25 380 MWdc, 3.7-hour storage-duration battery racks, would be built. Lithium iron phosphate batteries may be used (otherwise, the best technology at the time of construction would be used) and would undergo thermal propagation tests and comply with the latest codes and standards. The

battery racks would be installed adjacent to the AC/DC power converter and PCS on either a foundation or pilings as needed to protect the racks from stormwater runoff. The battery racks may be enclosed in multiple, dispersed climate-controlled structures approximately 5 feet long by 5 feet wide by 8 feet tall. Alternatively, battery racks may be stored in enclosures in a single designated fenced and cleared area of the solar site, near the on-site collector substation, which would occupy approximately 35 acres. The battery energy storage system could be constructed on a raised platform. The feasibility of raising the structures would be determined at final design.

2.2.2.4 *Linear and Ancillary Facilities Associated with the Solar Site*

Fencing

The entire solar site would be fenced to restrict public access during construction and O&M. The fencing would be outside of major routes through the development area, including Reese River Road and Old State Road 2C, such that the public could continue to use these roads. The perimeter fencing would be approximately 6 to 7 feet high and may be chain-link or another design with barbed wire on the top. The on-site substation would also be fenced Controlled access gates would be located at all entrances to the facility.

The perimeter fencing would include design elements to ensure permeability by small animals, which could include 12 inch by 12-inch openings in the lower section of the fencing every 0.25 miles or installing an approximately 8-to-12-inch gap at the base of the fence, as shown in Figure 2.2-1, for the length of the fence. The final fence design would be determined in coordination with the BLM and considering feedback from the resource agencies.

Internal Road System

Within the fenced solar site, a roadway system for the development and maintenance of the solar arrays and equipment would be developed consisting of an internal grid and perimeter roadways, graded, and covered in aggregate (6 inches in depth) or compacted soil (12 inches of recompacted native material). Approximately 34 miles of internal access roads would be installed. The internal access road system for the Proposed Action is shown in Figure 2.1-3. Existing roads within the solar site would also be utilized and maintained as part of the internal access system.

Drainage Systems

The solar field would include drainage control structures, including linear ditches, swales, and detention basins, as shown in Figure 2.1-3. The drainage systems would be within the fenced solar field and would collect and move water away from facilities and slow the downstream flows. The Project would include approximately 21 acres of swales and ditches and 45 acres of detention basins.

Meteorological Stations and Microwave Stations

Temporary and permanent meteorological stations would be installed within and around the perimeter of the solar site. Communication service to the Project would be provided by local service providers and/or a microwave tower and wireless system that would collect and send data to the supervisory control and data acquisition system (SCADA). The Project would include on-site communication lines connecting the Project components.

Figure 2.2-1 Example of Small Mammal Permeable Fencing

Existing Distribution Line Reroute

An existing electrical distribution line (NVN-093397) that leads to a decommissioned communications tower, located to the east of the Project area in the Wassuk Range, would need to be re-routed through the solar site. The existing electrical distribution line would be re-routed along Old State Road 2C, which would remain open through the Project area, and then would connect back to the existing line at the Project's eastern boundary or through an opening between solar array blocks. This distribution system would also be utilized to provide power to the O&M facilities. (Panorama 2023c).

2.2.2.5 *Solar Field Access Road*

Access for the Project during both construction and O&M would be off State Route (SR) 208 to East Walker Road, connecting to Reese River Road and Old State Road 2C. East Walker Road is an unpaved public roadway maintained by Lyon County. Approximately 2.3 miles of East Walker Road is on County-managed lands while the remaining 3.6 miles is on the BLM-managed lands. The initial 1.5 miles of East Walker Road to SR 208, heading east, may be paved with traffic-calming measures installed, the design of which would be determined in coordination with Lyon County Roads Department. A new 900-foot-long, 24-foot-wide road spur would be constructed between East Walker Road and Reese River Road, on the BLM-managed lands, to smooth a curve in the road at the existing intersection. Reese River Road would then be utilized to access the solar site and would be widened from 15 feet to 24 feet as would a portion of Old State Road 2C, for a total of 7.8 miles of widening.

Improvements to Reese River Road and Old State Road 2C would include permanent upgrades to facilitate the use of heavy equipment, including laying of gravel substrate and creation of low-water crossings. The access road would also require stabilization of low-water crossings, which may include installation of cut-off walls.

2.2.2.6 *Operations and Maintenance Facilities*

O&M Building

The Project would include a 2.8-acre O&M facility that would accommodate an O&M building, a paved parking area, and other associated facilities such as above-ground water storage tanks, a septic system, security fencing, signage, lighting, and, potentially, flagpoles. The O&M building would either utilize portable toilets or have an on-site septic system designed per County standards. Other facilities, such as a warehouse for materials storage, may be constructed within the O&M area footprint. Other systems include the lighting system and the fire protection system. The solar site would be monitored 24 hours per day, seven days per week during O&M.

Lighting System

Permanent outdoor night lighting would be provided at the administration/O&M building and on-site substation; however, some portable lighting may be required for some maintenance activities that must be performed at night. Lighting would be kept to the minimum required for safety and security. Sensors, switches, and timers would be used to keep lighting turned off when not required, and all lights would be hooded and directed downwards so as to minimize backscatter and off-site light.

Fire Protection

The Project's fire-protection water system would be supplied from a water storage tank, with sizing and design of the facilities determined in the final design phase in coordination with the Mineral County Fire Department. The BLM and local emergency services would have emergency access to the solar site via a locked gate to facilitate response time for wildfire and non-wildfire incidents. A Fire Management Plan would be implemented to reduce fire risk to the solar site and surrounding public lands for the life of the Project. If required by the fire department, a perimeter fire road may also be installed.

2.2.2.7 *Substation and Gen-tie*

Substation

The Project would require an on-site 345 kV or 525 kV substation, which would be 8.3 acres in size. The substation would be constructed to comply with applicable electrical safety codes. The substation would be separately fenced to provide increased security around the medium- and high-voltage electrical equipment. The substation area would include a transformer containment area, a microwave tower, a control house, and one or more transformers. The height of components in the substation varies, with the maximum highest being the gen-tie pole, at 180 feet. The on-site substation would be a series of 34.5 kV breakers for collection of power from the solar modules via the electrical collection system, a common busbar, and a step-up transformer.

Gen-tie

The Project would require the construction of an approximately 24.1-mile 345 kV or 525 kV circuit and fiber optic data telecommunications system for interconnection to the utility transmission grid system at the existing Fort Churchill substation. Approximately 22.9 miles of the 24.1-mile gen-tie alignment would be on the BLM-managed lands, with most of the alignment within an existing designated energy corridor, with two exceptions. The proposed gen-tie alignment deviates from the designated energy corridor along a 4-mile section where the energy corridor overlaps with the Mason Valley Wildlife Management Area (WMA). The gen-tie alignment also deviates from the designated energy corridor where it exits the solar site to the north, for the first approximately 4.4 miles. This realignment was established because the energy corridor passes through mapped habitat for the Bi-State sage grouse, while the realigned route does not. The gen-tie ROW width would be approximately 200 feet. Where adjacent, the gen-tie would be constructed outside the ROW of the proposed NV Energy Greenlink West 525 kV line, with an appropriate buffer. The Project would require approximately 190 gen-tie poles, most likely H-frame structures, cleared out up to 30 feet around each pole base.

The overhead line and fiber optic data telecommunications system would be installed per local and national electrical code requirements and in tandem with the gen-tie alignment. Support structures would

be galvanized steel monopoles or H-frames, with a dull gray appearance and would be used to support interconnection to the NV Energy transmission system. A point of change of ownership (POCO) would be established with NV Energy, from which the remaining line extending to the Fort Churchill substation would be owned by NV Energy. All overhead electrical lines would be designed and installed in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC 2006). The Applicant also would prepare and adhere to a Bird and Bat Conservation Strategy (BBCS) to address potential impacts to birds and bats during the construction and O&M phases of the Project.

Gen-tie Access Roads

Existing or planned roads that are approximately 20 feet wide would be used for primary access to the gen-tie line. Spur roads would be constructed off the existing roads to allow access to each gen-tie structure. Approximately 16.9 miles of 20-foot-wide spur roads would be constructed, and approximately 18.1 miles of existing (or proposed for Greenlink West) unpaved, 15-foot-wide access roads would be used without improvements. Another 17 miles of 15-foot-wide existing access roads would require improvements. The existing and new spur roads needed for the gen-tie alignment are shown in the POD.

2.2.2.8 *Proposed Action Summary of Permanent Disturbance*

Permanent disturbance is associated with all long-term Project components and associated facilities throughout the 30-year lifespan of the Project, including the solar arrays, BESS, roads and access routes, power distribution equipment, substations, gen-tie and transmission infrastructure, and permanent fencing. These areas would not be reclaimed until the end-of-life of the Project, which would occur in accordance with the BLM-approved Decommissioning and Site Reclamation Plan.

Table 2.2-1 summarizes anticipated permanent disturbance associated with the Proposed Action. The table also summarizes the temporary disturbance associated with construction, as described in Section 2.2.3.

2.2.3 Proposed Action Construction

2.2.3.1 *Construction Facilities and Temporary Disturbance*

Temporary facilities would be installed for the facilitation of construction and would not become part of the permanent facility. Temporary disturbance areas would be restored in accordance with the BLM-approved Site Restoration and Revegetation Plan following the completion of primary construction activities. These facilities include the following (all values are approximate):

- An approximately 3-acre office complex made up of a gravel base and trailers,
- 1 acre of nurseries for salvaged cacti,
- 80 acres of material storage and laydown yards, including for worker vehicle parking,
- 82 acres of gen-tie structure work areas comprising 75-foot-by-50-foot areas per pole, and
- 18 acres of gen-tie pull and tension sites comprising 100-foot-by-200-foot pull and tension sites.

Table 2.2-1 Summary of Estimated Permanent and Temporary Disturbance for the Proposed Action

Disturbance type or area	Temporary or permanent	Acres of disturbance on the BLM land	Acres of disturbance total	Notes
Solar facility				
Solar array blocks	Permanent	3,062	3,062	Solar panels, posts, and other associated equipment would be installed within this graded area. Vegetation would be allowed to regrow after construction. Includes 0.6 acre of disturbance to account for an estimated 135,818 3-inch screw posts throughout the facility (estimated assuming 118 posts per 1 acre of solar array).
O&M facility	Permanent	2.8	2.8	Includes the O&M building, paved parking lot, and water storage tanks all within the facility footprint surrounded by a perimeter security fence.
Substation	Permanent	8.3	8.3	Includes main power transformers, containment pit, control building, substation steel structures, high voltage circuit switching and protection equipment, and communications tower within substation footprint surrounded by a perimeter security fence.
Access roads and driveways for solar field	Permanent	89	89	34.2 miles of 20-foot-wide roads within and in between solar array blocks would be graded and covered with gravel base or compacted native soil.
Water storage facilities	Temporary	4.0	4.0	Temporary water-storage facilities would either be installed in distributed locations or consolidated.
Construction office complex	Temporary	3.0	3.0	An area used during construction for temporary offices and maintenance of equipment and vehicles.
Nurseries	Temporary	1.0	1.0	Salvaged cacti would be stored in a single consolidated location or distributed locations until replanted on the site in temporary use areas.
Material storage and laydown yards	Temporary	80	80	Several distributed and consolidated laydown yards for parking of worker vehicles as well as storage of materials and equipment.

Disturbance type or area	Temporary or permanent	Acres of disturbance on the BLM land	Acres of disturbance total	Notes
BESS	Permanent	35	35	Most likely co-located with the substation and thus requiring up to 35 acres. If distributed across the solar site, 392 locations of battery storage facilities would be used.
Equipment areas	Permanent	1.3	1.3	196 equipment areas, which include inverters and medium-voltage transformers distributed across the site.
Aboveground collector lines	Permanent	1.2	1.2	Approximately 3.1 miles of collector lines (assumed to follow internal access roads) on approximately164 aboveground poles (assumed to be installed every 50 feet) with an up to 10-foot clearance around pole.
Feeder lines	Permanent	40	40	Approximately 111 miles of underground feeder lines installed in an up to 3-foot-wide trench.
Swales	Permanent	21	21	Swales with approximately 40-foot widths constructed throughout the site to address stormwater runoff.
Detention basins	Permanent	45	45	Detention basins are distributed throughout the site for stormwater control.
Existing unpaved access roads	Permanent, existing	50.2	50.2	Existing unpaved 24-foot-wide access roads within the solar facility.
Total new permanent		**3,306**	**3,306**	
Total existing[1]		*50*	*50*	*N/a*
Temporary (may overlap permanent)[3]		*84*	*84*	*N/a*
Gen-tie line and gen-tie access roads				

Disturbance type or area	Temporary or permanent	Acres of disturbance on the BLM land	Acres of disturbance total	Notes
Gen-tie lines and spur roads to gen--tie lines	Permanent	59	64	**BLM:** Approximately 22.9 miles of gen-tie line with 176 H-frame poles cleared out approximately 0.12 acres around each set of poles, with 16.9 miles of 20-foot-wide spur roads to access each set of poles. **All:** Approximately 24.1 miles of gen-tie line with 190 H frame poles cleared out approximately 0.12 acres around each with 16.9 miles of 20-foot-wide spur roads to access each pole.
Gen-tie structure work areas	Temporary	76	82	125-foot-by-150-foot work areas at each gen-tie pole with 176 on the BLM lands and 190 on all lands.
Gen-tie Line Pull and Tension Sites	Temporary	14	18	120-foot by 100-foot pull sites where the gen-tie line direction changes sharply.
Existing gen-tie access roads (no improvements needed)	Existing	5.7	8.2	**BLM:** Approximately 5.6 miles of 15-foot-wide existing access roads on BLM lands. **All:** Approximately 18.1 miles of 15-foot-wide existing access roads as part of Project and Greenlink West
Existing access roads (improvements needed)	Permanent, existing/planned	31	31	**BLM:** Approximately 17 miles of 15-foot-wide existing access roads requiring improvements as part of proposed Greenlink West access on the BLM lands. **All:** Approximately 18.1 miles of 15-foot-wide existing access roads as part of Project and Greenlink West
Proposed access roads (Greenlink West)	Permanent, planned	0.9	0.9	Approximately 1/2 mile of 15-foot-wide proposed access roads as part of proposed Greenlink West on the BLM lands.
Total new permanent		**91**	**104**	
Total existing[1]		*5.7*	*8.2*	*N/a*

Disturbance type or area	Temporary or permanent	Acres of disturbance on the BLM land	Acres of disturbance total	Notes
Temporary (may overlap permanent)[3]		*90*	*100*	*N/a*
Solar facility access road				
Low-water crossings	Permanent	1.1	1.4	Low water crossing improvements along the existing unpaved access road to reach the solar site
Intersection improvement	Permanent	0	0.2	Roadway curve widening at intersection of State Route 208 and East Walker Road
New disturbance to widen existing access roads	Permanent	8.2	8.2	7.8 miles of Reese River Road and Old Route 2C on the BLM lands would be widened through new disturbance from 15 feet to 24 feet
New access road spur	Permanent	0.5	0.6	A new spur road approximately 900 feet long (0.2 mile) and 24 feet wide, extending from East Walker Road to Reese River Road on BLM lands would be constructed.
Existing unpaved access roads	Permanent, existing	24	28	**BLM:** Existing, unpaved, 11.4-mile-long access road on the BLM land. 3.6 miles would be approximately 24 feet wide (on East Walker Road, maintained by Lyon County) while the remaining 7.8 miles on Reese River Road and Old Route 2C would be 15 feet wide. **All:** Additional 2.3 miles of existing, approximately 20- to 24-foot-wide, unpaved East Walker Road, not on the BLM land, 1.5 of which may be paved.
Total new permanent		**9.7**	**10**	N/a
Total existing[1]		*24*	*28*	*N/a*

Disturbance type or area	Temporary or permanent	Acres of disturbance on the BLM land	Acres of disturbance total	Notes
Subtotal new permanent disturbance		**3,411**	**3,420**	N/a
Subtotal existing[1]		*80*	*86*	*N/a*
Subtotal temporary disturbance (may overlap permanent disturbance)		*174*	*184*	*N/a*

Notes:

1. Numbers may not be added due to rounding.
2. Data on Project components is based on preliminary engineering and assumptions. The information presented is subject to change.
3. Temporary disturbance acreages may overlap with permanent disturbance acreages.

2.2.3.2 *Construction Sequencing*

Construction of the Project under the Proposed Action and alternatives would follow the sequencing described below:

- **Geotechnical investigation:** A detailed geotechnical investigation of the Project area would be necessary to finalize engineering specifications.
- **Temporary storage and laydown yards:** Temporary staging areas would be established to facilitate construction activities and mobilize equipment and materials. These areas would be placed outside of the channels of drainages.
- **Site preparation:** Site preparation would include land-surveying and site delineation; trenching and excavation; and dust, erosion, and sediment control. Incised drainages would be left in place and largely unaltered; land contours would be maintained although drainage would be controlled using detention basins, affecting site hydrology after construction; any saleable mineral materials would likely be balanced in the Project area (i.e., any saleable minerals extracted from within the ROW would be used within the ROW for construction); The site preparation would also follow a Signage and Flagging Plan, which would be reviewed and approved by the BLM prior to construction.
- **Solar array assembly:** Solar array assembly would include mobilization of material and equipment to individual solar array block areas; preparation of trenches, installation of underground cable, and backfill of trenches; installation of posts and table frames for the tracking system; installation of PV modules; connection of electrical terminations; and inspection, testing, and commissioning equipment.
- **Construction of electrical collection and transmission systems:** The electrical collection and transmission-system infrastructure would entail the installation of the direct-current power-conversion stations and SCADA systems; the power and control equipment; the high-, medium-, and low-voltage cables; grounding of all equipment; and installation of communication systems.
- **Construction of on-site substation:** An 8.3-acre on-site substation, including a transformer containment area, a microwave tower, a control house, and one or more transformers, would be constructed on site. The transformer containment area would be lined with an impermeable membrane covered with gravel. The remaining substation area would be constructed with excavation and pouring of a foundation, as well as installation of electrical equipment and overhead cabling, installation of a control building, and installation of all auxiliary systems (e.g., heating, ventilation, lights).
- **Construction of auxiliary systems and infrastructure:** Internal roadways and transmission access would be constructed through grading, compacting, and leveling. Construction of auxiliary systems and infrastructure, including internal access roads, the O&M facilities, lighting, fencing, fire protection system, and water storage and delivery system would be constructed.

2.2.3.3 *Construction Water Use, Waste, and Power*

An estimated 1,000 acre-feet of water would be required during the Project construction period for construction-related activities, including dust control. All waste, including batteries, would be properly disposed of, or recycled in accordance with regulations and a Waste and Hazardous Materials Management Plan as well as a Spill Prevention, Control, and Countermeasures Plan (SPCCP). The types and quantities of hazardous materials and wastes are provided in the POD. Power would be supplied through an existing distribution line that would be energized through agreements with NV Energy.

2.2.3.4 *Construction Method, Workforce, Equipment, and Schedule*

Construction activities would occur between 5:00 a.m. and 5:00 p.m. up to 7 days per week. The on-site construction workforce would consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The on-site construction workforce is anticipated to be an average of approximately 400 construction workers with a peak of up to approximately 700 workers, assuming some periods of construction would minimize the workforce while others would be more workforce reliant. The site preparation, solar array assembly, the construction of electrical collection and transmission systems, construction of on-site substation, and the construction of auxiliary systems and infrastructure would overlap for

a period of six months from February to July 2025, where the peak of 700 workers would be anticipated (refer to Table 2.2-3). Most construction staff and workers would commute daily to the job site from the Reno and Carson City metropolitan areas, but up to 10 percent of the workforce may be drawn from within Mineral County, from the city of Yerington, and other areas of Lyon County. Anticipated construction traffic volume is provided in Table 2.2-2. A Traffic Management Plan would be prepared prior to construction for review by the BLM.

Table 2.2-2 Construction Vehicle Daily Roundtrips

Construction phase	Daily worker vehicle trips	Daily haul truck trips	Daily water truck trips	Daily pickup truck trips
Civil works	78	47	40	5
Installation of solar arrays	183	15	40	5
Installation of electrical collection systems	85	4	20	5
Installation of on-site collector substation	38	6	20	5
Civil works gen-tie	78	47	20	5
Installation of gen-tie	80	4	20	5

Typical equipment that would be used for the generation facilities and on-site substation is included in the POD.

The Project construction schedule would be phased over 16 months. The estimated construction schedule is provided in Table 2.2-3.

Table 2.2-3 Estimated Construction Schedule

Activity	Duration	Timeframe
Site preparation (Project solar site)	8 months	December 2024 to July 2025
Site preparation (Project access roads)	2 months	January 2025 to March 2025
Installation of PV arrays	14 months	February 2025 to March 2026
Installation of electrical collection systems	11 months	February 2025 to March 2026
Installation of on-site collection substation	11 months	December 2024 to November 2025
Installation of gen-tie line	11 months	December 2024 to November 2025
Testing and commissioning	Ongoing	March 2026 to April 2026
Site restoration and revegetation	Ongoing	No later than June 2026

2.2.4 Proposed Action Operation and Maintenance

Operation of the Project would create 15 permanent jobs (Triple Point 2022). The solar power plant would be operated remotely 7 days per week using automated facility controls and monitoring systems with SCADA control systems. Operations staff would be located off site, with daily site visits for security, routine inspection and maintenance, and repairs. At designated intervals, approximately every 10 to 15 years, major equipment maintenance would be performed. O&M procedures would be consistent with industry standards and practices for maintaining plant components for as long as acceptable so as to reduce waste.

Routine inspection and maintenance activities are listed along with frequencies for each in the POD. PV array cleaning may occur approximately two times per year and could take approximately 24 hours to complete (including nighttime panel cleaning) and may require some use of water. The Project would require up to 28 acre-feet of water per year for O&M facility purposes (e.g., worker subsistence, sanitation, fire protection, PV array cleaning). Project roads and the O&M area would be maintained free of vegetation.

Vegetation management would occur through mechanical methods (i.e., discing) and the BLM-approved chemical controls (i.e., herbicides). The use of herbicides would fall under the 2015 Final PEA Integrated Weed Management Plan (BLM 2015); tiered from the 2016 Plan for the BLM's Vegetation Treatments Using Aminopyralid, Logotypy, and Rimsulfuron on BLM Lands in 17 Western States (BLM 2016), which is tiered from the 2007 PEIS for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States (BLM 2007). Only herbicides and application methods and quantities approved in Nevada and the Carson City District and included in the RODs for the PEISs would be used. SOPs for herbicide use would be implemented.

The Applicant would implement a Site Restoration and Revegetation Plan and an Integrated Weed Management Plan that specify procedures, including use of herbicides for managing vegetation and reducing the spread of non-native and noxious weeds. The plans would be submitted to the BLM for review and approval prior to the issuance of a Notice to Proceed (NTP), should the Project be approved.

2.2.5 Proposed Action Decommissioning and Site Reclamation

The objective of Project decommissioning and reclamation is to remove the installed power generation equipment and to encourage revegetation of native species, as feasible. The Applicant would be required to post a reclamation bond as a condition of the ROW authorization issuance in order to ensure the availability of funds for site decommission and reclamation. The Project's bond would be based on the approved Decommissioning and Site Reclamation Plan. The plan will be finalized based on the selected Alternative prior to issuance of NTP. The life of the Project would be approximately 30 years. While it is possible that the Project is repowered at the end of the 30-year period, for the purposes of the EIS, decommissioning has been analyzed in Chapter 3 for all resources. Prior to termination of the 30-year ROW grant, the Applicant would update the site-specific Decommissioning and Site Reclamation Plan.

The Decommissioning and Site Reclamation Plan would provide details regarding the removal of all Project components, reuse of materials to the extent feasible, and site restoration activities to a percentage of reference site conditions. Decommissioning requires approximately one-third of the workforce, time, and resources as construction of the Project; therefore, it would be expected to occur over six months and require the support of approximately 150 workers on average. Similarly, water use is estimated to require one-third the amount of construction or 335 acre-feet. The BLM would review the plan prior to approval.

2.3 No Action Alternative

Under the No Action alternative, the BLM would not authorize a ROW grant for the Project. No solar site, substation, gen-tie line, O&M facilities, or other Project components would be constructed. The BLM would continue to manage the land consistent with the CRMP (BLM 2001), as amended. Any future applications for solar development of the site would be subject to the site-specific conditions identified in the BLM's Western Solar Plan (BLM and DOE 2012), or as updated, and the applicable laws and land use plans in place at the time of application.

2.4 Alternative 1: Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance

2.4.1 Overview

Alternative 1 (Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance) is designed as a Project lifespan alternative; it would modify elements of the Proposed Action throughout

construction, O&M, and decommissioning. The intent of Alternative 1 is to reduce disturbance to major washes, vegetation, and soils within the solar site by locating development areas outside of the major washes and providing guidelines to limit vegetation disturbance during construction. Restoration would be conducted over the lifespan of the Project through development and implementation of a Site Restoration and Revegetation Plan. Reducing disturbance would help to preserve soils, soil seed banks, native perennial vegetation, wildlife habitat, and sensitive plant species, as well as reduce the potential for the introduction of invasive weeds, fugitive dust, and erosion from increased stormwater runoff volumes and velocities. Alternative 1 is also designed to simplify the reclamation of the Project site at the Project's end-of-life.

2.4.2 Elements the Same as the Proposed Action

All of the Project's solar site components (i.e., solar array blocks, BESS, linear and ancillary facilities, water retention facilities, O&M facilities, and on-site substation) would be largely the same as for the Proposed Action, with the same energy production and storage capacity. The gen-tie line and access roads would also be the same as for the Proposed Action.

2.4.3 Elements Unique to Alternative 1

2.4.3.1 *Project Design*

Development Blocks

Under Alternative 1, Project development in the solar site would be limited to seven defined "development blocks" to avoid major washes (i.e., where modeled flows could exceed 3 feet in 100-year storm events) and key access routes. Acreages of the seven development blocks are shown in Table 2.4-1. The balance of the 5,141-acre application area, comprising 707 acres, would be outside of fenced areas under this alternative. Figure 2.4-1 also shows how the site would be divided into development blocks under Alternative 1. Development blocks would be built out in phases. Final engineering design will identify the order of development block build out. Each development block would be built to the point that array posts are installed, and then the ground stabilized, before opening another block. Smaller blocks (i.e., D, E, F, G) can be built concurrently, as long as generally not more than 1,000 acres is open at a time, with the exception of development block A. The minimum setback for solar arrays is outside the 100-year flood plain of the large washes, as well as major roadways that would remain open. Alternative 1 would also create permeability through the Project solar site for movement of recreationalists and wildlife, including game species. A more detailed site plan for Alternative 1 is shown in the *Alternatives Report*, available with the EIS on the BLM's National NEPA Register website.

Table 2.4-1 Acreages of Development Blocks under Alternative 1

Development block	Area (acres)
A	3,000
B	317
C	469
D	225
E	71
F	259
G	93
Total	4,434

Vegetation and Topography Maintenance

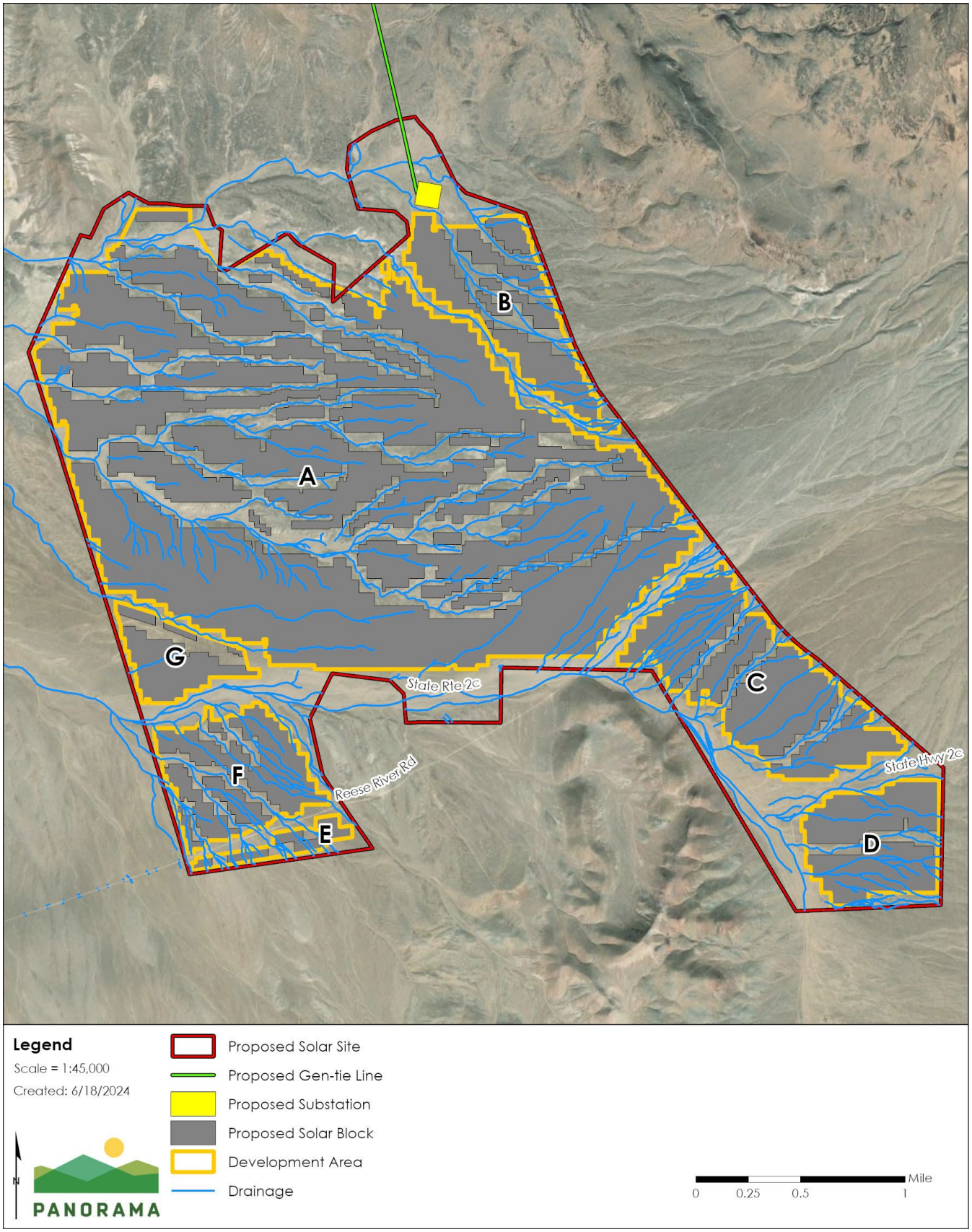
Alternative 1 includes several thresholds of disturbance for each type of construction method to be used within the solar array areas. The thresholds do not apply to areas of permanent disturbance, such as equipment pads,

buildings, driveways, conduit channels, internal access roads within the solar array development blocks, or detention basins. Under Alternative 1, overland travel methods would be utilized to develop the solar array blocks, so as to reduce disturbance to topography, soils, and vegetation and vegetation root systems. Methods would include both overland travel that maintains vegetation and overland travel that crushes vegetation but aims to preserve the root ball. The methods allow for some grading in the solar array development blocks. The thresholds are included in Table 2.4-2

Table 2.4-2 Grading Thresholds within Solar Array Development

Type of Disturbance	Threshold Description
Grading	Traditional construction methods (i.e., disk and roll and grading) would be allowed for adjustments to topography or to construct around other constraints more easily. Within the solar array blocks, a maximum disturbance guideline for grading for panel installation is established at approximately 20 percent.
Overland travel/maintain vegetation	Approximately 40 percent of the existing remaining perennial vegetation within each solar array block (not including areas for equipment pads, access roads, conduits, detention basins, etc.) would be preserved through limited overland travel and avoidance. During final design, the Applicant would need to demonstrate to the BLM that this goal is feasible through selected construction methods.
Overland travel/crushed vegetation	The remaining 40 percent of the solar array blocks (not including areas for equipment pads, access roads, conduits, detention basins, etc.) would be constructed using overland travel, with the vegetation crushed over successive equipment passes. The number of passes would be limited to the minimum needed to construct the features, with the goal of maintaining root balls so that portions of these areas could later be restored.
Site Restoration and Revegetation Plan	Alternative 1 also includes restoration over the lifespan of the Project to maintain the perennial vegetation cover and to restore vegetation that was subject to drive and crush within the solar array block area. The Site Restoration and Revegetation Plan would also dictate maintenance of the vegetation for fire and operational safety over the lifespan of the Project. The Site Restoration and Revegetation Plan would identify the methods selected, including the seed mixes to be used to restore areas, if needed, in coordination with the BLM. The goal is that by the end-of-life of the Project, up to 65 percent of the original application area (3,341 out of 5,114 acres) would have perennial vegetation cover. Decommissioning would then be accomplished without greatly increasing the disturbance. Alternative 1, like the Proposed Action, would also require implementation of an Integrated Weed Management Plan over the lifespan of the Project.
Access Management Plan	Alternative 1 also requires preparation of an access management plan that contains the information necessary to demonstrate how minimized disturbance goals would be met.

Figure 2.4-1 Proposed Development Blocks under Alternative 1



2.4.3.2 *Alternative 1 Construction*

The key feature of this alternative that differs from the Proposed Action is that the solar array blocks would be constructed utilizing overland travel methods. Table 2.4-3 summarizes the guidelines for soil and vegetation maintenance for this alternative broken down by construction method. *Overland travel/maintain sustainable vegetation* describes alternative, non-traditional development methods for construction of solar arrays. This construction method is expected to improve the retention of native vegetation, wildlife habitat, soils, and seed banks, while minimizing air quality impacts (i.e., from fugitive dust) and water resource impacts. Methods that include overland travel but result in driving and crushing vegetation are expected to maintain root systems and reduce impacts to vegetation and hydrology as compared with disk and roll and grading methods. Restoration in these areas of crushed vegetation is expected to be more feasible over time, as described below under "Operation and Maintenance (O&M)".

The methods necessary for maintaining vegetation and establishing limited travel paths require specialized equipment and additional construction time. Therefore, the construction period for Alternative 1 would likely be longer than for the Proposed Action, at an estimated 18 months versus 16 months. The total estimated number of workers are expected to be the same as described for the Proposed Action.

Table 2.4-3 Avoidance/Disturbance Area by Project Construction Method under Alternative 1

Construction method	Avoidance areas or avoided features within application area (acres)	Solar array block construction (acres)	Permanent disturbance areas (e.g., substation, internal roads, detention basins, power stations, BESS) (acres)	Total (acres)	Percentage of application area
Avoidance of key areas (e.g., washes)	1,864	0	0	1,864	36%
Overland travel/maintain sustainable vegetation	0	1,220 [a]	0	1,220	24%
Overland travel/crush vegetation (potentially restorable)	0	1,220 [b]	0	1,220	24%
Clear and cut/graded	0	612 [c]	215 [d]	827	16%
All combined	1,864	3,053	215	5,141	100%
Total maintained vegetation at end of construction	1,864	1,220	0	3,084	60%
Total maintained vegetation by end of operation	1,864	1,465[d]	0	3,329	65%

Notes:

[a] Equals 40 percent of the solar array development blocks, not including areas of permanent disturbance for facility features (e.g., equipment pads, access roads, conduits, detention basins)

[b] Equals 40 percent of the solar array development blocks, not including areas of permanent disturbance for facility features (e.g., equipment pads, access roads, conduits, detention basins)

[c] Equals 20 percent of the solar array development blocks, not including areas of permanent disturbance for facility features (e.g., equipment pads, access roads, conduits, detention basins), which may be graded for topography or other needs.

[d] Assumes that 20 percent of the overland travel/crush vegetation would recover during operations. This estimate is conservative but allows for on-going impacts to vegetation from operations and is a minimum.

[e] O&M facility (2.8 acres), substation (8.3 acres), access roads and driveways (89 acres), water storage facility (4 acres), BESS (2.7 acres), equipment areas (1.4 acres), aboveground collector lines (1.2 acres), feeder lines (40 acres), swales (21 acres), detention basins (45 acres)

2.4.3.3 *Operation and Maintenance (O&M)*

During O&M, areas of vegetation would be maintained. Vehicle trips between solar array blocks would be limited to access roads and the shortest path to equipment off of the access roads, with the goal of minimizing impacts to existing vegetation. Vehicular access would occur in the smallest possible vehicle to complete the activity or, when possible, on foot. Vegetation under panels and around equipment would be trimmed or mowed as needed to ensure safe operation. The Site Restoration and Revegetation Plan would be initiated following completion of the primary construction phase, during O&M. The goal would be to restore vegetation so that up to 65 percent of the total initial application area is maintained with vegetation.

2.4.3.4 *Decommissioning*

Decommissioning would be as described in Section 2.2.5 for the Proposed Action and consist of removing all Project materials from the site. Areas without vegetation through the solar array blocks would be used for access to the maximum extent possible. Restoration and reclamation of the remaining Project disturbance would then be undertaken. Decommissioning would be performed as identified in the Decommissioning and Site Reclamation Plan.

2.5 Alternative 2: Alternative Supplemental Access During Construction

2.5.1 Overview

Alternative 2 (Alternative Supplemental Access During Construction) includes providing supplemental access during construction to disperse some of the vehicle trips that under the Proposed Action would be concentrated on East Walker Road. This alternative was discussed with Nevada Copper, who has agreed to allow for supplemental access through their private property on the Pumpkin Hollow Mine, contingent on a mutual legal agreement identifying the terms of use. Cooperative agreements would also be obtained with LADWP to also use existing roads on the BLM land for which they hold a non-exclusive ROW.

2.5.2 Elements the Same as the Proposed Action

All elements of the Project would be the same as those of the Proposed Action under this alternative. The solar site and gen-tie would be constructed exactly as described for the Proposed Action (unless this alternative is layered with Alternative 1, in which case all elements would be the same as for Alternative 1). The primary difference in this alternative is the addition of supplemental access routes used during construction.

2.5.3 Elements Unique to Alternative 2

2.5.3.1 *Project Design*

The current number of vehicle trips per day is estimated in the Air Quality Report (RCH 2023). The estimated trips by Project phase are provided in Table 2.2-2 and would include several hundred roundtrips per day during peak construction. The Proposed Action includes one access route to the Project site, relying on East Walker

Road to connect to Reese River Road. East Walker Road is a local, mostly unpaved road serving two residences, agricultural areas, and recreationalists accessing the Walker River State Recreation Area and the BLM lands.

Alternative 2 would involve partial use of one or two additional access options for a portion of the vehicle trips in order to reduce the impact on the residences along East Walker Road, as well as resulting impacts compounded by traffic associated with the Walker River State Recreation Area. Some roadway sections would require additional road base to be added in areas of erosion and minor road grading would be required. Modifications to the existing roads would generally remain within the existing disturbance area. Maintenance of the supplemental access roads is expected and would be the responsibility of the Applicant. The supplemental access routes are summarized in Table 2.5-1 and shown in Figure 2.6-1 and Figure 2.6-2.

Table 2.5-1 Supplemental Access Road Options under Alternative 2

Access route option	Description
Pursel Lane to LADWP's transmission access road to a new spur road to the solar site, utilizing State Route 877 to Pursel Lane.	County maintained portion of Cremetti Road/Pursel Lane/SR 827: 3.5 miles of paved, approximately 24-foot-wide road. Privately maintained portion of Pursel Lane: 4.3 miles of unpaved but improved road on the Pumpkin Hollow Copper Mine LADWP transmission access road on the BLM land to Reese River Road: 6.6 miles of unpaved, approximately 15-foot-wide road adjacent LADWP's transmission line
LADWP Transmission Access Road from US Route 95 Alternate (US 95A) to Reese River Road	LADWP Transmission Access Road on the BLM land to Reese River Road: 13.8 miles of unpaved, approximately 10-foot-wide road on the BLM land but adjacent to LADWP's transmission line

2.5.3.2 *Project Construction*

Supplemental access routes would only be utilized during Project construction. The purpose of the supplemental access routes would be to reduce some of the vehicle trips along East Walker Road by dispersing them across other access routes. Construction workers would likely be commuting from the Reno and Carson City metropolitan areas. Up to 25 percent of workers would be directed to the supplemental access routes. For additional safety, due to the narrow road width, a pilot car would lead traffic in and out of the job site, or other measures needed for safety would be incorporated in the Traffic Management Plan.

2.5.3.3 *Project O&M and Decommissioning*

Alternative 2 would not apply to the O&M phase of the Project. The supplemental access routes would only be utilized during Project construction. Decommissioning requires approximately one-third the workers and trips and thus impacts would be reduced compared with the Proposed Action. The routes, particularly through the Nevada Copper property, may not exist at the time of decommissioning.

2.6 Alternative 3: Alternative Gen-tie Connecting to Greenlink West

2.6.1 Overview

Alternative 3 (Alternative Gen-tie Connecting to Greenlink West) entails connecting the gen-tie line from the Project to the proposed Greenlink West Transmission Project through a new switching station under the Greenlink West line. This alternative requires authorizations that are not guaranteed at this time. NV Energy must approve this alternative in consideration of system operation and integration. This alternative's feasibility also depends upon the approval and construction of the proposed Greenlink West Transmission Project, which is

currently also undergoing NEPA review (the 90-day public comment period on the Draft EIS concluded on August 3, 2023).

2.6.2 Elements the Same as the Proposed Action

All of the Project solar site components (i.e., solar PV modules/arrays, BESS, linear and ancillary facilities, water retention facilities, operations, and maintenance facilities) would be the same as described for the Proposed Action, with the exception of the location of the on-site substation. The Project solar site access road would also be the same as described for the Proposed Action (unless this alternative is layered with Alternative 1, in which case all elements except for the substation would be the same as for Alternative 1).

2.6.3 Elements Unique to Alternative 3

2.6.3.1 *Project Design*

Alternative 3 entails moving the proposed 525 kV substation on the solar site further south along the eastern boundary of the site, building a new switching station under the proposed Greenlink West line, and building a new 0.54-mile-long 525 kV gen-tie between the solar site substation and new switching station, as shown in Figure 2.7-1. The gen-tie would include approximately four tubular steel or H-frame transmission line poles similar to those described for the Proposed Action. A switching station is an electrical substation with only one voltage level, whose only function is switching actions. The switching station would connect into the proposed Greenlink West transmission line to feed power generated at the Project solar site into NV Energy's system. The proposed Greenlink West transmission line would then continue on to the Fort Churchill substation. Under Alternative 3, the on-site 525 kV substation would displace solar arrays as they are located under the Proposed Action design. Solar arrays would instead be located in the area of the substation under the design of the Proposed Action, with no net change in the number of solar arrays. The on-site substation footprint would remain at 8.3 acres. The new switching station under the proposed Greenlink West transmission line would be approximately 8 to 10 acres in size. The new switching station would be owned and operated by NV Energy. All of the new infrastructure, including the gen-tie line and the switching station, would be located within the existing Section 368 designated utility corridor adjacent to the solar site. The estimate of new disturbance associated with the gen-tie is shown in Table 2.6-1.

Table 2.6-1 Summary of Estimated New Permanent Disturbance for the Gen-tie under Alternative 3

Component	Acres of impact	Description
Gen-tie line	0.5	Approximately 0.54 mile of gen-tie line with 4 H-frame poles; approximately 0.12 acre cleared out around each
New access road along gen-tie line	1.3	Approximately 0.54 mile of new 20-foot-wide access road from the Project substation to the switching station
New switching station	10	A new switching station within the adjacent Section 368 utility corridor, between the solar site and Greenlink West.
All	11.8	

Figure 2.6-1 Proposed Alternative 2 Access Route Option: Pursel Lane to LADWP Transmission Line Road

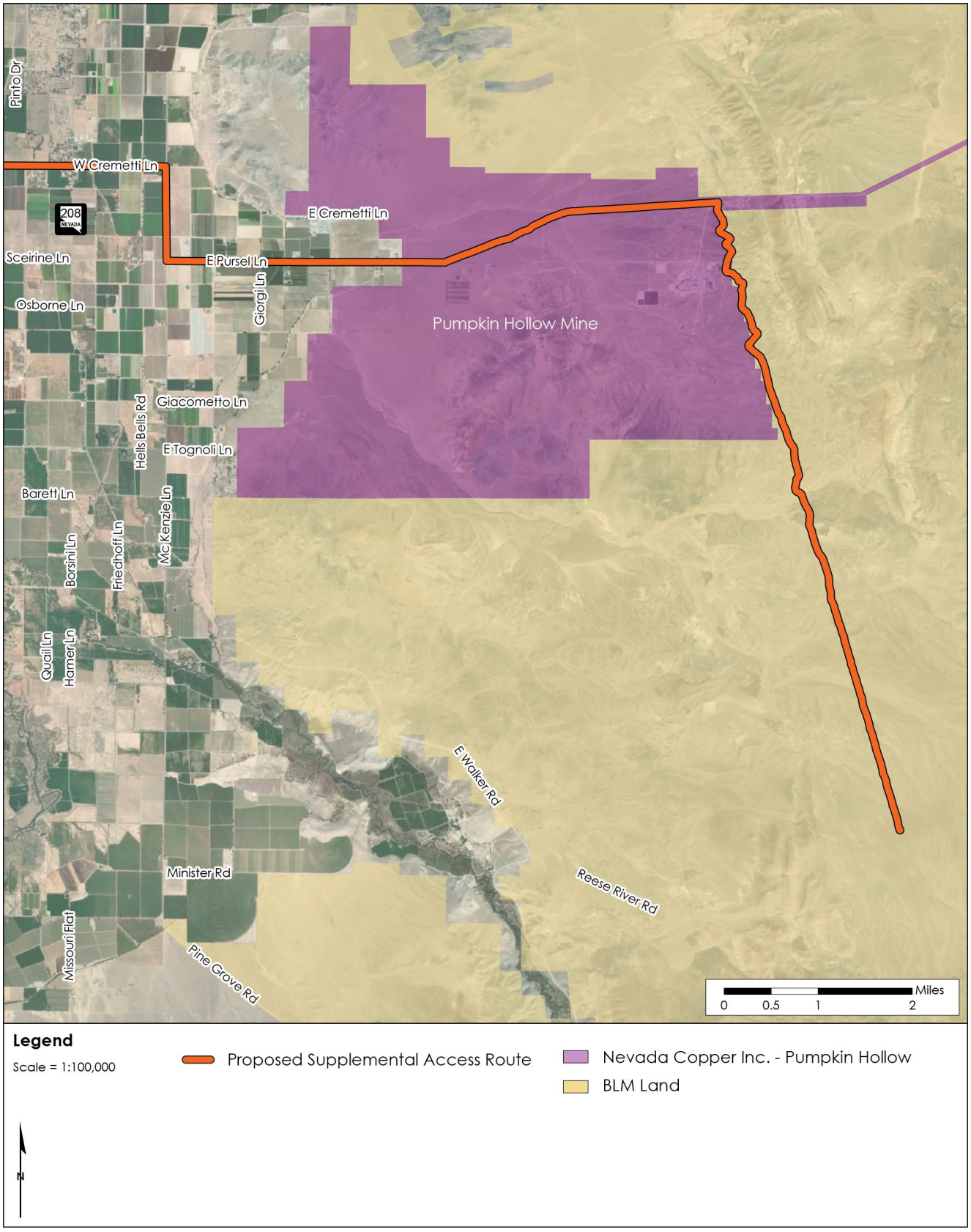
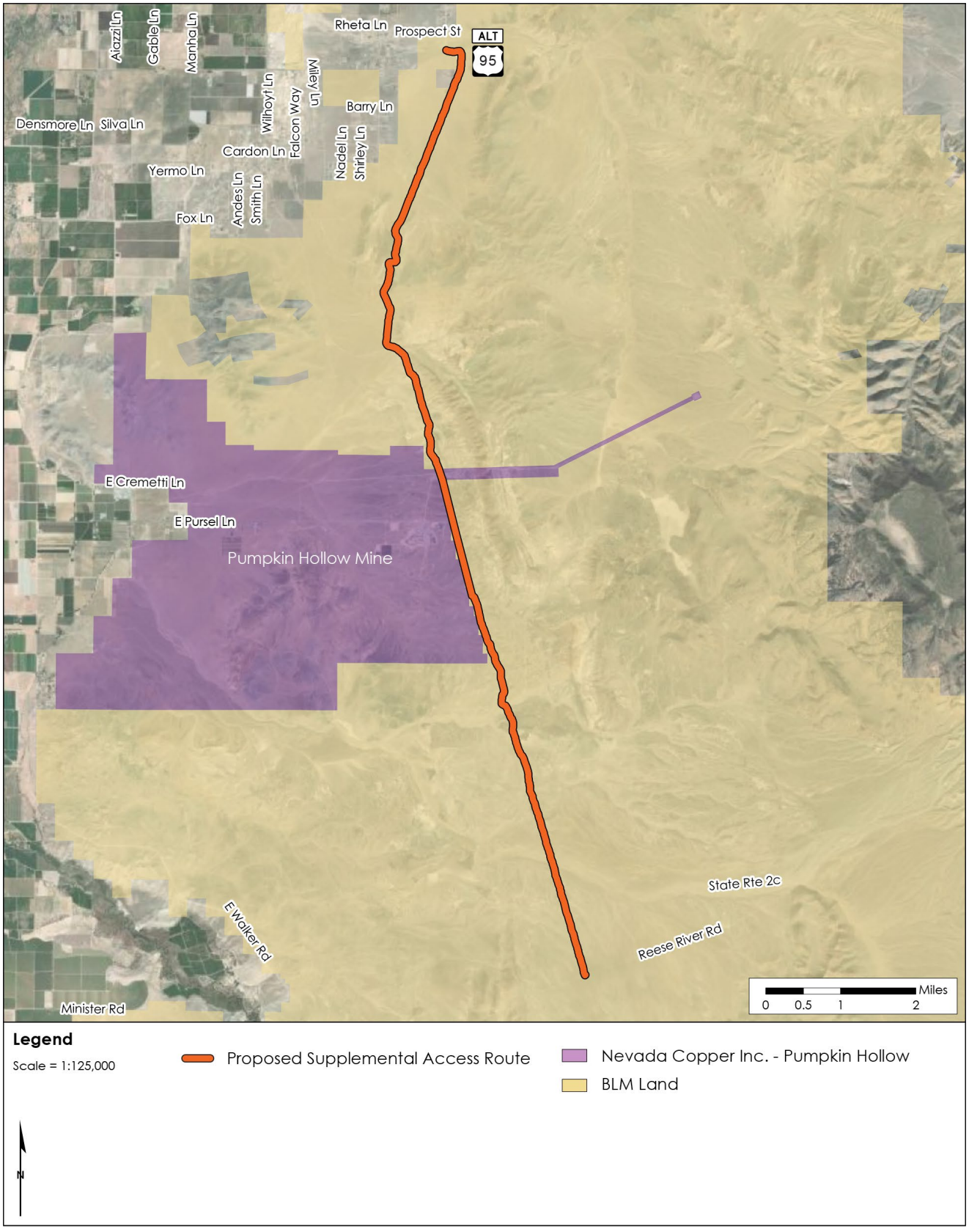


Figure 2.6-2 Proposed Alternative 2 Access Route Option: LADWP Transmission Line Road from US 95A



2.6.3.1 *Project Construction*

The Project substation would be constructed as described for the Proposed Action. The new switching station would also require the same construction methods as the on-site substation. Switching station construction would consist of site grading, concrete equipment foundation forming and pouring, crane-placed electrical and structural equipment, underground and overhead cabling and cable termination, ground grid trenching and termination, control building erection, and installation of all associated systems including, but not limited to, heating, ventilating, and air conditioning system components; distribution panels; lighting; communication and control equipment; and lightning protection. The switching station area would be excavated to a depth of 10 feet. After installation of the grounding grid, the area would be backfilled, compacted, and leveled, followed by the application of 6 inches of aggregate rock base. Equipment (i.e., breakers, buswork, and metal dead-end structures) installation would follow.

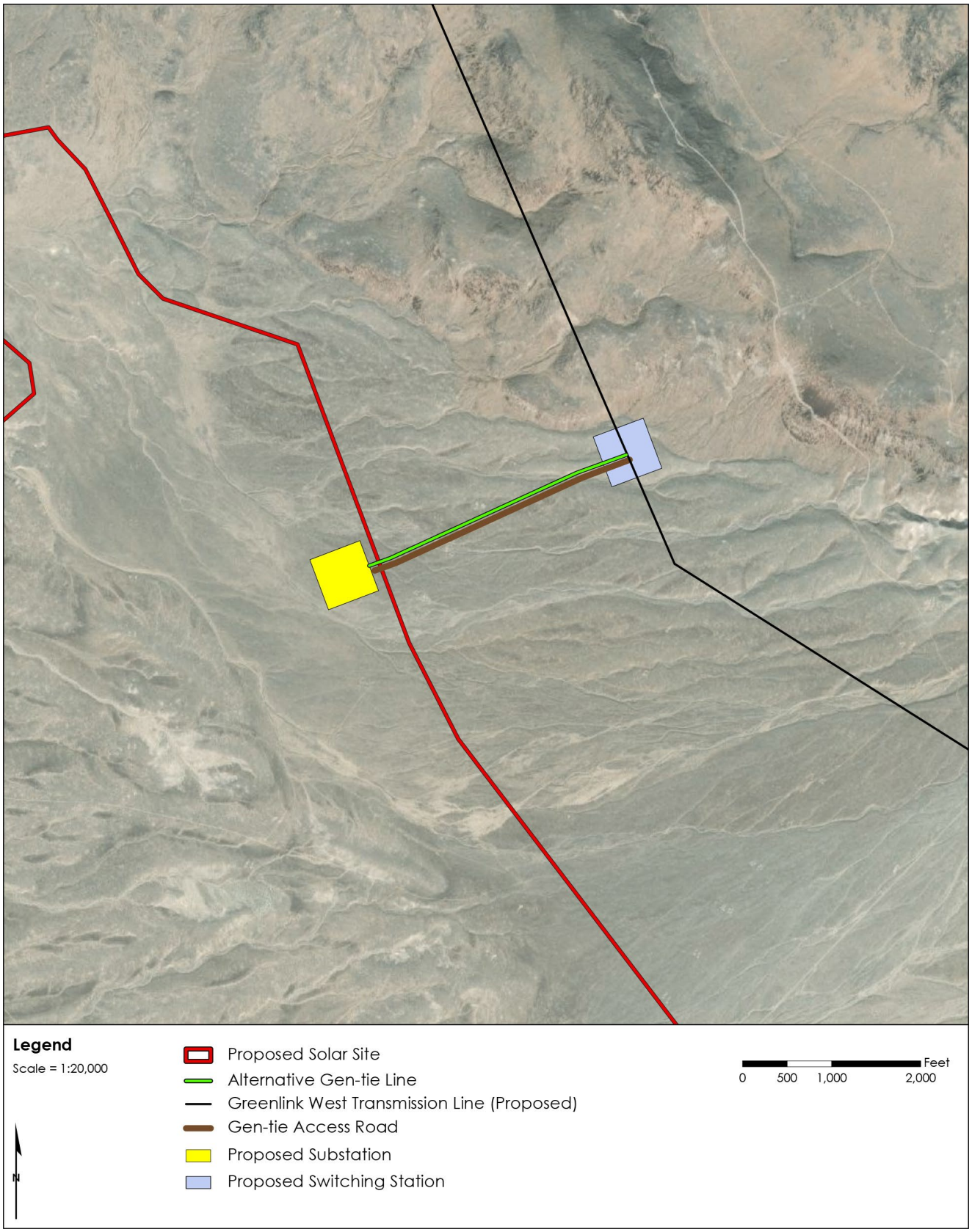
2.6.3.1 *Project O&M and Decommissioning*

The O&M and decommissioning phases would be the same as for the Proposed Action; however, only 0.54 mile of gen-tie line would need to be maintained. NV Energy would maintain the switching station.

2.7 Federal Lead Agency Preferred Alternative

Under NEPA, the *preferred alternative* is a preliminary designation of the lead agency's preference of action among the Proposed Action and alternatives. The identification of a preferred alternative does not constitute a commitment or decision in principle by the BLM, and there is no requirement for the BLM to select the preferred alternative in the ROD. Under NEPA, a lead agency may select a preferred alternative for a variety of reasons, including the agency's priorities in addition to the environmental considerations discussed in the EIS. The BLM may also select components of different alternatives, as presented and evaluated in the EIS. In accordance with NEPA (40 CFR § 1502.14(d)), the BLM has designated all elements of Alternative 1, Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance combined with Alternative 2, Supplemental Access During Construction as the preferred alternative.

Figure 2.7-1 Proposed Alternative 3: Gen-tie and Substation Connecting into Proposed Greenlink West



2.8 Alternatives Considered but Eliminated from Detailed Study

The BLM eliminated from further detailed analysis any alternatives that met the following criteria (BLM 2008, §6.6.3):

- It is ineffective (it would not respond to the purpose and need).
- It is technically or economically infeasible (consider whether implementation of the alternative is likely given past and current practice and technology; this does not require cost-benefit analysis or speculation about an applicant's costs and profits).
- It is inconsistent with the basic policy objectives for the management of the area (such as, not in conformance with the LUP).
- Its implementation is remote or speculative.
- It is substantially similar in design to an alternative that is analyzed.
- It would have substantially similar effects to an alternative that is analyzed.

Several alternative sites, technologies, and methods were considered but eliminated, as described in Table 2.8-1. Additional information on the alternatives considered but eliminated is provided in the *Alternatives Report* (Panorama 2023).

Table 2.8-1 Alternatives Considered but Rejected

Alternative	Description
Private land	Much of the available private land in the region is dominated by agricultural use or terrain that is not suitable for solar development or is part of the Pumpkin Hollow Copper Mine. Additionally, 85 percent of the land in Nevada is owned by the federal government, which limits the amount of available private land for development.
Other BLM-administered lands	Other suitable areas are proposed for other energy development projects (primarily solar) or have other constraints, including potential impacts from military operations, tribal lands, and special land uses, such as wetlands around the Fort Churchill substation or proximity to the Pony Express Trail and Lahontan Reservoir/Carson River.
Brownfield/degraded land	The USEPA tracks 480,000 contaminated sites for potential reuse for renewable energy development as part of its Re-Powering America's Lands Initiative. As with the private land alternatives previously described, it would be technically possible to develop solar energy on these contaminated sites. However, there were no identified sites in the region that would be sufficiently large enough to support a 700 MWac project with feasible access to transmission lines and substations with adequate capacity.
Other types of renewable energy: solar, wind or geothermal	Other types of renewable energy projects, including wind, geothermal, and other solar technologies, were eliminated from detailed consideration because they would not meet the BLM's purpose and need to respond to the Applicant's application.
Distributed generation	Distributed-generation solar was also eliminated from detailed consideration. *Distributed generation* refers to the installation of small-scale solar energy facilities at individual locations at or near the point of consumption (e.g., use of solar PV panels on a business or home to generate electricity for on-site consumption). Distributed-generation systems usually generate less than 10 MW and thus would fail to promote

Alternative	Description
	the BLM's objective to permit substantial quantities of renewable energy generation.
Demand-side management	This potential alternative to utility-scale solar PV energy development consists of a variety of approaches to reduce electricity use, including energy efficiency and conservation, building and appliance standards, and load management and fuel substitution. With population growth and increasing demand for energy, conservation and demand-side management alone is not sufficient to address energy demands. These efforts also do not respond to federal mandates to promote, expedite, and advance the production and transmission of environmentally sound energy resources, including renewable energy resources and, in particular, cost-competitive solar energy systems at the utility scale.
Concentrated photovoltaic technology	*Concentrated photovoltaic* (CPV) technology uses layers of wafers to absorb different wavelengths of sunlight and provide more power conversion efficiency than typical PV panels. This technology requires dual tracking technology to provide critical alignment with direct sunlight in order to be efficient. CPV panels are mounted on taller structures than traditional PV panels (as high as 40 feet above the surface). This alternative was eliminated from detailed study because this technology is relatively new and there are uncertainties for long-term performance reliability. Further, the manufacturing capacity to supply large-scale utility projects has not been proven to date.
Alternative access via Minister Road	Commenters during scoping suggested the use of Minister Road, through the Walker River State Recreation Area, to connect to Reese River Road as an alternative access route to the solar site. This alternative was evaluated through coordination with Nevada State Lands, who stated that use of their new road connecting to Minister Road through the park would only be used for park access and would not be compatible with construction traffic. Therefore, this alternative was rejected.
Other access road alternatives	Other access routes were considered, including building a new road, as well as overhauling existing access roads from US95A to support full Project traffic loads. These options all require substantially greater ground disturbance with increased effects to wildlife, drainage, soils, erosion, air quality, and visual impacts, as compared with utilizing existing public roads with traffic controls.

2.9 Comparison of Effects

This EIS examines the range of reasonable alternatives developed to meet the Project's purpose and need, along with a No Action alternative. A No Action alternative is required to be considered under NEPA (40 CFR § 1502.14) as a basis for comparison. Table ES-2 in the Executive Summary to this EIS provides a comparison of the alternatives.

Chapter 3 Affected Environment and Environmental Consequences

3.1 Introduction

3.1.1 Affected Environment

This chapter describes the existing environment, including conditions and trends of the human and physical environment that could be affected by the Proposed Action and alternatives Resources addressed include those that occur within, are adjacent to, or are associated with the Proposed Action and alternative analysis area (referred to as the *study area* for select resource topics).

3.1.2 Environmental Consequences

This chapter also describes environmental consequences, referred to as "impacts" or "effects" of implementing the Project. Impacts are defined as modifications to the environment over existing conditions that are caused by a proposed action, and include direct, indirect, and cumulative impacts. Terminology for discussion of environmental consequences under NEPA is defined in part 1508 of the April 20, 2022, Phase 1 CEQ revisions of the Regulations for Implementing the NEPA (40 CFR §§ 1508.1(g)).

Potential impacts were evaluated based on the assumption that environmental commitments would be implemented as part of the proposed activities. Environmental commitments may include BMPs, minimization measures, mitigation measures, conservation measures, environmental compliance, compensatory mitigation, programmatic design features (PDFs), SOPs, or other commitments. Proposed environmental commitments summarized for each resource are in Appendix B, *Mitigation, Monitoring, and Reporting Measures*.

Because the Project is tiered to the 2012 Western Solar Plan, the Project is subject to the Western Solar Plan PDFs (Appendix A in the Western Solar Plan), which would potentially reduce the impacts of the Project (BLM and DOE 2012). PDFs are presented first with "Western Solar Plan PDF" followed by the acronym for the applicable resource topic used in the Western Solar Plan. The CRMP identifies SOPs that could reduce effects, which are also identified where applicable in the analysis.

3.1.3 Mitigation Measures Identified in the Analysis

Project specific mitigation measures (MMs) are proposed, where applicable, based on potential for adverse effects from the Project. An MM is a specific requirement of Project implementation that either avoids, reduces, or minimizes a potential environmental impact. Each mitigation measure is assigned an alphanumeric reference code consisting of "MM" followed by an abbreviation representing the applicable resource topic, and a serialized number. For example, mitigation measures applicable to impacts to land use are assigned a reference code beginning with "MM LU-."

3.2 Cumulative Impacts

3.2.1 Overview

Cumulative impacts are the incremental impacts of past, present, and reasonably foreseeable future actions in combination with the direct and indirect impacts of the Project. The cumulative impacts analysis in this EIS considers the potential for cumulative impacts in the vicinity of the Project, in Lyon and Mineral counties, Nevada. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR § 1508.1(g)(3)). Under NEPA, a cumulative impacts analysis is accomplished through the following steps:

- Establish geographic and temporal scopes for analysis.
- Identify the affected environment, including resources, ecosystems, and human communities, their baseline conditions, and current stresses in relation to regulatory thresholds.
- Identify past, present, and reasonably foreseeable future actions within the geographic and temporal scope and their impacts to resources.
- Determine the incremental environmental effects of the project combined with past, present, and reasonably foreseeable future actions and provide a discussion of the magnitude and significance of each.

3.2.2 Geographic Extent and Timeframe for Cumulative Analysis

Table 3.2-1 provides the geographic scope of the cumulative impacts analysis for potentially affected resources within the Project area. The geographic scope of impacts will vary based on the nature of the resource being evaluated and the distance at which an impact might occur.

The temporal scope of this cumulative impacts analysis is the lifespan of the Project, from implementation to 30 years in the future, followed by the decades over which restoration activities could continue. Projects with potential cumulative impacts for which an application has been submitted to a permitting agency or that are in the planning stage have been included in the analysis. Past and present projects are only included if their current impacts would aggregate with those of the Proposed Action or alternatives. Past projects are only included to the extent that their impacts are ongoing.

Table 3.2-1 Geographic Extent of the Cumulative Impacts Analysis by Resource Topic

EIS topic or topics	Geographic scope	Explanation
Soils, water uses, and jurisdictional waters	Mason Valley Hydrographic Basin	Impacts from other projects within the same areas of surface hydrologic connectivity and within the connected groundwater system could aggregate. Soil destabilization and erosion from other projects in the same areas of surface water hydrologic connectivity could occur downstream.
Biological resources: general wildlife, special status species, and vegetation	The Mason Valley and Wassuk Range	Projects within this geographic boundary would be expected to affect similar vegetation, habitat, and wildlife. This geographic scope accounts for the area within which similar populations of species or habitat could occur.
Land use, recreation, socioeconomic, environmental justice, public health, and safety; and mineral resources	Lyon and Mineral counties; Nye and Churchill counties considered for socioeconomic impacts	Projects within these geographic extents may also affect the same land uses and recreational resources, public services and communities, and mineral resources.
Rangeland Resources	Gray Hills, Perry-Springs Deadman, Black Mountain, Parker Butte, and Cleaver Peak allotments	Project that could affect the same allotments could have cumulative impacts.

EIS topic or topics	Geographic scope	Explanation
Air quality	Mason Valley Hydrographic Basin	Projects within the same basin used for air impact analyses as the Project could have cumulative impacts. In Nevada, hydrographic basins are also used to address air quality.
Climate change	Nevada and California	Cumulative impacts from GHGs were considered for the states where the power generated from the solar facility could offset emissions from carbon-based power-generation sources.
Visual resources, recreation	Within an approximately 15-mile radius of the Project site	Projects within this geographic area could have adverse impacts on the same visual and recreational resources.
Historic resources, Native American concerns	Within a 5-mile radius of the Project site	Projects within this geographic area could have an impact on the visual, auditory, and atmospheric conditions of a resource.
Transportation	Transportation systems within Lyon, Churchill, and Mineral counties	Projects that use the same roadways would have the potential to contribute to cumulative effects.
Public health and safety	Lyon and Mineral counties	Projects that are located nearby could contribute to cumulative effects. Projects that utilize the same roadways could also contribute to cumulative effects and would be project-specific. Lyon and Mineral counties are considered for cumulative effects related to landfill and fire and emergency services.

3.2.3 Past, Present, and Reasonably Foreseeable Future Projects

The actions listed in Table 3.2-2 and shown in Figure 3.2-1 are those within the geographic scope of the cumulative impacts analysis that are ongoing or reasonably foreseeable and that, along with the Project, could contribute to cumulative impacts. None of the listed actions are directly connected to or dependent on the Proposed Action or alternatives.

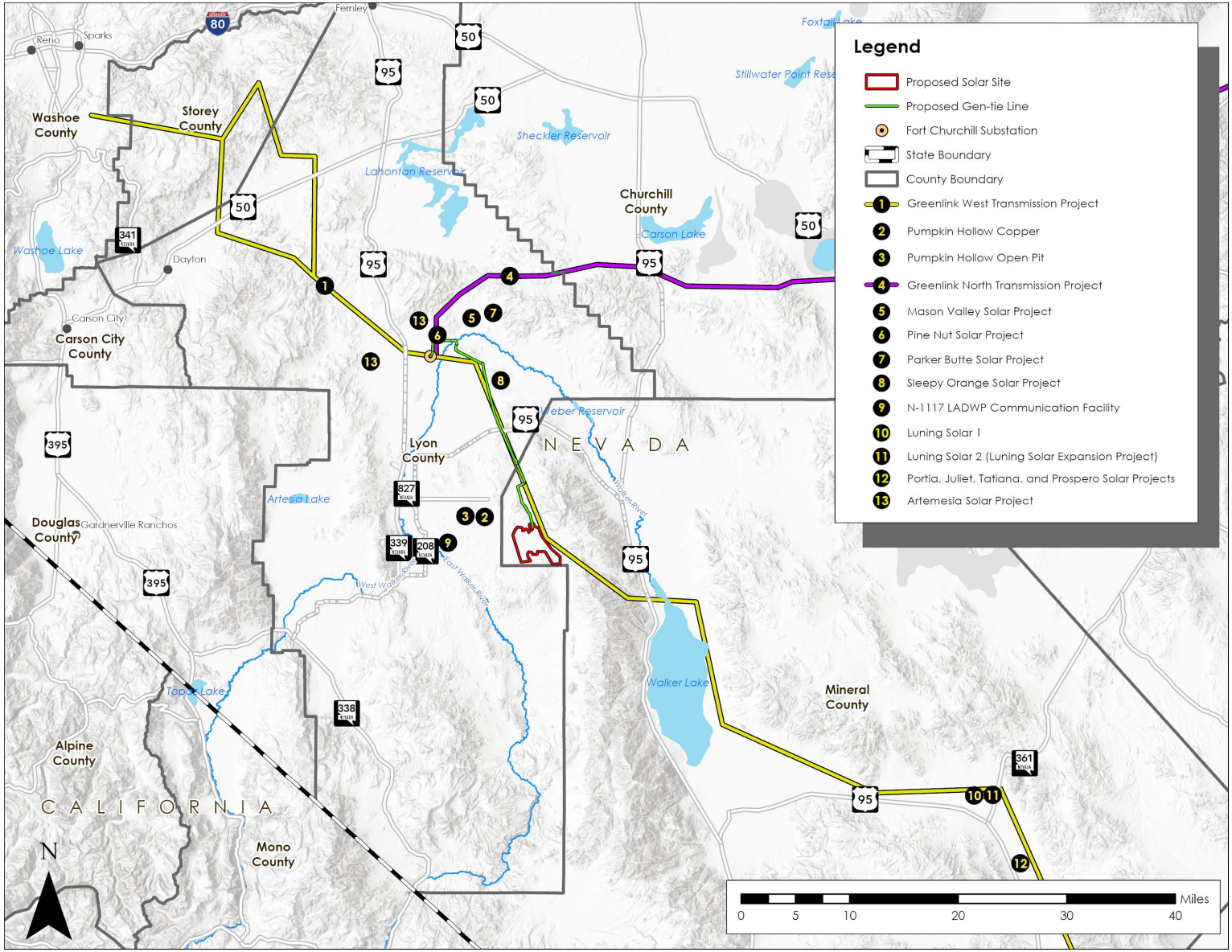
Table 3.2-2 Projects within the Geographic Scope of the Cumulative Impacts Analysis

#	BLM Serial Number (where applicable/assigned) and project name	Project type	Approximate size	County	Status	Construction method	Construction duration	Start of construction	End of construction/Start of Operations	Operations Duration
1	N-1117 LA Department of Water and Power Communication Facility	Communication site	N/a	Lyon, Mineral	Operating	N/a	N/a	N/a	N/a	30+ years
2	Pumpkin Hollow Copper Mine Underground Mine	Mine	N/a	Lyon	Operating	N/a	N/a	N/a	N/a	30+ years
3	Pumpkin Hollow Open Pit Development	Mine	N/a	Lyon	Proposed	Open pit mining	Unknown	Unknown	Unknown	Unknown
4	N-99863 Greenlink West Transmission	Electric transmission	120 kV, 345 kV, and 525 kV transmission facilities spanning 358 miles from Las Vegas to Yerington	Washoe, Storey, Lyon, Mineral, Esmeralda, Nye, Clark	Proposed	Grading	3 years	January 2024	December 2026	30+ years
5	Greenlink North Transmission Project	Electric transmission	525 kV gen-tie line spanning 235 miles from Ely to Yerington	Washoe, Storey, Lyon, Churchill, Lander, Eureka, White Pine	Proposed	Grading	3 years	January 2026	December 2028	30+ years

#	BLM Serial Number (where applicable/assigned) and project name	Project type	Approximate size	County	Status	Construction method	Construction duration	Start of construction	End of construction/Start of Operations	Operations Duration
6	Mason Valley Solar	Power generation	400 MW solar project with 200 MW of battery storage on 2,877 acres of BLM land with a 0.5-mile long 500 kV gen-tie	Lyon	Application submitted; variance process not yet commenced	Unknown	Unknown	Unknown	Unknown, but likely after 2026	Typically, 35-year ROW
7	Pine Nut Solar	Power generation	200 MW solar project on 2,300 acres of BLM land	Lyon	Application submitted; variance process not yet commenced	Unknown	Unknown	Unknown	Unknown, but likely after 2026	Typically, 35-year ROW
8	Parker Butte Solar	Power generation	550 MW and 275 MW battery on 1,765 acres of BLM land with a 12.5 mile long 345 kV gen-tie	Lyon	Application submitted; variance process not yet commenced	Unknown	Unknown	Estimated to commence in 2025	Estimated to be completed in 2027	Typically, 35-year ROW
9	Sleepy Orange Solar	Power generation	500 MW photovoltaic solar project, 500 MW battery energy storage system; 345 kV generation-tie line	Lyon	Application submitted; variance process not yet commenced	Unknown	Unknown	Unknown	Unknown, but likely after 2026	Typically, 35-year ROW

#	BLM Serial Number (where applicable/assigned) and project name	Project type	Approximate size	County	Status	Construction method	Construction duration	Start of construction	End of construction/Start of Operations	Operations Duration
10	Luning Solar 1	Power generation	50 MW project in Mineral City, NV and a 1.6-miles-long 120 kV power line.	Mineral	Constructed and operational	N/a	N/a	N/a	Completed in 2017	2017 through 2047
11	Luning Solar 2 (Luning Solar Expansion Project)	Power generation	Includes construction of additional solar panel modules to deliver 60 MW of power, battery storage, and expansion of the existing Table Mountain substation	Mineral	Approved in December 2021, with Decision Record.	Grading and clearing to install panels	Approximately 1 year	Unknown, potentially 2024	Unknown, potentially 2025	30 years
12	Portia, Juliet, Titania, and Prospero Solar Projects	Power generation	Construction of four adjacent solar facilities, each 350 MW, and with 138 or 230 kV gen-ties, and substation upgrades	Mineral	Application submitted; variance process not yet commenced	Unknown	Unknown	Unknown	Unknown, but likely after 2026	Typically, 35-year ROW
13	Artemesia Solar Project	Power generation	300 MW photovoltaic solar project with battery energy storage system; 345 kV generation-tie line	Lyon	Application submitted; variance process commenced	Unknown	Unknown	Unknown	Unknown, but likely after 2026	30 years

Figure 3.2-1 Cumulative Projects



3.3 Air Quality and Climate Change

3.3.1 Introduction

This section addresses the potential impacts of the Project on air quality. The information presented in this section is based on the Air Quality Technical Report for the Libra Solar Project (RCH 2023).

3.3.2 Analysis Area

Hydrographic basins, defined as the area from which precipitation flows into a single stream or drainage, are also used to define local airsheds as the air quality management unit throughout Nevada. The hydrographic basins were developed based on topography and, thus, airsheds tend to be consistent with those basins. The Project area is located within the Mason Valley Hydrographic Basin, as shown in Figure 3.3-1.

The analysis area for greenhouse gas (GHG) emissions, therefore, is global. This analysis focuses on Nevada and California where emissions are quantifiable (Intergovernmental Panel on Climate Change (IPCC) 2014).

3.3.3 Affected Environment

3.3.3.1 *Overview*

The Project site is located near Yerington, Nevada. Yerington has a dry desert climate with hot and dry summers and mild winters. The average temperature for summer is around 90 degrees Fahrenheit, and the winter temperatures rarely reach freezing. The area experiences little humidity. The region receives approximately 5 inches of rain per year and 4 inches of snow (Visual Crossing Corp. n.d.). Snow accumulates on the ground for only a few days per year most years.

The Project is in a region with moderate wind. The windier part of the year lasts for approximately 4 months, from mid-February through the end of June. The calmest month of the year in Yerington is January (WeatherSpark, n.d.). Meteorological data were obtained for the air quality analysis from Fallon Station for the five-year period of 2017 through 2021 (NOAA 2017; 2022). Winds are predominantly from the south-southwest-and west-northwest, with an average wind speed of 3.2 meters per second (7.2 mph).

3.3.3.2 *Air Standards*

The USEPA has set national ambient air quality standards (NAAQS) to protect public health and the environment. NAAQS are defined for six criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and particulate matter (PM). The State also has established air quality standard for the same pollutants (Nevada Administrative Code [NAC] Title 40 § 445B.22097). Air quality standards are presented in Table 3.3-1.

Figure 3.3-1 Mason Valley Hydrographic Basin

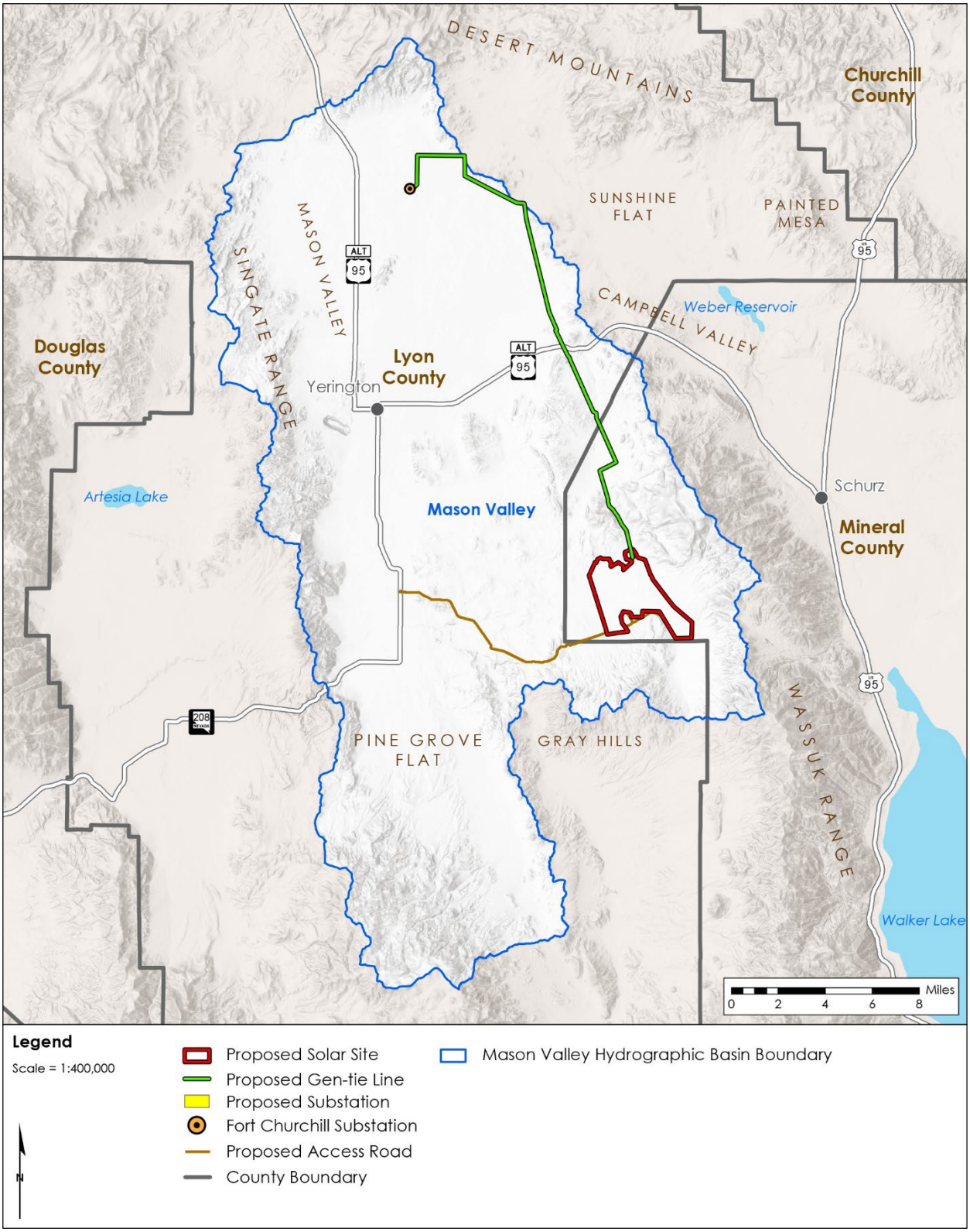


Table 3.3-1 Nevada and National Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging time	Nevada standards	NAAQS primary standards	NAAQS secondary standards
O_3	8 hours	0.070 ppm	0.070 ppm (137 $\mu g/m^3$)	0.070 ppm (137 $\mu g/m^3$)
O_3	1 hour	0.10 ppm (195 $\mu g/m^3$)[1]	N/a	N/a
CO	1 hour	35 ppm (40 $\mu g/m^3$)	35 ppm (40 $\mu g/m^3$)	N/a
CO	8 hours	9 ppm (10 $\mu g/m^3$)[2] 6 ppm (7 $\mu g/m^3$)[3]	9 ppm (10 $\mu g/m^3$)	N/a
NO_2	1 hour	100 ppb (188 $\mu g/m^3$)	100 ppm (188 $\mu g/m^3$)	N/a
NO_2	Annual arithmetic mean (AAM)	0.053 ppm (100 $\mu g/m^3$)	0.053 ppm (100 $\mu g/m^3$)	0.053 ppm (100 $\mu g/m^3$)
SO_2	1 hour	75 ppb (196 $\mu g/m^3$)	75 ppb (196 $\mu g/m^3$)	—
SO_2	3 hours	0.5 ppm (1,300 $\mu g/m^3$)	N/a	0.5 ppm (1,300 $\mu g/m^3$)
SO_2	24 hours	0.14 ppm (365 $\mu g/m^3$)	0.14 ppm (365 $\mu g/m^3$)[4]	N/a
SO_2	AAM	0.030 ppm (81 $\mu g/m^3$)	0.030 ppm (81 $\mu g/m^3$)[4]	N/a
Pb	Calendar quarter	N/a	1.5 $\mu g/m^3$	1.5 $\mu g/m^3$
Pb	Rolling 3-month average	0.15 $\mu g/m^3$	0.15 $\mu g/m^3$	0.15 $\mu g/m^3$
PM_{10}	24 Hours	150 $\mu g/m^3$	150 $\mu g/m^3$	150 μ/m^3)
PM_{10}	AAM	50$\mu g/m^3$	50 $\mu g/m^3$	50 $\mu g/m^3$
$PM_{2.5}$	24 hours	35$\mu g/m^3$	35 $\mu g/m^3$	35 $\mu g/m^3$
$PM_{2.5}$	AAM	12.0 $\mu g/m^3$	12.0 $\mu g/m^3$	15 $\mu g/m^3$
H_2S	1 hour	0.08 ppm (112 $\mu g/m^3$)	N/a	N/a

mg/m^3: milligrams per cubic meter *ppm: parts per million* *ppb: parts per billion*

$\mu g/m^3$: micrograms per cubic meter *AAM: annual arithmetic mean*

Notes:

Not applicable (N/a) indicates that the standard is not applicable to the Project.

For the Lake Tahoe Basin, #90

For areas less than 5,000 feet (1,524 meters) above mean sea level

For areas at or greater than 5,000 feet (1,524 meters) above mean sea level

Applies to areas of nonattainment; however, there are no SO2 nonattainment areas in Nevada.

Source:(State of Nevada 2020; USEPA 2020)

3.3.3.3 *Air Quality Designations*

The USEPA designates attainment status for air quality standards within hydrographic basins. Attainment areas meet or exceed ambient air quality standards, and non-attainment areas do not. The Project area is located within the Mason Valley Hydrographic Basin, which is in attainment for all pollutants. The Washoe County Hydrographic Basin is the nearest basin to the west of the Project area, and where Project workers are expected to originate as it contains the cities of Reno and Carson City. The Washoe County Hydrographic Basin is designated as a non-attainment area for PM_{10}, a maintenance area for CO, and attainment for all other criteria pollutants. Background concentrations for NO_2, CO and SO_2 can be found in the Air Quality Technical Report for the Libra Solar Project (RCH 2023).

3.3.3.4 *Greenhouse Gases/Climate Change*

The term greenhouse gasses (GHGs) refers to gases that trap heat in the atmosphere. The primary GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone, and water vapor. Others include hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). GHG emission inventories are measured in units of carbon dioxide equivalent (CO_2e).

An expanding body of scientific research supports the theory that global climate change is currently affecting weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes, and drought; and increased levels of air pollution.

Nevada's GHG emissions inventory mirrors trends occurring across the Western U.S., where transportation-sector emissions (35 percent) exceed those from the energy sector (32 percent). Industrial, residential, and commercial emissions are growing rapidly while those associated with other sectors remain relatively consistent (State of Nevada 2020). Nevada generates emissions comprising less than 1 percent of the overall emissions in the U.S., which is proportional to the State's relative population.

3.3.4 Environmental Consequences

3.3.4.1 *Methods*

The air quality analysis presented herein follows guidance within Sections 5.11.1 and 5.11.2 and Appendices A.2 and M.13 of the Western Solar Plan (BLM and DOE 2012). Emissions generated during construction of the Project were calculated based on the detailed list of equipment and the schedule presented in the Project's POD (Arevia 2023). Modeling methods and assumptions are provided in more detail in the Air Quality Technical Report for the Libra Solar Project (RCH 2023).

In addition to criteria air pollutants, hazardous air pollutants (HAPs) were also evaluated. HAPs (such as acetaldehyde, formaldehyde, benzene, toluene, and xylene) are gaseous organic and inorganic chemicals and PM that the USEPA has identified to have known or suspected potential to cause cancer or other serious health effects. The CAA mandates that the USEPA regulate HAP emissions. While no ambient (i.e., outdoor) standards for HAP emissions levels have been developed, standards for HAP emissions emitted by stationary sources have been established.

The Project is in an attainment area for all NAAQS and is not subject to new or modified major source[1] permitting under the CAA's Prevention of Significant Deterioration (PSD) analysis (USEPA 2023). For informational purposes, however, air pollutants from the Project were calculated within the nearest location to Yosemite National Park and the other Class I areas, including Desolation Wilderness, Mokelumne Wilderness, Emigrant Wilderness, and Hoover Wilderness. These Class I areas are located within 62 miles of the Project area, the maximum recommended modeling distance for American

[1] Major sources are medium to large industrial facilities that emit or have the potential to emit at least 100 tons per year of any criteria pollutant, or any stationary source that emits or has the potential to emit 250 tons per year of any criteria pollutants.

Meteorological Society/USEPA Regulatory Model (AERMOD)(USEPA 2018). Yosemite National Park is located approximately 57 miles from the Project area.

3.3.4.2 *Proposed Action*

Construction Impacts

Air Quality. Construction-related emissions are expected to be short-term. Emissions include combustion emissions (CO, NO_2, SO_2) and fugitive dust. Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. Sustained high winds (greater than 25 mph) occur less than two percent of the time in the Project region (NOAA 2017; 2022). Fugitive dust, including wind-driven fugitive dust, generated during construction would include not only PM_{10} but also larger particles. These dust particles would fall out of the atmosphere within several hundred feet of the construction areas, which could result in nuisance-type impacts. Table 3.3-2 presents the maximum combustion and fugitive dust emission (CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$) concentrations that were modeled for construction. The modeling was based on the Proposed Action, incorporating combustion and fugitive dust controls during 2025 and assuming water would be trucked to the Project area. Table 3.3-3 presents the same information but assumes use of an on-site groundwater well. With combustion and fugitive dust controls, the maximum concentrations for PM_{10}, $PM_{2.5}$, and the combustion-emissions criteria pollutants would not exceed the NAAQS and Nevada state standards. Impacts would not be substantially adverse.

The maximum impacts related to fugitive dust emissions would occur over the narrow geographical areas near the Project site and along the unpaved access road and gen-tie line over brief time periods (i.e., isolated conditions). The areas of maximum daily PM_{10} conditions (given elevated background levels) that are near sensitive receptors include two residences on East Walker Road, one residence along the gen-tie at the eastern boundary of the Mason Valley WMA, and several residences located approximately 0.5 mile from the gen-tie in an area just north of US 95A. Attachment 3 of the Air Quality Technical Report for the Libra Solar Project (RCH Group 2023) provides modeling isopleths of concentration results for the maximum Project PM_{10} and $PM_{2.5}$ concentrations, assuming dust controls. The areas of highest PM_{10} and $PM_{2.5}$ concentrations include locations along the northern portion of the gen-tie and just north of US 95A along the gen-tie as well as along the access road. Sensitive receptors are located near US 95A location of highest concentration, although no standards would be exceeded with the use of controls.

Table 3.3-2 Estimated Maximum Concentration with Controls (Trucking Option)

	CO 1-hour	**CO 8-hour**	**NO_2 1-hour**	**NO_2 annual**	**SO_2 1-hour**	**SO_2 3-hour**	**PM_{10} 24-hour**	**PM_{10} annual**	**$PM_{2.5}$ 24-hour**	**$PM_{2.5}$ annual**
Project modeled concentration ($\mu g/m^3$)	20.6	5.72	21.3	1.58	2.23	1.25	36.2	7.26	2.79	0.93
Background concentration ($\mu g/m^3$)	2,483	1,852	88.1	21.1	8.45	6.41	103	18.4	16.6	4.80
Total concentration ($\mu g/m^3$)	**2,504**	**1,858**	**109**	**22.7**	**10.7**	**7.66**	**139**	**25.6**	**19.4**	**5.73**
NAAQS/NV state standard ($\mu g/m^3$)	40,000	10,000	188	100	196	1,300	150	50	35	12
Total percent of NAAQS/NV state standard	6.3	18.6	58.2	22.7	5.4	0.6	92.6	51.2	55.5	47.7
Exceed NAAQS/NV state standard? (Yes/No)?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Project concentration percent of NAAQS/NV state standard	0.1	0.1	11.3	1.6	1.1	0.1	24.2	14.5	8.0	7.8

Table 3.3-3 Estimated Maximum Concentration with Controls (Well Option)

	CO 1-hour	**CO 8-hour**	**NO_2 1-hour**	**NO_2 annual**	**SO_2 1-hour**	**SO_2 3-hour**	**PM_{10} 24-hour**	**PM_{10} annual**	**$PM_{2.5}$ 24-hour**	**$PM_{2.5}$ annual**
Project modeled concentration (µg/m3)	20.5	5.71	21.3	1.58	2.23	1.25	21.6	7.24	2.78	0.93
Background concentration (µg/m3)	2,483	1,852	88.1	21.1	8.45	6.41	103	18.4	16.6	4.80
Total concentration (µg/m3)	**2,504**	**1,858**	**109**	**22.7**	**10.7**	**7.66**	**124**	**25.6**	**19.4**	**5.73**
NAAQS/NV state standard (µg/m3)	40,000	10,000	188	100	196	1,300	150	50	35	12
Total concentration percent of NAAQS/NV state standard	6.3	18.6	58.2	22.7	5.4	0.6	82.8	51.2	55.5	47.7
Exceed NAAQS/NV state standard (Yes/No)?	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Project concentration percent of NAAQS/NV state standard	0.1	0.1	11.3	1.6	1.1	0.1	14.4	14.5	7.9	7.7

The Applicant would implement Western Solar Plan PDFs AQC1-1 and AQC 2-1 (BLM and U.S. DOE 2012, app. A) and the CRMP SOPs (BLM 2001) during construction. Western Solar Plan PDF AQC 1-1 requires applicants to consult with the BLM in the early phases of project planning to help determine conformance with NAAQS and other potential constraints associated with the proposed Project area. The Applicant has complied with this measure during the NEPA process and through preparation of the Air Quality Technical Report for the Libra Solar Project (RCH 2023). Western Solar Plan PDF AQC 2-1 requires projects to identify measures to minimize air quality impacts, such as using equipment that meets or exceeds emission standards specified in the state code of regulations and that meets the applicable USEPA Tier 3 and Tier 4 emissions requirements, and preparation of a dust abatement plan. These elements are included in the draft Dust Control and Air Quality Plan (Panorama 2023). As part of the plan, fugitive dust control measures would be implemented during construction, including but not limited to applying water in sufficient quantities to prevent the generation of visible dust plumes, applying the BLM-approved soil binders to uncovered areas, re-establishing ground cover as quickly as possible, using a wheel-washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site, and maintaining effective cover over exposed areas. The CRMP SOPs require projects to minimize soil disturbance, comply with the CAA and federal and state emission standards, and develop pollution abatement programs to provide for environmental protection and reasonable resource uses. While not modeled as paved, the Project also includes potentially paving the first 1.5 miles of East Walker Road in coordination with the two homeowners on East Walker Road and Lyon County Roads Department. Paving would further reduce dust generation on East Walker Road. While some exposure to dust and pollutants could still occur, exceedances of NAAQS (CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$) would not occur from construction of the solar site, access road, or gen-tie with implementation of the design features.

Table 3.3-4 presents the maximum CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$ concentrations at Yosemite National Park during 2025, the maximum intensity construction period, from emissions from the Proposed Action, assuming inclusion of fugitive dust controls. The maximum concentrations for all pollutants and averaging periods are well below the PSD increment. No adverse effect on Yosemite National Park would occur. The Air Quality Technical Report for the Libra Solar Project (RCH 2023) also presents the calculation of effects to Desolation Wilderness, Mokelumne Wilderness, Emigrant Wilderness, and Hoover Wilderness, none of which would be adverse.

GHG. The estimated total construction GHG emissions for the Project is 16,877 metric tons of CO_2e. The estimated annual average construction GHG emissions for the Project is 5,626 metric tons of CO_2e. As indicated in Table 3.3-5, the 30-year amortized construction-related GHG emissions would be 563 metric tons of CO_2e per year. Per the USEPA GHG equivalencies calculator, the maximum emissions generated during construction of the Project would be the same as produced by 776 to 1,199 households annually from energy consumption (USEPA 2020a). Cumulative GHG emissions have been linked with accelerated global climate change. One-time generation of GHG emissions would be required for Project construction. The total quantity of construction emissions generated, however, would be meaningfully less than a single year of equivalent energy production using non-renewable resources.

Construction would contribute to an elevated level of CO_2 over a short period of time (16 months); climate change, however, is a long-term phenomenon. While the Project would result in a high level of emissions for a brief time, those emissions would be offset by the operational benefits of renewable energy power generation over the long-term. The net impact would be beneficial rather than adverse.

Hazardous Air Pollutants. In addition to criteria air pollutants, HAP may be emitted during construction through the use of construction equipment and industrial facilities. Mobile sources of hazardous air pollutant emissions result from fuel combustion in both on-and off-road vehicles. For vehicle operations associated with construction activities, worker commuting, and deliveries, the speciated hazardous air pollutant emissions include compounds such as acetaldehyde, formaldehyde, benzene, toluene, and xylene. See the Air Quality Technical Report for the Libra Solar Project (RCH 2023) for more details regarding the HAP calculations.

Table 3.3-4 Estimated Maximum Concentration at Yosemite National Park with Controls

	CO 1-hour	**CO 8-hour**	**NO_2 1-hour**	**NO_2 annual**	**SO_2 1-hour**	**SO_2 3-hour**	**PM_{10} 24-hour**	**PM_{10} annual**	**$PM_{2.5}$ 24-hour**	**$PM_{2.5}$ annual**
Project Modeled concentration (µg/m3)	0.37	0.06	3.35	0.03	0.06	0.02	0.22	0.01	0.02	<0.01
PSD Class I increment (µg/m3)	—	—	—	2.5	25	—	8	4	2	1
Exceed PSD Class I increment (Yes/No)?	No	No	No	No	No	No	No	No	No	No

Table 3.3-5 Estimated Construction Greenhouse Gas Emissions

Source	**Carbon dioxide equivalent (CO2e) (metric tons)**
Annual construction emissions 2024	2,617
Annual construction emissions 2025	12,259
Annual construction emissions 2026	1,984
Total construction emissions	16,858
Annual average construction emissions	5,619
Annual amortized construction emissions (30-year)	562

The highest HAPs emitted during construction would be formaldehyde at 2.4 tons. The combined total of all HAPs emitted during construction would be approximately 7.6 tons. The potentially emitted HAPs would be less than 10 tons per year for any individual HAP, and less than 25 tons per year for all HAPs combined; therefore, the Project would not be considered a major HAP emission source during construction.

Public Health. *Coccidioidomycosis*, commonly known as valley fever, is primarily a disease of the lungs that is common in the southwestern U.S. and northwestern Mexico. Valley fever can be transported through fugitive dust generated during construction and decommissioning. The Project would implement Western Solar Plan PDFs AQC1-1 and AQC1-2 and mitigation measure MM AIR-1 and MM AIR-2 to further reduce fugitive dust impacts during construction. With the implementation of these measures, the risk to workers of contracting valley fever would be minimized. See Section 3.16, Public Health and Safety for more information.

Operation and Maintenance Impacts

Air Quality. Vehicles transporting workers to and from the solar site and used to conduct maintenance activities, as well as minimal use of generators in emergencies would emit some pollutants. O&M could involve soil disturbance in portions of the Project area (for repairs and maintenance), but disturbance would be mostly limited to access roads. Wind events could disturb soil within the Project area, resulting in erosion and fugitive dust; however, high wind events are relatively uncommon in the Project region. Under existing conditions, the fugitive dust emissions of PM_{10} and $PM_{2.5}$ from wind erosion are estimated at 1,968 tons and 295 tons, respectively. During initial operation, the net increase in uncontrolled fugitive dust emissions of PM_{10} and $PM_{2.5}$ from wind erosion is estimated at 2,475 tons and 371 tons, respectively. That is, prior to the re-establishment of Project soil compaction, without dust controls, the fugitive dust emissions due to wind erosion would be higher than the existing conditions. With fugitive dust controls but without vegetation re-establishment, the net decrease in fugitive dust emissions of PM_{10} and $PM_{2.5}$ from wind erosion would be 635 tons and 95 tons, respectively, compared to existing conditions. Fugitive dust controls within the solar site would include application of dust palliatives as approved by the BLM. The Dust Control and Air Quality Plan required by NDEP, and the Western Solar Plan PDFs for the O&M phase of the Project would identify measures for reducing dust, with monitoring to ensure off-site impacts do not occur.

The facility is also incentivized to limit fugitive dust on site as dust can dramatically affect the energy output of solar cells. Studies in the U.S. have found losses of 5 percent to 23 percent, depending on the type of dust and angle of the solar panel surface (Maghami et al. 2016). Dust controls (e.g., watering, applying regulation-compliant palliatives) are commonly used throughout active solar fields to minimize output losses. The Applicant would also implement Western Solar Plan PDF AQC 3-1, which outlines compliance and monitoring requirements during operations and CRMP SOP 1, which requires limiting soil disturbance. Western Solar Plan PDF AQC 3-1 dictates that areas that have been graded, scraped, bladed, compacted, or denuded of vegetation must be monitored and treated. The Dust Control and Air Quality Plan would address methods for implementing this requirement. If during high wind events (i.e., sustained winds over 25 mph), dust over the solar site is visibly greater than surrounding areas, or if valid complaints are received, treatment would be required. Compliance methods include reapplying palliatives or water as necessary for effective fugitive dust management and ensuring compliance of all combustion sources with State emission standards (e.g., best available control technology requirements). Fugitive dust impacts during O&M would be reduced as compared with the baseline conditions and thus would not be adverse.

Air emissions from fossil fuel facilities that could be offset by the Project were compared for California and Nevada. As a lower-emission power-generation source, the Project would likely reduce the overall composite emission rates associated with regional electrical generation. However, these benefits might accrue at locations far removed from the solar facilities and over a wide geographic area. To assess these benefits, emissions avoided were estimated on the assumption that the Project would generate 700 MWac of electrical power (see Table 3.3-6 and Table 3.3-7). Based on the results, air quality impacts from the Project are expected to be beneficial versus adverse during the O&M phase.

GHG. A 700 MWac solar facility would generate approximately 1,704,549 MWh of electricity per year.[2] Using the average fossil fuel power-generation emissions factor for California and Nevada of 0.439 metric tons CO_2e per year (USEPA 2022), a similar sized fossil fuel power generation facility would generate 747,728 metric tons of CO_2e emissions. The 30-year (operational period of the facility) equivalent fossil fuel power-generation emissions would be 22,282,296 metric tons CO_2e. The Project, in contrast, would generate between an estimated 32,000 and 38,000 metric tons CO_{2e} over the 30-year life, as shown in Table 3.3-8. O&M would generate some emissions from testing and use of generators, but emissions would be minimal since use would only be for a few days per year. Desert landscapes and vegetation provide carbon sequestration and stock that would be lost from site development, but at the maximum level, that loss would not be considerable.

Project O&M would offset a meaningful quantity of emissions from fossil fuel power generation. The offset amount would be meaningfully higher than the emissions generated. The Project would have beneficials impacts to GHG emissions compared to non-renewable energy generation.

Decommissioning Impacts

Air Quality. Decommissioning activities would be similar to construction activities but assumed to occur on a more limited scale and over a shorter duration. The potential effects on ambient air quality would be correspondingly smaller than those from construction activities. Associated effects on ambient air quality would be temporary and not adverse.

The Project would implement Western Solar Plan PDF AQC 4-1, which states that reclamation of the site would incorporate the PDFs listed under Western Solar Plan AQC 2-1 to reduce the likelihood of air quality impacts associated with decommissioning. An adverse effect on local air quality from fugitive dust emissions during decommissioning is unlikely but could occur. Following decommissioning, areas of bare soil could continue to contribute to fugitive dust emissions for many years. The Site Restoration and Revegetation Plan and the Decommissioning and Site Reclamation Plan would include restoration and revegetation requirements to meet site performance standards for mitigation. Implementation of these plans would restore areas to pre-construction conditions, but it may take decades to a century or more. Since the area would be de-compacted to facilitate restoration, fugitive dust could be locally increased as compared with baseline conditions; however, the Site Restoration and Revegetation Plan and Decommissioning and Site Reclamation Plan would require methods of soil stabilization during the restoration process. The remote location of the site and limited vehicle traffic, as well as the stabilization measures, would limit the effects of dust generated and, thus, impacts are not anticipated to be adverse.

GHG. Decommissioning and reclamation activities would be similar to construction activities but occur on a more limited scale and with shorter duration. Potential effects on climate change would be correspondingly smaller than those from construction activities. Decommissioning activities would last for a shorter period. The GHG emissions generated during decommissioning would be offset by the beneficial effects achieved throughout the lifetime of the Project.

[2] Refer to Section 2.5.2 for a description of the methodology to determine MWh of electricity per year.

Table 3.3-6 Operations Emissions Offset (tons per year) Without Controls

Emissions source	**VOCs**	**SO_2**	**CO**	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Worker vehicles	0.04	<0.01	0.35	0.01	0.07	0.01
Pickup trucks	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
Onsite equipment	0.01	0.01	0.03	0.01	0.01	0.01
Pumps & generators (trucking/well option)	<0.01 / 0.04	0.02 / 0.40	0.03 / 0.57	0.03 / 0.62	<0.01 / 0.03	<0.01 / 0.03
Water trucks (trucking/well option)	0.01/ 0.00	<0.01 / 0.00	0.13 / 0.00	0.14 / 0.00	0.06 / 0.00	0.01 / 0.00
Net fugitive dust	N/a	N/a	N/a	N/a	2,475.21	371.28
Total	**0.06 / 0.09**	**0.03 / 0.41**	**0.57 / 1.01**	**0.19 / 0.50**	**2,475.35 / 2,475.34**	**371.31 / 371.34**
Total equivalent emissions generated for 700 MW non-renewable energy power generation	N/a	68.18	N/a	374.57	N/a	N/a
Emissions offset (trucking/well option)	**0.06 / 0.09**	**68.15 / 67.77**	**0.57 / 1.01**	**374.38 /374.07**	**2,475.35 / 2,475.34**	**371.31 / 371/34**

Note: N/a indicates that information is not available or not applicable.

Table 3.3-7 Operations Emissions Offset (tons per year) With Controls

Emissions source	**VOCs**	**SO_2**	**CO**	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Worker vehicles	0.04	<0.01	0.35	0.01	0.07	0.01
Pickup trucks	<0.01	<0.01	0.03	<0.01	<0.01	<0.01
Onsite equipment	0.01	0.01	0.03	0.01	0.01	0.01
Pumps & generators (trucking/well option)	<0.01 / 0.04	0.02 / 0.40	0.03 / 0.57	0.03 / 0.62	<0.01 / 0.03	<0.01 / 0.03
Water trucks (trucking/well option)	0.01 / 0.00	<0.01 / 0.00	0.13 / 0.00	0.14 / 0.00	0.06 / 0.00	0.01 / 0.00

Emissions source	**VOCs**	**SO_2**	**CO**	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Net fugitive dust	N/a	N/a	N/a	N/a	-634.86	-95.23
Total	**0.06 /0.09**	**0.03 /0.41**	**0.57 /1.01**	**0.19 /0.50**	**-634.74 /-634.75**	**-95.20 /-95.18**
Total equivalent emissions generated for 700 MW non-renewable energy power generation	N/a	68.18	N/a	374.57	N/a	N/a
Emissions offset (trucking/well option)	0.06 / 0.09	**68.15 / 67.77**	0.57 / 1.01	**374.38 / 374.07**	**-634.74 / -634.75**	**-95.20 / -95.18**

Note: N/a indicates that information is not available or is not applicable.

Table 3.3-8 Operational Emissions Offset Over the Life of the Project (CO_2e Metric Tons)

Emissions source	**Project emissions (CO2e metric tons)**
Annual amortized construction emissions (30-year timeframe)	562
Substation	270
Worker trips	120
Offroad equipment/pickup trucks	34
Pumps/generators (trucking/well option)	5/106
Water trucks (trucking/well option)	244/0
Total annual proposed action (trucking/well option)	1,236/1,093
Total 30-year proposed action (trucking/well option)	37,067/32,777
Total equivalent emissions generated for 700 MW non-renewable energy power generation over life of the project (29.8 years)	-22,282,296
Loss of carbon sequestration 1 (30 years)	63,048–993,001
Emissions offset during Project O&M (trucking option)	-22,186,471 to -21,256,518
Emissions offset during Project O&M (Well Option)	-22,182,181 to -21,252,228

Note: Annual carbon sequestration rates vary, depending on the study, from 0.16 MT carbon/acre/year to 2.52 MT carbon/acre/year. One ton of carbon is equivalent to 3.67 tons of CO2 (Allen, Jenerette, and Santiago 2023). A loss period of 30 years is assumed.

Cumulative Impacts

Construction-related ground disturbance projected for other projects in the analysis area between 2025 and 2026 would likely be limited to the proposed Greenlink West Transmission Project (Greenlink West) and, potentially, expansion activities at the Pumpkin Hollow Copper Mine. The contribution to cumulative impacts from the Project would constitute an incremental increase in air pollutants within the analysis area. Other solar projects would be implemented at separate times or would be geographically further from the Project and, therefore, the construction impacts to air quality are not expected to overlap with the effects of the Project to result in a cumulative effect.

Greenlink West would be constructed adjacent to the Project's gen-tie, and localized dust emissions could occur. The annual construction emissions in tons for the Project for 2025 are shown in Table 3.3-9 along with estimated annual emissions for Greenlink West (BLM 2023) The emissions estimated for Greenlink West are for the entire 472 miles, of which approximately 18 miles would overlap with the Project. The local contribution to cumulative effects from Greenlink West would be minor and would not be expected to result in adverse impacts to air quality if work were to occur concurrently. Similar dust suppression measures would be applied for Greenlink West as for the Project, which would minimize the potential for cumulatively adverse impacts to air quality from dust emissions.

Table 3.3-9 Annual Construction Emissions (tons) with Controls

Emissions source	VOC (metric tons)	CO (metric tons)	NOx (metric tons)	SO_2 (metric tons)	PM_{10} (metric tons)	$PM_{2.5}$ (metric tons)
Project (2025)	11.5	42.3	66.5	5.84	163	22.7
Greenlink West (annual), for 18 miles	0.3	2.1	3.4	0.008	0.3	0.05

The Pumpkin Hollow Copper Mine expansion includes pit mining, which involves a large amount of ground disturbance and could produce increased emissions. The timing of work and emissions are not currently known and, thus, cumulatively increased air emissions cannot be ruled out. It is assumed that the mining operation, which is located on private land, would be subject to the NDEP air quality standards and would require dust control to also avoid impacts in conflict with air quality standards. The Project would include Western Solar Plan PDFs and control measures to minimize the Project's contribution to an otherwise adverse cumulative air quality impact.

Other projects, including other solar developments near the Fort Churchill substation, could be constructed during the O&M phase of the Project. These projects would generate emissions similar to those described for the Project; however, the Project would result in minimal emissions during O&M and, in fact, in offsetting emissions would not result in net adverse cumulative effects. Decommissioning of the Project would not occur at the same time as any other currently foreseeable projects. There would be no adverse cumulative impacts from decommissioning.

Cumulative GHG emissions from Greenlink West and other solar projects would be similar to the Project and would be beneficial over the life of those projects. The Pumpkin Hollow Copper Mine expansion may result in increased emissions of GHGs; however, the Project, as a renewable energy project, would not contribute to an otherwise increased cumulative effect.

3.3.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Air Quality

Under Alternative 1, the maximum ambient concentrations of criteria pollutants would occur at the gen-tie line and access road during construction, as with the Proposed Action. Resultant ambient pollutant

concentrations would be very similar to those shown for the Proposed Action in Table 3.3-2 and Table 3.3-3. This alternative would result in increased duration of impacts since construction would take approximately 2 months longer; however, annual emissions estimates would not increase (i.e., duration, but not intensity, of construction would change). Emissions would not exceed Nevada air quality standards or NAAQS with controls, application of Western Solar Plan PDFs AQC 1-1 and AQC 2-1, and application of the CRMP SOPs. With fugitive dust controls, the net (decrease as a result of Alternative 1) fugitive dust emissions of PM_{10} and $PM_{2.5}$ from wind erosion would be a reduction of 953 tons and 143 tons, respectively, compared to the existing condition and a net reduction of 318 tons and 48 tons, respectively, compared with the Proposed Action during construction, since this alternative would result in maintaining as much as 64 percent of the on-site vegetation during construction and O&M across the Project area.

Although particulate matter and fugitive dust impacts would likely be reduced from the decreased level of maximum disturbance and the type of disturbance during construction, Action Alternative 1 could potentially result in an increase (compared to the Proposed Action) in fugitive dust during O&M. Areas of maintained vegetation would not be subject to soils compaction and, thus, may have greater dust emissions (similar to the baseline conditions) during rare high wind events than for the Proposed Action. Disturbed, graded areas would be treated with soils stabilization and, thus, dust emissions are still expected to be less than baseline conditions. Adverse impacts to air quality are not anticipated under this alternative. Decommissioning impacts would be similar to those for the Proposed Action. Less reclamation work would be needed under this alternative to return the solar site to its pre-construction condition since as much as 64 percent of the original application area's vegetation and surface topography may be maintained as compared with 36 percent for the Proposed Action. Impacts to air quality are not expected to be adverse.

Cumulative impacts would be similar to those described for the Proposed Action, and the Project would not contribute to increased adverse cumulative impacts to air quality.

GHG

GHG emissions impacts would be the same as for the Proposed Action. The Project would have similar impacts during construction, which would be offset by the Project O&M phase as a renewable energy project. Under this alternative, the Project would have the same total electrical power output as the Proposed Action, thus conferring the same benefits. The Project under this alternative would not contribute to increased adverse cumulative impact to GHG emissions and climate change.

3.3.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Air Quality

Alternative 2, utilizing supplemental access routes, would result in a change of location of vehicle exhaust and dust emissions but would not change the total emissions as compared with the Proposed Action. Emissions would not exceed Nevada state air quality standards and NAAQS with controls, application of Western Solar Plan PDFs AQC 1-1 and AQC 2-1, and the CRMP SOPs. Since total emissions would not change, the air quality impacts during construction, O&M, and decommissioning and cumulative impacts would be the same as for the Proposed Action, and a net change in adverse impacts is not anticipated. Supplemental access route roads are unpaved and would not change the Project's overall vehicle trips and miles traveled. The result would be reduced dust generation in a given location with dust generation created instead along the supplemental access routes. Some upgrades to these road surfaces would further reduce particulate matter emissions during use of the roads. Mitigation measures such as implementing speed limits and application of dust palliatives would minimize dust emissions along supplemental access routes.

GHG

GHG emissions impacts would be the same as for the Proposed Action since, under this alternative, construction of the solar site and gen-tie alignment would not change. Use of supplemental access routes would not increase travel times or vehicle trips; thus, GHG emissions are anticipated to be similar to those

for the Proposed Action. Adverse effects would not occur, and the net beneficial impacts would be the same as for the Proposed Action.

3.3.4.5 *Alternative 3 – Alternative Gen-tie Connecting to Greenlink West*

Air Quality

Under Alternative 3, the 24.1-mile-long gen-tie would be shortened to 0.54 mile, and a switching station would be added under Greenlink West. Emissions associated with the construction of the gen-tie and access along the gen-tie would be reduced as compared with the Proposed Action given the reduced ground disturbance and reduction in vehicle miles traveled. Overall emissions would not exceed NAAQS or Nevada state air quality standards with controls, application of the Western Solar Plan PDFs AQC 1-1 and AQC 2-1, and the CRMP SOPs. The primary benefit of Action Alternative 3 would be elimination of impacts from dust emissions to sensitive receptors north of US 95A and near the Mason Valley.

Overall, emissions during O&M would be reduced compared with the Proposed Action and would not be adverse. Net impacts to air quality would also be beneficial, like for the Proposed Action. Decommissioning would have similar effects as described for the Proposed Action but would likewise be reduced since the area of disturbance associated with the gen-tie alignment would be reduced. Cumulative impacts would be similar to those described for the Proposed Action, and the Project would not contribute to increased adverse cumulative effects.

GHG

GHG emissions impacts would be similar to those for the Proposed Action but slightly reduced since, under this alternative, the solar site would not change but the gen-tie construction emissions would be reduced. Adverse effects would not occur, and the same net beneficial impacts would be anticipated.

3.3.4.6 *No Action Alternative*

Under the No Action alternative, the solar site, gen-tie line, and substation would not be developed. No soil or vegetation disturbance would occur, and no impacts to air quality would occur. Climate change would continue as defined by current trends and no renewable energy alternative to carbon-intensive fossil fuels would be provided. No adverse effects would occur.

3.3.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize air quality impacts.

Table 3.3-10 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• AQC 1-1, 2-1, 3-1, and 4-1
Carson City CRMP SOPs	• Soil, Watershed, and Air SOPs 1, 2, and 4
Management Plans	• Dust Control and Air Quality Plan (Available on the Project website) • Site Restoration and Revegetation Plan (Available on the Project website) • Decommissioning and Site Reclamation Plan

Mitigation Measures

The Project would comply with the mitigation measures in Table 3.3-11 to minimize air quality emissions.

Table 3.3-11 Air Quality Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM AIR-1: Emissions Controls	Air quality protection measures that shall be implemented to reduce emissions include: • Develop and implement a carpooling program or other program per MM TR-1 to minimize employee trips to the Project site. • Install a gravel apron to reduce mud/dirt trackout from unpaved truck exit routes. • Construct three-sided enclosures for storage piles, where needed to reduce dust. • Enforce a posted speed limit (e.g., 25 mph [40 km/hour]) within the access road to minimize airborne fugitive dust. • Limit grading and travel on unpaved access road on days with an Air Quality Index forecast of greater than 100 for particulates for the Project area.[1] The BLM has allowed the use of several dust palliatives on other projects. If dust palliatives are used in place of water for the Project, the total amount of water needed during construction would be reduced. The Applicant may opt to use such palliatives, as authorized by the BLM for the Project. The soil binder/dust palliatives that are proposed for the Project, and which the BLM previously has allowed are: • Road Bond 1000 • For roads and heavy traffic areas: Soil Sement • For non-traffic areas on finer soils: Formulated Soil Binder FSB 1000 • Alternatives as approved by the BLM
MM AIR-2: Dust Control and Stabilization	A Dust Control and Air Quality Plan for Project construction and O&M shall be prepared, which identifies the methods of reducing dust while demonstrating off-site impacts of the methods used would not occur. The Dust Control Plan shall also identify upgrading portions of the Project access road and gen-tie access roads to an all-purpose surface where particulate emissions are highest to greatly reduce emissions, if feasible.

1. An Air Quality Index value of 100 corresponds to the ambient air quality standard for the pollutant, which is the level USEPA has set to protect public health. Air Quality Index values at or below 100 are commonly satisfactory for public health.

3.3.4.8 *Irreversible or Irretrievable Impacts and Residual Effects*

Emissions of criteria air pollutants associated with construction activities would result in short-term increases in the concentrations of pollutants in the affected airshed. Sources of air pollution associated with long-term operations would increase as a result of substation and solar facility maintenance, but at a much lower level than during the construction phase (<1 percent of the impacted counties' total emission inventory for all evaluated pollutants). Localized increases in the concentrations of air pollutants would persist during the O&M of the Project but would dissipate relatively quickly following the Project

decommissioning. Therefore, there would be no irreversible or irretrievable impacts to air quality in the area. Residual impacts include those that remain after application of mitigation. Residual impacts would include the generation of some limited dust and air pollutants, but all emissions are expected to be below standards for all alternatives.

3.4 Soils

3.4.1 Introduction

This section is based on information provided in the Preliminary Geotechnical Investigation Report for the Libra Solar Project (Westwood 2023b), as well as soil data and information produced by the National Cooperative Soil Survey (NRCS n.d.). The BLM has no specific regulatory authority that addresses soil protection. However, soils are linked to the Clean Water Act and Clean Air Act through dust emissions, and soil conservation is specifically cited in FLPMA.

3.4.2 Analysis Area

The analysis area for soils is limited to the Project site, gen-tie lines, and access road and adjacent areas. This geographic extent is appropriate because effects of the Project's construction and O&M may result in erosion and soil losses that could impact the immediate area and areas adjacent the Project site and off-site components. The analysis area is used to provide context for current conditions and, ultimately, for the direct, indirect, and cumulative impacts related to loss of soil resources or soil productivity.

3.4.3 Affected Environment

3.4.3.1 *Soil Types*

The Libra Solar Project is located within the Great Basin section of the Basin and Range Physiographic Province (Fenneman and Johnson 1946). The Great Basin Desert is a temperate desert with hot, dry summers and snowy winters, and drastic elevation changes (NPS 2021b). The valleys are dominated by sagebrush and shadscale vegetation.

According to the Geologic Map of Nevada (J. H. Stewart and Carlson 1978) the site is predominately mapped within pediment deposits, alluvial plain, and undifferentiated alluvial deposits. The Wassuk group is also mapped within the Project boundary, which is described as weakly cemented fine silty sandstone to sandy siltstone. Surrounding units in the Wassuk Range are mainly quartz and volcaniclastic sediment. The Web Soil Survey data indicates a depth to duripan restrictive layer between 9 and 18 inches (25 cm to 46 cm) below ground surface (bgs) throughout the majority of the Project solar site (NCSS 2022b). "Duripan" is described as cemented silica creating hardpan soil. Soils with duripans are often geographically associated with areas of volcanic activity. Duripan layers restrict root growth. Soil borings found that hardpan or duripan was encountered between 3.5 and 15 feet bgs (Westwood 2023b)

The solar site is comprised of two primary soil units:

- **Deefan-Rawe-Bluewing association** (approximately 63 percent of the site): Classified as clayey gravel (GC), silty gravel (GM), gravel with silt (GW-GM, GP-GM) and gravel (GW, GP) with a cemented layer between 10 to 26 inches. Minor sandy units are also noted. This unit is derived from mixed alluvium.
- **Smedley-Annaw-Izo association** (approximately 21 percent of the site): Classified as silty gravel (GM), and gravel with silt (GW-GM, GP-GM) with a cemented layer between 15 to 33 inches. Minor sandy units are also noted. This unit is derived from mixed alluvium.

The gen-tie crosses numerous soil units along its 24.1-mile length, most in pediment and alluvial deposits, but it also crosses numerous alluvial flats and stream terraces in the north, closer to the Fort Churchill substation and in proximity to the Mason Valley WMA and the Walker River. The Project access road crosses several soil units, with most being pediment and alluvial deposits like the solar site, including the

Cleaver association (NCSS 2022a). Maps showing all of the soils units are provided in the Preliminary Geotechnical Investigation Report for the Libra Solar Project (Westwood 2023b).

3.4.3.2 *Soils Characteristics*

Water and Wind Erosion

The soil erodibility factor (known as the K factor) is used to quantify a soil's susceptibility to water erosion (Palacky 1988). K factor values range from 0.02 (least erodible soils) to 0.7 (most erodible soils). The shallow soils found on the Project solar site have K factors ranging from 0.10 to 0.20, and thus have low susceptibility to erosion (NCSS 2022c).

The purpose of wind erodibility groups (WEGs) is to predict a soil type's susceptibility to wind erosion, which varies according to soil texture, organic matter content, soil carbonate, rock fragment content, and mineralogy. WEG values are assigned to soil map units within the SSURGO system and range from a value of 1 to 8: high wind erosion susceptibility (WEG 1 or 2), moderate wind erosion susceptibility (WEG 3, 4), slight wind erosion susceptibility (WEG 5, 6, or 7), and no susceptibility to wind erosion (WEG 8). The Project solar site has WEGs in the 5 and 6 range and, thus, have slight wind erodibility potential. The gen-tie alignment area soil types vary widely, with wind erosion potential ranging from 1 to 8. The access road, like the solar site, has mostly low to moderate erosion potential, with WEGs in the range of 5 to 6, but at its more western extent near Yerington, pockets of high soil susceptible to wind erosion are found with a WEG of 1 (NCSS 2022e).

Soil Corrosion Potential

As reported in the Preliminary Geotechnical Investigation Report (Westwood 2023b), chemical constituent test results indicated that the site has soil pH ranging from 7.0 to 7.4, and contains up to 8,421 mg/kg of soluble sulfates, and up to 2,398 mg/kg soluble chlorides. These values, along with other soil properties such as moisture content, soil type, and electrical resistivity, indicate that the subsurface conditions are moderately corrosive to steel piles (Palacky 1988), with sulfate levels that are corrosive to concrete.

Soil Productivity (T factor, Soil Loss Tolerance)

An important factor in the consideration of soil productivity (how well soils support biotic growth) are thresholds for soil loss due to erosion. The T factor is defined as the soil loss tolerance (as measured in tons per acre), which is the maximum amount of soil erosion at which the quality of a soil as a medium for plant growth can be maintained. Erosion classes range on a scale from 1 to 5, with the 5 being the most resilient to future erosional losses of soil and 1 being the least resilient. For the purposes of this analysis, T factor classes of 1 to 2 are considered to have low soil loss tolerance (i.e., highly susceptibility to erosion impacts and loss of soil productivity). The Project solar site's primary soil composition units have the following T factors: Deefan, 1; Rawe, 3; Bluewing, 5; Smedley, 1; Izo, 5; and Annaw, 2. The data suggests that while variable, much of the solar site has a low soil loss tolerance (NCSS 2022d). The erosion potential is low to moderate, but if the soils do experience erosion, soil productivity is affected. Most of the access road areas have a T factor of 1 as well. The gen-tie alignment crosses many soil units, but most have higher T factor values, indicating higher resilience related to soil loss and soil productivity.

None of the soils on the solar site are identified as supporting Prime Farmland. Areas of the gen-tie may support agricultural uses and farmland; however, the gen-tie does not cross any active areas of farming.

3.4.4 Environmental Consequences

3.4.4.1 *Methods*

A qualitative analysis was completed to assess the impacts of the Project site preparation methods on soil characteristics for the Proposed Action and each action alternative. The analysis addresses water and wind erosion of soils, soil corrosion and impacts on the Project structures, and impacts related to loss of soil productivity.

3.4.4.2 *Proposed Action*

Construction, Operation and Maintenance, and Decommissioning

Wind and Water Erosion of Soils. The Proposed Action's components would result in temporary and permanent disturbance of soils. Soils in the Project area (including the solar site, access road, and gen-tie) have the potential to erode from both wind and heavy rain or water run-off. The Proposed Action includes traditional construction methods, which would result in surface and topsoil disturbance of approximately 64 percent of the application area (3,306 acres), as well as 104 acres along the gen-tie, and 10 acres along the access road. The Project area has low to moderate wind and water erosion potential, but pockets of the solar site, a small section of the access road, and some areas along the gen-tie alignment have high wind erosion potential, which would be exacerbated by the disturbance from construction.

Increased erosion on the Project site from stormwater overland flows could result in increased deposition of fine-grained sediments into the surrounding washes, which would likely flow downstream and off site before settling out of the washes. Because no uses such as agriculture or built structures are located downstream for 5 miles or more, periodic increases in fine-grained sediment loads and deposition are not expected to have adverse effects. The washes in the region move large quantities of all sizes of sediment as part of the natural desert processes, changing course and depositing soil during large storm events.

A SWPPP is required as part of the BLM ROW grant and would be prepared and implemented during construction. It would include installation of Project-specific erosion control BMPs (as identified in the SWPPP) and Western Solar Plan PDF SR2-1 (BLM and DOE 2012, app. A). The CRMP SOPs 4 and 7 require rehabilitation and restoration of disturbed areas to also minimize soil erosion (BLM 2001).

Temporary disturbance areas (approximately 184 acres) include temporary workspaces, yards, and staging areas that may be used for construction. Temporary areas of disturbance would be restored in accordance with the BLM-approved Site Restoration and Revegetation Plan following the completion of primary construction activities. Permanent disturbance is associated with all long-term Project components needed for operation and maintenance of the Project solar site and associated components throughout the 30-year lifespan of the Project, including the solar arrays, BESS, roads and access routes, distribution power, substations, gen-tie and transmission infrastructure, and permanent fencing. These areas would be reclaimed after the Project's 30-year lifespan, and reclamation would occur in accordance with the BLM-approved Decommissioning and Site Reclamation Plan. Part of the Site Restoration and Revegetation Plan would include using the salvaged and managed topsoil, as required by Western Solar Plan PDF SR2-1 (BLM and DOE 2012, app. A).

Wind erosion could also occur across bare soils, which is also addressed in Section *3.3 Air Quality and Climate Change*. Appropriate dust abatement measures would be identified in the Dust Control and Air Quality Plan, to be implemented during construction and operation, in compliance with NDEP requirements. These measures would include BMPs such as limiting vehicle speeds, watering of active areas, watering of stockpiles, watering on roadways, and track-out control at site exits. Dust palliatives and soil stabilizers would also be used to reduce the potential for wind erosion on the solar site. With the preparation of a SWPPP and the Dust Control and Air Quality Plan along with the implementation of Western Solar Plan PDFs, direct adverse effects from soil erosion caused by construction would be minimized. An additional mitigation measure, MM SOILS-1, would require that the Applicant implement phasing of disturbance in order to minimize the amount of area of destabilized soils at a time. Phasing could include ground disturbance and development of roads, pads, and infrastructure in 1,000-acre units at a time. The areas would likely be developed to the point that array posts are installed, and then the ground stabilized, before opening the next 1,000 acres of development. This measure would reduce the amount of soils subject to wind and water erosion at a time.

Corrosivity and Soil Hazards. Direct effects caused by corrosive and unstable soils could occur during O&M if foundations for the arrays and other equipment are not appropriately designed, which could result in failure of the components and additional effects to various environmental parameters from conducting extensive repairs. MM SOILS-2 requires a design-level geotechnical evaluation and implementation of recommendations to manage corrosive soils and cemented soils, as well as minor areas of slope instability

(e.g., near major drainages) to be conducted prior to construction, with recommendations incorporated into the Project's final design. Direct effects caused by unstable soils during O&M would be minimized by implementing the recommendations of the design-level geotechnical evaluation.

The solar site includes a duripan horizon of cemented silica a few feet below the surface, which could cause construction difficulties. MM SOILS-2 requires that the design-level geotechnical evaluation also address the best foundation methods given the hardpan layer as well as pile testing prior to construction. Implementation of this measure would minimize effects.

Soil Productivity. Construction activities would affect soil productivity through temporary and permanent disturbance at the solar site, gen-tie, and access road. The soils on the solar site have a low erosion tolerance and may lose the ability to support vegetation if eroded. Disking and grading have similar effects on soil productivity. The Project would likely reduce soil productivity on over 3,306 acres of land across the solar site, plus an additional 104 acres for the gen-tie and 10 acres for the access road. Restoration after decommissioning may take decades to over a century. This effect would be adverse since the Project's soils provide vegetation and forage for wildlife and livestock The Site Restoration and Revegetation Plan and a Decommissioning and Site Reclamation Plan would minimize effects. MM SOILS-3 would require proper salvage and reuse of topsoil, including rare instances of desert pavement, to maintain soil productivity While MM SOILS-3 and restoration efforts would reduce the impact adverse effects would persist since restoring productivity after soil disturbance is difficult and could take decades or more.

Cumulative Impacts

The total cumulative acreage of soils impacts could be substantial, exceeding 15,000 to 20,000 acres including the Project, transmission facilities, additional solar projects, and the Pumpkin Hollow Copper Mine Open Pit Development Project (expansion project). Exposure of bare soil would increase erosion and sedimentation from wind and water across a larger area along the east side of the Mason Valley. All cumulative construction projects that disturb more than 1 acre of land would be required to comply with the Construction Stormwater General Permit and a SWPPP. Erosion control BMPs in the SWPPP would minimize erosion, thus reducing cumulative effects.

Each project would also contribute to the loss of soil productivity in the region. The Project would also contribute to this effect. Measures to conserve topsoil and implement restoration would reduce effects, but the Project may still contribute to an overall adverse impact on loss of soil productivity.

3.4.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction, Operation and Maintenance, and Decommissioning Impacts

Under this alternative, the native soil impacts from disking and/or grading would be reduced from approximately 64 percent of the application area to approximately 35 percent in total. Soil erosion from wind and water could still occur but would be reduced. The same Western Solar Plan PDFs, the CRMP SOPs, and MMs as identified for the Proposed Action would be applicable to reduce and minimize adverse effects to soils. This alternative would have approximately 1,800 acres of soil productivity loss as compared with 3,420 acres under the Proposed Action. Impacts would be reduced through application of MMs to salvage and reuse topsoil as well as through restoration efforts.

Cumulative Impacts

Cumulative impacts would be similar to those described for the Proposed Action in terms of the potential for an overall cumulative impact to soils in the region, particularly from the loss of soil productivity. The Project under this alternative would still contribute to an overall loss of productivity, but the contribution would be reduced as compared with that of the Proposed Action.

3.4.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

This alternative is limited to the use of supplemental access routes during construction. The routes would serve to reduce the concentration of construction traffic on East Walker Road, in particular. Under

Alternative 2, upgrades to the road would be within the existing road footprint, or immediately adjacent, thus, soils impacts would be similar to those described for the Proposed Action. Construction, O&M, and decommissioning of the primary access road, the solar site, and the gen-tie would be the same as for the Proposed Action, with the same measures (i.e., MM SOILS-1, MM SOILS-2, and MM SOILS-3, Western Solar Plan PDF SR2-1, and the CRMP SOPs 4 and 7) required to reduce impacts. Cumulative impacts would also be the same as described for the Proposed Action.

3.4.4.5 *Alternative 3 – Alternative Gen-Tie Connecting to Greenlink West*

Impacts under this alternative would be the same as for the Proposed Action; however, reducing the gen-tie alignment from 24.1 miles to a 0.54-mile-long spur with a new switching station under Greenlink West, immediately east of the solar site, would reduce overall soil disturbance. Disturbance for the gen-tie was estimated at 104 acres. Under this alternative, the gen-tie and switching station would impact 11.8 acres, a 92-acre decrease. Given the solar site comprises the majority of the soil impacts and would not change under this alternative, impacts would still be adverse as described for the Proposed Action. Western Solar Plan PDFs and MMs would also apply to reduce effects, but both Project impacts to soil productivity and cumulative impacts would be assumed to remain adverse, albeit reduced.

3.4.4.6 *No Action Alternative*

Under the No Action alternative, the BLM would not issue ROW grants or special use permits, and the Project would not be constructed. Surface disturbance would not occur, and soils resources would not be affected.

3.4.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize soil impacts.

Table 3.4-1 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• SR 2-1
Carson City CRMP SOPs	• Soil, Watershed, and Air SOPs 4 and 7
Management Plans	• Dust Control and Air Quality Plan (Draft is available on the Project website) • Site Restoration and Revegetation Plan (Draft available on the Project website) • Decommissioning and Site Reclamation Plan

Mitigation Measures

The Project would comply with the mitigation measures in Table 3.4-2 to minimize adverse impacts on soils.

Table 3.4-2 Soils Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM SOILS-1: Construction Phasing	*(Applicable to the Proposed Action, Alternative 2, and Alternative 3)* The Applicant shall incorporate phasing of the development during final design, in order to minimize the amount of area of un-stabilized soils at a time. Phasing would include ground disturbance and development of roads, pads, and infrastructure in not more than 1,000-acre areas at a time. The areas would be built to the point that array posts are installed, and then the ground stabilized, before opening the next 1,000 acres of development. Phasing shall be identified in the final design plans provided and approved by the BLM, prior to NTP.
MM SOILS-2: Design Level Geotechnical Investigation	A design level geotechnical investigation shall be prepared prior to construction. The investigation shall address soil hazards as well as design of posts and foundations for corrosivity and hardpan soil horizons. The recommendations of the design-level geotechnical investigation shall be implemented and provided in the final design plans provided and approved by the BLM, prior to NTP.
MM SOILS-3: Soil Preservation and Topsoil Salvage	The following measures shall be implemented to preserve where possible and salvage topsoil: 1. Determine the extent of the salvage operation. Excavate the topsoil carefully using machinery like backhoes or excavators, ensuring minimal disturbance to the underlying layers. 2. Create designated stockpile areas for each soil type identified during the site assessment. Separate the salvaged topsoil into distinct piles based on their properties and characteristics. This shall enable better management and targeted use of the soils later. 3. Store the sorted topsoil in a well-organized manner, using appropriate measures to protect it from erosion, wind, and excessive moisture. Covering the stockpiles with tarps or using windbreaks can help maintain soil quality and prevent loss through wind erosion. 4. When using for reclamation, follow best practices for soil preparation, such as incorporating organic matter or soil amendments, as necessary.

3.4.4.8 *Irreversible or Irretrievable Impacts and Residual Effects*

Soil impacts associated with the Project are related to long-term loss of productivity and losses from wind and water erosion. Under all alternatives, some degree of soil productivity would be lost for decades or more, but given implementation of the Decommissioning and Reclamation Plan, soil productivity would not be irretrievably lost. Even after application of mitigation, some erosion is anticipated as a residual effect, as is the loss of soil productivity.

3.5 Cultural Resources

3.5.1 Introduction

Cultural resources include prehistoric (pre-contact) Native American and historic-era archaeological sites; historic buildings and structures (architectural); as well as the locations of significant historical events. Cultural resources are physical features (both human-made and natural) associated with past human activities that are, in most cases, finite, unique, fragile, and non-renewable.

Under NEPA, impacts on all cultural resources are considered regardless of their eligibility for inclusion in the National Register of Historic Places (NRHP) or local historical designation. Cultural resources are categorized as one of the following types: prehistoric (pre-contact) Native American archaeological resources; ethnographic resources; or historic-period archaeological and built-environment resources. Cultural resources also include sacred sites and other places of traditional cultural importance, including traditional cultural properties (TCPs), associated with the cultural practices or beliefs of a living community. Cultural resources are evaluated for their eligibility for the NRHP under Title 54 U.S. Code (USC) section 300101 et. seq., commonly known as the National Historic Preservation Act of 1966, as amended (NHPA), and Title 54 USC section 306108, commonly known as Section 106 of the NHPA. NRHP-eligible cultural resources are also called historic properties.

In accordance with Section 106 of the NHPA, agencies must evaluate a Project's potential impacts to historic properties, which includesby consulting with relevant parties to identify historic properties, assess potential effects, and resolve any adverse effects. The BLM has chosen to fulfill its obligations under Section 106 of the NHPA for the Project by using the process outlined in 36 CFR section 800.8(c), known as "Substitution," rather than the traditional Section 106 review process. "Substitution" allows federal agencies' officials to "use the process and documentation required for the preparation of an Environmental Assessment/Finding of No Significant Impact or an EIS/ROD to comply with Section 106 in lieu of procedures set forth in 36 CFR 800.3 through 800.6" (36 CFR § 800.8(c)). The agency official must notify certain parties (for the Project, the Nevada State Historic Preservation Office [SHPO]/Tribal Historic Preservation Office and the ACHP) in advance of its intentions. The BLM sent notification of its intent to use Substitution to the SHPO, ACHP, and Native American Tribes on April 14, 2023. More information on the regulatory requirements of the Substitution process, and how this Project complies, are provided in Appendix D.

3.5.2 Analysis Area

As defined under Section 106 of the NHPA, the area of potential effects (APE) is a geographic area or areas within which impacts from an action may affect historic properties (36 CFR 800.16(d); 36 CFR 800.4(a)(1)). The BLM, as the lead agency for Section 106 compliance, defined two types of APEs, the direct (physical) APE (D-APE) and the visual, auditory, and atmospheric (VAA) APE, as shown in Figure 3.5-1. This analysis area accounts for potential impacts to cultural resources within the D-APE, VAA APE, and cumulative impacts from implementation of the Project.

The D-APE conforms with the physical Project area, and encompasses approximately 6,924 acres. The VAA APE is defined as the D-APE plus a five-mile area extending from the D-APE, encompassing approximately 317,200 acres.

The BLM determined that the area extending five miles from the physical APE is appropriate to account for all potential VAA effects based on literature and records reviews, desktop mapping exercises, visual analyses, and field reconnaissance.

ASM Affiliates (ASM) performed a literature and records review (Class I inventory), including consulting similar solar projects similar in size, scale, and/or geography to the Project. In particular, the Fish Springs Ranch Solar Energy Center (FSRSEC; DOI-BLM-NV-C020-0012) and the Gemini Solar Project (Gemini; DOI-BLM-NV-S010-2018-0051-EIS), have similar geography and/or size and scale. For both projects, BLM defined the VAA APEs as the project direct APE and an additional five mile buffer. In

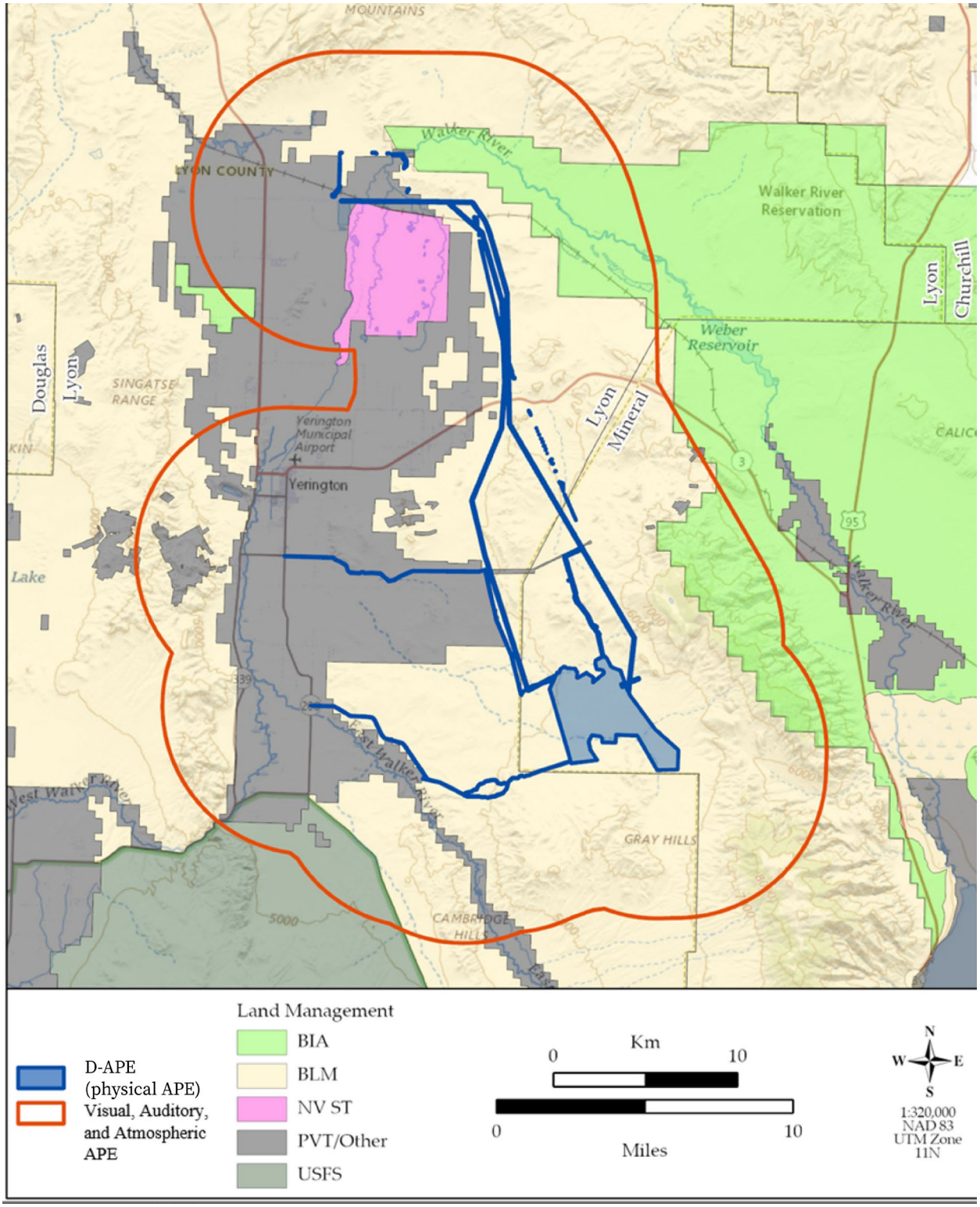
both cases BLM submitted a Cultural Resources Inventory Needs Assessment (CRINA) to the SHPO outlining its justification for determination of the VAA APEs; in both cases, the SHPO agreed that the BLM's delineation of the VAA APEs was appropriate to account for all effects to cultural resources.

In the CRINA for the FSRSEC, BLM justified its determination of the VAA APE by providing analysis of the visual line of sight within five miles of the direct APE. This justification referenced the viewshed analysis prepared for the project which considered the topography surrounding the project and proposed project facilities. The BLM limited the VAA APE to within five miles beyond the physical APE because, after five miles, the project would be viewable only in the distant background. Although the FSRSEC project is smaller in scale than Libra Solar, the BLM found the environmental setting and surrounding topography to be similar and appropriate for reference and comparison.

The BLM also consulted the CRINA for Gemini because it had similar project components as Libra and is larger. Gemini's CRINA states: "All visual, indirect physical, atmospheric, and audible effects will be constrained to a five-mile radius around the project area, or until the surrounding topography blocks the view. This five-mile radius was established through a comparison with a nearby solar facility of the same nature (photo-voltaic), Aiya Solar (BLM Report No. 2738), where the BLM-SHPO agreed upon visual APE was five miles for the cultural inventory."

Using information derived from the Class I inventory, including Report *#N-099846 - Bureau of Land Management Libra Solar Project Visual Resources Technical Report* (Panorama 2023h), the ASM conducted desktop mapping exercises and simulations to provide photorealistic examples of how Libra Project components would change the existing landscape and affect historic properties from any distance. A visibility analysis was performed using ArcGIS Spatial Analyst where the Project would be visible if there were no vegetation or structures to screen the Project components (i.e., bare earth analysis). These exercises informed the BLM's refinement of the VAA APE to the appropriate five miles beyond the physical-APE.

Figure 3.5-1 Proposed Areas of Potential Effects (APEs)



Note: The direct physical APE (D-APE) as shown in this figure includes previous versions of the gen-tie alignment and a northern access road option. The D-APE and Visual, Auditory, and Atmospheric APE (VAA APE) was established, and surveys conducted prior to realignment and preliminary design moved the gen-tie to its current position. The realignment was subsequently surveyed.

3.5.3 Affected Environment

3.5.3.1 *Cultural Setting*

Prehistoric Period

Evidence of human occupation first appears in the archaeological record in the Great Basin starting around 11,000 years before common era (BCE). Early occupants were hunter gatherers who formed small populations of highly mobile foragers during the end of the Pleistocene. In addition to hunting, Paleoindian/Paleoarchaic groups in the Great Basin pursued a broad subsistence strategy consisting of waterfowl, lagomorphs, and plant foods (Beck and Jones 1997). Pluvial lakes dried up from around 6,500 BCE to 3,000 BCE and sustenance shifted to seeds and other plants, as evidenced by ground stone artifacts. A cooler wet climate prevailed from 3,000 BCE through 500 common era (CE), reestablishing pluvial lakes. Larger mammals, especially mountain sheep, appear to be the preferred game choice in upland settings, although deer, rabbit, and, occasionally, bison were taken (Aikens and Madsen 1986). From 500 to 1400 CE, human populations in the central and western Great Basin, which includes the Project area, practiced a continuation of adaptive strategies from earlier periods.

Ethnographic and Ethnohistoric

The Project is within a greater region that includes the Newe (Western Shoshone) to the east, the Numa (or Northern Paiute) within the Project area, and the Wa She Shu (Washoe) to the west. The Newe (or Western Shoshone) territory traditionally covered a large swath of land from Death Valley, California, to the south, up to Idaho and Utah in the north-northeast, and including much of central Nevada (ITCN 1976). Newe bands were flexible in membership and distribution.

The Numa (or Northern Paiute) traditionally occupied the western third of the Great Basin region stretching from the Owens Valley in California through Nevada and into southern Oregon and Idaho (ITCN 1976b; Bengston 2003). The Numa language and traditions share many commonalities with the Newe and Nuwuvi to the east but are distinct from the Washoe and California groups to the west. Like all Great Basin groups, the Numa territory was composed of many overlapping and spatially fluid homelands occupied by bands of varying size and composition. There were at least six distinct bands in the southern portions of Numa territory, including the Kootzagwae of Mono Lake, Pagwewae and Agiwae of Walker Lake and lands east, Taboosewae of Mason and Smith Valleys, Toewae of the Carson Sink, and Kooeyooewae of Pyramid Lake (Stewart 1939; Johnson 1975; ITCN 1976b).

The Wa She Shu (or Washoe) inhabited and continue to reside in the area along the eastern Sierra Front to the west, the Pine Nut and Virginia ranges to the east, Honey Lake in the north, and Sonora Pass in the south. Early occupation of the region by the Washoe is supported ethnographically and oral traditions tell that the Washoe did not travel to this place, but rather have always been there. Linguistic studies show that the Washoe language is drastically distinct from that of their neighbors (ITCN 1976c).

Historic Period

Nevada's historic period began in the 1700s when Spanish explorers passed through present-day southern Nevada searching for a route to connect settlements in New Mexico with those in California. Exploration of central Nevada did not begin in earnest until 1826, when Spanish authorities opened the territory to fur trapping. The Spanish province of Alta California, which included present-day Utah and Nevada, belonged to Spain until 1822, then to Mexico, but was ceded to the U.S. in 1848 at the end of the Mexican American War. In 1849, the discovery of gold near Sutter's Mill, California, spurred westward migration. In 1849 alone, the California Trail saw as many as 25,000 travelers. Emigrants did not typically pass through the central portions of Nevada until the 1860s (McBride 2002).

The Comstock strike of 1859 changed perceptions of Nevada from "pass through" country to a region of economic potential (De Quille 1877; McBride 2002). Miners who initially failed to strike it rich in California came to the Comstock area near the Carson Valley to work the strike. Soon thereafter, the Reese River District of central Nevada began to attract interest. In 1864, Nevada was admitted to the Union as the 36th state. During the late nineteenth and early twentieth centuries, mining continued to develop throughout western Nevada, necessitating the growth of railroad networks in the region. The four

major railroads in the area were the Tonopah & Goldfield Railroad, the Las Vegas & Tonopah Railroad, the Tonopah & Tidewater Railroad, and the Bullfrog Goldfield Railroad. Towns such as Yerington, Hawthorne, Luning, and Mina, either already existed or cropped up along the railroads and were initially associated with mining and/or railroad stations. Many of these towns persisted through the mid-twentieth century and some remain inhabited today. As mining and railroad growth halted throughout the region during the mid-twentieth century, towns fostered and relied on other industries such as agriculture; military infrastructure and training; recreation and tourism; gambling; and hospitality, all of which became major sources of economic growth for communities in western Nevada. The closest populated area to the solar site, the city of Yerington, started as a trading post in 1871 and was originally named Pizen Switch. The town was renamed Greenfield, and then "Yerington," for Henry M. Yerington, superintendent of the Virginia & Truckee Railroad from 1868 to 1910, in a failed attempt to woo him into bringing a rail spur to the town. Over the years, the area's focus turned to farming as well as copper mining. The Anaconda Copper Company extracted 360 million tons of copper from its open pit mine between 1952 and 1978 (Travel Nevada, n.d.).

3.5.3.2 *Survey Methods*

Direct APE (D-APE)

To establish the affected environment and determine the presence of existing cultural resources (including historic properties) that could be physically impacted by the Project, a Class I cultural resources inventory and report and a Class III cultural resources survey and report were completed (Stoner and Catacora 2023). All background research and fieldwork were completed by ASM in accordance with the Secretary of the Interior's Guidelines for Archaeology and Historic Preservation, the standards found within BLM Manual 8110, and the BLM Nevada State Office's Guidelines and Standards for Archaeological Inventory (Sixth Edition).

The Class I cultural resources inventory, conducted prior to the Class III intensive survey, identified numerous archaeological and historical sites within the direct APE. Data sources for the research included the Nevada Cultural Resources Information System (NVCRIS) database; files from the BLM CCDO; historic General Land Office (GLO) and U.S. Geological Survey (USGS) maps; the NRHP database; and published and unpublished tribal ethnographic overviews and TCP studies.

A Class III cultural resources inventory was required for the direct APE for the Proposed Action and alternatives that were carried forward into detailed analysis. The Class III survey was performed by ASM Affiliates in 2022 and 2023. If portions of the direct APE were surveyed for cultural resources by a qualified professional in the last 20 years to Class III standards, those areas were not resurveyed. All previously recorded sites in those areas were revisited and updated, as necessary.

Cultural resources identified during the Class III inventory were evaluated for eligibility for listing in the NRHP by ASM and the BLM, within an appropriate historic context, using the four criteria of significance and the seven aspects of integrity. In order to be eligible for listing in the NRHP, a cultural resource must possess both historic significance and sufficient integrity to convey that significance (36 CFR § 60.4). Significance must be demonstrated under one or more of the following four criteria: A) associated with events that have made a significant contribution to the broad patterns of our history; B) associated with the lives of persons significant in our past; C) embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or D) have yielded, or may be likely to yield, information important in prehistory or history. Cultural resources significant under the criteria must also retain sufficient integrity to be eligible for listing in the NRHP. The seven aspects of integrity include location, design, setting, materials, workmanship, feeling, and association.

Visual, Auditory, and Atmospheric APE

ASM also conducted a Class I inventory of the VAA APE, which included a records search and literature review .. A visibility analysis was performed using ArcGIS Spatial Analyst to identify all areas visible

from the Project out to five miles. The visibility analysis identified where the Project would be visible if there were no vegetation or structures to screen the Project components (i.e., bare earth analysis).

Historic properties identified in the records search that a) were within the VAA APE, b) had potential visibility based on the visibility analysis, and c) where visual, auditory, or atmospheric changes could impact the integrity of the resource, were subject to visual field inspections and assessment. Visited historic properties were photographed from selected sensitive-viewer observation points, which were identified within the historic property or at the boundary of the historic property. The photographs were used to prepare visual simulations and to complete BLM visual assessment forms to aid in the analysis of effects (Stoner and Catacora 2023a).

3.5.3.3 *Resources Found*

Cultural Resources within the Direct APE

ASM documented 79 sites within the D-APE; of these, two were previously recorded and revisited. Of the 79 sites, 65 are historic-era sites, nine are prehistoric (pre-contact) era sites, and five are multi-component sites (Stoner and Catacora 2023). The nine prehistoric (pre-contact) Native American sites are all lithic scatters. The 65 historic-era sites focus mainly on prospecting and mining, transportation and infrastructure resources including roads, railroads, and transmission lines, unassociated historic refuse deposits, a ranching-related well and trough, and cadastral markers (Stoner and Catacora 2023).

The BLM has preliminarily determined that seven of the 79 sites within the D-APE are historic properties (i.e., eligible for listing in the NRHP), and has preliminarily determined the remaining sites are not eligible. The SHPO has concurred with the BLM's determination that three sites within the D-APE (S3327 [segment of the Southern Pacific Railroad], S3328 [segment US Highway 95]), and 26LY1450 [segments of the Wabuska Drain]) are eligible for listing in the NRHP. SHPO concurrence is pending for the remaining four sites the BLM determined are eligible: (26LY3165 [segment of the Reese River Road]; and 26LY3287, 26LY3288, and 26LY3289 [pre-contact era sites]). The SHPO concurred with the BLM that 67 sites are not eligible for listing in the NRHP and did not concur that five sites were not eligible due to the need for BLM to evaluate the sites against all four National Register Criteria for Evaluation. The BLM has reevaluated those five sites and resubmitted its request to the SHPO for concurrence that they are not eligible, which is pending. The results of the BLM's consultation with the SHPO will be outlined in the ROD for the Project.

Resources within the VAA APE

The VAA APE included the area within five miles of the proposed Project. The records search and literature review of the VAA APE identified 706 cultural resources within five miles of the Project and those in the area overlapping within the D-APE are included in this total. Of the sites within the VAA APE, 39 resources were previously determined eligible for the NRHP under Criterion A, B, C and/or D. Sixteen of these 39 historic properties were found to not have VAA components (i.e., setting components) that support their eligibility determinations or listing and thus are not considered further in the VAA analysis. Between March 20 and 31, 2023, ASM conducted field visits of the remaining 23 historic properties to assess if they have line-of-site viewsheds of the Project that would be affected or may have setting components contributing to their site eligibility. Eighteen of the 23 historic properties visited by ASM were found to have either no direct line-of-sight to the Project area or do not have setting components that support their eligibility. These 18 historic properties were not considered further in the VAA analysis

The remaining six historic properties, summarized in Table 3.5-1, are in the foreground/middleground zones of the VAA APE and have setting components that support their eligibility, and thus are the six resources considered for potential VAA impacts in Section 3.5.4.

Table 3.5-1 Historic Properties within the VAA APE Area with Visual Setting Components

Site number	Site description	NRHP Status
26LY1450	Wabuska Drain	Eligible under Criterion A
26LY2088	Y Hill	Eligible under Criterion A
26LY2887/D357	Sage Crest Drive-In Historic District	Eligible under Criteria A, C and D
26LY3165	Reese River Road, Refuse Scatter, and mining features	Eligible under Criterion A
S3327	Southern Pacific Railroad	Eligible under Criterion A
S3328	US Highway 95A [US95A]	Eligible under Criterion A

Four of the six historic properties summarized in Table 3.52, the Reese River Wagon Road, Wabuska Drain, Southern Pacific Railroad, and US95A overlap with the D-APE. The Wabuska Drain, Southern Pacific Railroad, and US95A have modernized features. The Reese River Wagon Road consists of two segments that were an important historic element of the local transportation network in the nineteenth and early twentieth centuries, with a period of significance between 1859 and 1972.

Y Hill and the Sage Crest Drive-In are two historic properties located within the VAA and do not overlap with the D-APE. Y Hill is the historic-era town marker for Yerington and consists of the "Y" geoglyph with a historic-era refuse scatter. The "Y" geoglyph overlooks Yerington and was created in the 1930s. It represents a pattern of development in the town of Yerington's identity, falling within the period of significance of 1860 to 1935. The Sage Crest Drive-In is within the Sage Crest Drive-In Historic District) is a drive-in theater that opened between 1952 and 1953 as the "Sage Crest Drive-In" and was in operation until 1995, retaining much of its historic integrity and its core structural components including a screen, ticket booth, and projection booth/concession stand. These two historic properties, along with the Reese River Wagon Road, include the integrity of the rural county settings in their eligibility contributions.

3.5.3.4 *Traditional Cultural Properties*

To date, no TCPs have been identified. The BLM sought input about potential TCPs from Tribes that may be affected by the Project through issuance of consultation letters under Section 106 consultation and through four workshops held with the Tribes as part of government-to-government consultation in June and July 2023, and April 2024.

3.5.4 Environmental Consequences

3.5.4.1 *Methods*

Considerations

As defined under 36 CFR section 800.5(a)(1) (Criteria of Adverse Effect), an adverse effect occurs when a federal undertaking directly or indirectly alters any characteristics of a historic property that qualify it for NRHP listing. An adverse effect on a historic property is not limited to physical destruction or damage but may also include relocation of the property, changes in the character of the setting of the property, and the introduction of VAA intrusions that alter the integrity of its setting. Impacts from a federal undertaking that result in an adverse effect on a historic property may also include reasonably foreseeable effects caused by the undertaking that may occur later (i.e., cumulative impacts).

Cultural resources not eligible for listing in the NRHP warrant no further consideration under the NHPA but have been considered here under NEPA.

Physical Effects

A Project that could cause the direct physical alteration of character-defining features of a historic property could result in diminished aspects of integrity (i.e., location, design, setting, materials, workmanship, feeling, and association). The impact is assessed according to the extent that the degree of physical alteration would constitute an adverse effect to the eligibility of the historic property under Section 106 of the NHPA.

VAA Effects

VAA effects result from changes to the scenic quality and/or value of the cultural resources from modifications to the surrounding landscape. Where the setting is important, it must be determined if the proposed project would cause a VAA intrusion sufficient to diminish the characteristics of setting that make the property eligible. Where it does not contribute to the eligibility of the property, the effects to that setting are not important considerations. Historic properties only important for their information potential (i.e., those that qualify under for the NRHP under Criterion D) are not eligible for their setting and are not affected by visual, auditory, or atmospheric impacts. Therefore, only historic properties within the VAA APE that qualify under Criteria A, B, or C are analyzed for VAA impacts. Where a historic property is sensitive to the rural setting or context and the Project would have moderate or strong contrast and thus be a noticeable element in the view from that resource, an adverse effect to the resource would occur.

3.5.4.2 *Proposed Action*

Construction and O&M Impacts

Physical Impacts to NRHP-Eligible Resources. Construction activities could have physical impacts on NRHP-eligible resources through direct contact with the historic property that could cause damage or loss of the resource. The three known prehistoric (pre-contact) Native American NRHP-eligible resources (26LY3287, LY3288, and LY3289 would be avoided. These three historic properties have no Project facility development or ground disturbance proposed in their vicinity.

MM CR-1 requires that an Environmental Exclusion Area (EEA) established around the three pre-contact historic properties to protect them from any physical Project activities; the EEA would encompass 500 feet beyond the site boundaries. MM CR-1 also requires that the EEA demarcations be removed from the Project footprint in the final engineering and design and would prohibit occupancy outside the established Project boundary. Implementation of MM CR-1 would thus ensure avoidance of any direct physical effects on these three NRHP-eligible resources during both construction and O&M. During O&M, no new ground disturbance would occur, and these historic properties would continue to be avoided.

Project construction and O&M would result in an adverse physical effect to Reese River Wagon Road, due to the proposed widening and surfacing work on the road that would modernize the road and thus alter a defining component of the historic property. This impact would be mitigated through implementation of MM CR-2, which includes archival and documentary research, oral history interviews, and photo documentation to develop a historic context suitable for the development of an interpretive site with signage focusing on the transportation theme associate with the historic road. Project construction and O&M would not have any potential for physical impacts on the other three historic period and built environment NRHP-eligible resources within the direct APE (i.e., Wabuska Drain, Southern Pacific Railroad, and US95A); the gen-tie would cross these resources but would not result in any physical alteration of them.

Adverse physical effects on known or previously undiscovered cultural resources could occur from theft or vandalism during construction and O&M. Construction would likely deter regular public recreational activity in the Project area; however, an average of 400 construction workers could be on the construction site at a time. Construction of the Project could also unearth, expose, or disturb subsurface archaeological, historic, or prehistoric (pre-contact) resources that were not visible or not apparent on the surface during the Class III inventory. The Applicant would comply with the Western Solar Plan PDFs CR1-1 and CR1-2, which require coordination with the BLM to minimize physical impacts to NRHP-eligible resources,

including consultation with other federal, tribal, state, and local agencies. These measures also require the Applicant to implement appropriate training/educational programs for the solar company workers, including the construction workforce. PDF CR1-2 requires appropriate avoidance and protection measures for any unexpected discovery of cultural resources during construction and, potentially, archaeological and Native American monitoring, which would be accomplished through implementation of the Cultural Resources Mitigation Plan (Appendix D), Cultural Resources Monitoring and Post-Review Discovery Plan (Appendix D), and the Historic Properties Treatment Plan (Appendix D). Implementation of Western Solar Plan PDFs CR1-1 and CR1-2 would minimize potential impacts to previously undiscovered cultural resources during construction.

During O&M, effects on cultural resources from theft or vandalism caused by increased public access are not expected since the solar site would be fenced and secured. The Project would not provide new public access to the areas known to contain archaeological resources. Effects from increased erosion that could expose, transport, weather; and rebury archaeological, historic, or prehistoric (pre-contact) resources are also not expected. Stormwater flow volume and runoff rates downstream of the Project site would not increase following construction of the Project to an extent that it would result in additional erosion beyond baseline conditions. Graded areas within the solar site would be sloped, with protections to prevent the creation of rills or gullies in accordance with the design-level geotechnical evaluation, which is also necessary to protect the solar infrastructure (see Section *3.4: Soils*). Areas of erosion would be addressed early through MM WR-3.

VAA Impacts to NRHP-Eligible Resources. As identified in Section 3.5.3.3, six historic properties are considered in the VAA impact analysis. These resources are visible within five miles of the Project site and the integrity of the historic setting is a key component of the resources' NRHP eligibility. The following discussion addresses the potential for adverse auditory and atmospheric impacts, as well as visual impacts to the integrity of the setting for these resources from construction and O&M for the Project.

Two of the historic properties within the VAA APE (Y Hill and the Sage Crest Drive-In) are beyond a distance where auditory effects caused by the Project could occur (generally 75 feet). Wabuska Drain, U.S.95A, and the Southern Pacific Railroad would be crossed by Project construction; however, auditory impacts would not be adverse since noise impacts from construction would be temporary and elevated noise is already associated with these resources. Adverse auditory effects to NRHP-eligible resources would not occur.

The Project is designed to generate clean energy and would not substantially change air quality. Construction of the Project would temporarily increase pollutants, including dust and emissions from equipment during construction. This increase would be localized to the area of the APE and occur during the construction of the Project only. Atmospheric effects from the proposed construction methodology are thus assumed to be negligible and atmospheric impacts would not occur during O&M. Adverse atmospheric impacts to the historic properties would not occur.

While no adverse auditory or atmospheric impacts would occur to the six historic properties, the BLM has determined they would be subject to adverse visual impacts. Project construction and O&M could have an adverse visual impact on the Southern Pacific Railroad, U.S. 95A, and the Wabuska Drain (all built environment historic resources). The Project's gen-tie would be built over these sites, changing the visual context and character of the sites by adding a new, visible modern element. Adverse visual effects would also occur to Y Hill, Sage Crest Drive-In, and the Reese River Wagon Road. For these three resources, the rural setting is an important element of their NRHP eligibility. Retaining good integrity of setting would mean the surrounding areas remain rural and undeveloped. The Project would be visible in the foreground/middleground from these resources and thus is expected to alter the rural setting by introducing a modern element. The change in the integrity of the setting for these three historic properties is considered an adverse effect. The following table summarizes the visual impacts to each of the six NRHP-eligible resources within the VAA APE.

Table 3.5-2 Analysis of Effects to Historic Properties in the VAA Analysis

Site number	Site description	NRHP Status	Summary of Visual Effect	Finding of Effect
26LY2088	Y Hill (Historic Era Geoglyph)	Eligible under Criterion A	Resource is within the foreground zone, 1.05 mi. from the closest Project component. Moderate contrast levels. Changes to rural setting would constitute an adverse visual effect.	Adverse Effect
26LY2887/D357	Sage Crest Drive-In Historic District	Eligible under Criteria A, C and D	Resource is within the foreground/middleground zone, 3.5 miles from the closest Project component. Moderate contrast levels could occur.	Adverse Effect
26LY3165	Reese River Road, Refuse Scatter, and mining features	Eligible under Criterion A	Resource is partially intersected by the Project's block installation areas and in the foreground and middleground visual zones. Moderate to strong contrast levels could occur.	Adverse Effect
S3327	Southern Pacific Railroad	Eligible under Criterion A	Resource is intersected by gen-tie.	Adverse Effect
S3328	US Highway 95A	Eligible under Criterion A	Resource is intersected by gen-tie.	Adverse Effect
26LY1459	Wabuska Drain	Eligible under Criterion A	Resource is intersected by gen-tie.	Adverse Effect

MM CR-2 identifies the mitigation for reducing adverse visual effects to the integrity of setting for the six NRHP-eligible historic properties. Adverse effects would be mitigated by archival and documentary research, oral history interviews, and photo documentation to develop a historic context suitable for the development of an interpretive site with signage focusing on the themes of Community Development for the Sage Crest Drive in and Yerington "Y," Transportation for the Reese River Wagon Road, US95A, and the Southern Pacific Railroad, and Agricultural related infrastructure and water for the Wabuska Drain. The measure is elaborated in the Cultural Resources Mitigation Plan, and the Historic Properties Treatment Plan (Appendix D). The HPTP details the measures BLM has planned to avoid, minimize, and/or mitigate adverse effects to the six historic properties.

Other Cultural Resources. NEPA also requires consideration of impacts to other cultural resources that may not be eligible for listing in the NRHP. There are 72 additional resources found within the D-APE that could be impacted by Project construction (and O&M). PDFs CR1-1 and CR1-2 would reduce impacts to some of these resources, but many may be damaged or destroyed during construction. to further reduce impacts to the pre-contact resources, MM CR-3 has been added which requires avoidance of ineligible prehistoric (pre-contact) Native American sites and isolated resources to the extent practicable through micro-siting.

Decommissioning Impacts

Under the Proposed Action, decommissioning activities would entail removal of the solar arrays and associated facilities and reclamation of the site to pre-Project conditions (to the extent practicable). Western Solar Plan PDF CR3-3, which requires the Applicant to confine soil-disturbance activities to previously disturbed areas, would be implemented during decommissioning. To ensure continued avoidance of the three prehistoric (pre-contact) sites in the construction phase EEA, MM CR-1 requires that the EEAs be re-established during decommissioning. Decommissioning would result in no new physical impacts to the Reese River Wagon Road, which is also in the D-APE. Western Solar Plan PDF CR1-2, would also be implemented during decommissioning, requiring appropriate training/educational programs for the solar company workers, including the decommissioning workforce.

The six historic properties that would be adversely visual affected by construction and O&M are expected to be positively affected from decommissioning as their visual settings would revert to pre-Project conditions.

Cumulative Impacts

The loss of several resources from a particular ethnographic group or representing a particular time period could result in significant impacts with respect to the information those resources possess. Other projects, either existing or planned, in the cumulative effects area could (or did) directly and/or indirectly adversely affect cultural resources. Implementation of MM CR-2, the Historic Properties Treatment Plan, and the Cultural Resources Monitoring and Post-Review Discovery Plan, would reduce and/or mitigate cumulative effects to cultural resources.

The Project could also physically affect previously unknown resources which, along with impacts from other projects in the cumulative affects area, could be considered an adverse cumulative effect, triggering the Applicant to implement Solar PEIS PDFs CR 11 and CR 1-2, which require coordination with the BLM to minimize cultural resources impacts, including consultation with other federal, tribal, state, and local agencies.

3.5.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Impacts to cultural resources from construction and O&M activities under Alternative 1 would be similar to those described above under the Proposed Action because construction locations would be similar. However, Alternative 1 would limit traditional construction methods (i.e., disc and roll and grading) to approximately 20 percent of the solar array blocks, which would decrease the acreage of surface and subsurface disturbance. This reduction in disturbance would reduce the potential for impacts related to discovery of and damage to unknown subsurface archaeological, historical, or pre-contact cultural resources eligible for listing in the NRHP. Impacts to historic properties within the D-APE would be the similar as for the Proposed Action, with avoidance of the three prehistoric (pre-contact) sites through Project MM CR-1, and implementation of the Cultural Resources Mitigation Plan under MM CR-2 to address the physical impacts to Reese River Wagon Road. No physical effects would occur to the other historic properties in the D-APE. VAA impacts to the six historic properties considered under the VAA analysis would also be similar for the Proposed Action and would be mitigated through MM CR-2. MM CR-3.

Decommissioning impacts would be similar to the Proposed Action. The same Western Solar Plan PDFs, the CRMP SOPs, MMs, and required management plans identified for the Proposed Action would be implemented under Alternative 1 to minimize adverse effects. Cumulative impacts to cultural resources would be similar to the Proposed Action,.

3.5.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Utilizing supplemental access routes to the Project solar site would have the same impacts to cultural resources as the Proposed Action. The construction area, workforce, and schedule would be the same. No new or greater impacts would occur from diverting some traffic along other routes to the Project site because the routes have already been disturbed and are in current use. Upgrade and maintenance activities

would be limited to existing disturbance. The same PDFs, MMs, and required management plans for the Proposed Action would be implemented to reduce adverse effects to cultural resources. Cumulative impacts to cultural resources would be the same as for the Proposed Action.

3.5.4.5 *Alternative 3 – Alternative Gen-tie Connecting to Greenlink West*

Alternative 3 would eliminate construction of the proposed 24.1-mile gen-tie line to be replaced with a 0.54-mile-long gen-tie and switching station located under Greenlink West as described in Section 2.6. The three prehistoric (pre-contact) historic properties within the D-APE would be subject to the same impacts as under the Proposed Action; these impacts would be avoided through implementation of MM CR-1. The Reese River Wagon Road would also be subject to the same impacts as described for the Proposed Action and those impacts would be mitigated through implementation of MM CR-2. Impacts to previously undiscovered resources would be similar to the Proposed Action and would be reduced through the Western Solar Plan PDFs. MM CR-3 would be implemented to reduce impacts to other cultural resources, namely other prehistoric (pre-contact) sites and isolates that were not found eligible for listing in the NRHP.

VAA impacts to Y Hill, Sage Crest Drive-In, US95A, Wabuska Drain, and the Southern Pacific Railroad would be avoided. Cumulative impacts to cultural resources would be the same as for the Proposed Action.

3.5.4.6 *No Action Alternative*

Under the No Action alternative, the solar field, gen-tie line, battery energy storage system, and associated linear facilities would not be developed. Under the No Action Alternative, there would be no change to existing conditions that would result from the Project.

3.5.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize impacts to cultural resources.

Table 3.5-3 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• CR1-1, 2-1, 3-1, 3-3
Carson City CRMP SOPs	• N/A
Management Plans	• Cultural Resources Mitigation Plan • Historic Properties Treatment Plan • Cultural Resources Monitoring and Post-Review Discovery Plan

Mitigation Measures

The Project would implement the mitigation measures in order to minimize adverse impacts on cultural resources.

Table 3.5-4 Cultural Resources Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM CR-1: Native American Site Environmental Exclusion Area (EEA)	An Environmental Exclusion Area (EEA) and at least 500-foot buffer shall be established around the three NRHP-eligible prehistoric (pre-contact) Native American sites within the Project application area (26LY3287, LY3288, and LY3289). The EEA shall be removed from the Project footprint in the final engineering and design plans before construction, resulting in redefinition of the development area boundary and fence lines. The design engineers shall coordinate with the BLM or consulting archaeologist to verify full avoidance. Occupancy outside the established Project boundary shall be prohibited. EEAs shall be re-established during decommissioning.
MM CR-2: Cultural Resources Mitigation Plan and Cultural Resources Monitoring and Discovery Plan Requirements	A Cultural Resources Mitigation Plan shall be prepared that shall address the one historic property that could be adversely impacted through physical disturbance and VAA impacts (Reese River Wagon Road [26LY3165]), as well as the resources that could be affected only by visual, atmospheric, and auditory effect (i.e., Y Hill [26LY2088], Sage Crest Drive-In [26LY2887], US95A [S3328], Wabuska Drain [26LY1450], and the Southern Pacific Railroad [S3327]). The plan shall include measures that include archival and documentary research, oral history interviews, and photo documentation to develop a historic context suitable for the development of an interpretive site with signage focusing on the themes of Community Development for the Sage Crest Drive in and Yerington "Y," Transportation for the Reese River Wagon Road, US Highway 95A, and the Southern Pacific Railroad, and Agricultural related infrastructure and water for the Wabuska Drain. The Cultural Resources Monitoring and Discovery Plan shall identify when monitoring is required (i.e., during new ground disturbance), monitoring responsibilities, and the actions to be taken should a resource be encountered in the field, including stopping work within a buffer distance of the resource until it can be inspected and addressed.
MM CR-3: Avoidance of Native American Cultural Resources where Practicable	Prehistoric (pre-contact) Native American sites found to be ineligible for listing in the NRHP, as well as isolated resources shall be avoided where practicable through micro-siting in order to reduce impacts and loss of these resource. Avoidance, where practicable, shall be demonstrated in the Project final engineering design as well as implemented in the field through the cultural resources monitoring, as defined in the Cultural Resources Monitoring and Discovery Plan.

3.5.4.8 *Irreversible and Irretrievable Impacts and Residual Effects*

Irreversible or irretrievable impacts are those that cannot be reversed or recovered. The Project and all alternatives would avoid direct and indirect impacts to the three prehistoric (pre-contact) Native American NRHP-eligible sites, with MM CR-1's avoidance provisions. The physical impacts to Reese River Wagon Road would be irreversible for the Proposed Action and all alternatives but VAA impacts to the Y-Hill, Sage Crest Drive-In, the Southern Pacific Railroad, US95A, and Wabuska Drain (under the Proposed

Action and Alternatives 1 and 2) would be reversed when the gen-tie is decommissioned. Any significant damage or loss of previously undiscovered resources and the impacts to the cultural resources not eligible for listing in the NRHP would be irretrievably lost.

Residual impacts would include physical changes to the historic character of Reese River Wagon Road, and setting impacts to Y-Hill, Sage Crest Drive-In, the Southern Pacific Railroad, US95A, and Wabuska Drain (under the Proposed action and Alternatives 1 and 2) even with mitigation. Otherwise, residual impacts would not occur unless inadvertent damage to NRHP-eligible resources occurs during the Project construction or other phases. With the Western Solar Plan PDFs, this scenario and resulting residual impacts are unlikely.

3.6 Native American Concerns

3.6.1 Introduction

This section focuses on Native American concerns about the Project identified over the course of consultation and coordination for the Project, to date.

3.6.2 Analysis Area

The analysis area includes the area of disturbance for the Project (including for the Proposed Action and alternatives), including the solar facility and all associated components, roads, collector lines, and the gen-tie line. The analysis area also includes the five-mile area beyond the D-APE the BLM delineated for the VAA APE. The BLM also considered areas outside the VAA APE that were identified as important to tribes.

3.6.3 Affected Environment

3.6.3.1 *Federally Recognized Tribes*

The Project is within a greater tribal region that includes the Newe (Western Shoshone) to the east, the Numa (or Northern Paiute) within the Project area, and the Wa She Shu (Washoe) to the west. The BLM invited the following federally recognized Native American tribes to participate in Government-to-Government consultation for the Project: the Bridgeport Indian Colony, Fallon Paiute-Shoshone Tribe, Reno-Sparks Indian Colony, Yerington Paiute Tribe, Walker River Paiute Tribe, Yomba Shoshone Tribe, Pyramid Lake Paiute Tribe, and Washoe Tribe of Nevada and California.

3.6.3.2 *The Western Shoshone, Northern Paiute, and Washoe*

Territorial Boundaries

The Numa (or Northern Paiute) is the primary ethnographic group in the Project area. They traditionally occupied the western third of the Great Basin region stretching from the Owens Valley in California through Nevada and into southern Oregon and Idaho (ITCN 1976; Bengston 2003). The Numa language and traditions share many commonalities with the Newe and Nuwuvi to the east but are distinct from the Washoe and California groups to the west. At least six distinct bands were in the southern portions of Numa territory, including the Kootzagwae of Mono Lake, Pagwewae and Agiwae of Walker Lake and lands east, Taboosewae of Mason and Smith Valleys, Toewae of the Carson Sink, and Kooeyooewae of Pyramid Lake (ITCN 1976; Johnson 1975; Stewart 1939).

The Wa She Shu (or Washoe) inhabited and continue to reside in the area along the eastern Sierra Front to the west, the Pine Nut and Virginia ranges to the east, Honey Lake in the north, and Sonora Pass in the south. Early occupation of the region by the Washoe is supported ethnographically, and oral traditions tell that the Washoe did not travel to this place, but rather have always been there.

The Newe (or Western Shoshone) territory traditionally covered a large swath of land from Death Valley, California, to the south, up to Idaho and Utah in the north-northeast, and including much of central Nevada (ITCN 1976a). In central Nevada, the No-ga'ie near Duckwater and Pi-at-tui'ab-be in Big Smoky

Valley were documented by Powell and Ingalls in 1873 as Newe bands with ties to south-central Nevada (ITCN 1976a; Bengston 2003).

Important Resources to Native Americans

Overview. The Northern Paiute believe that power (*puha*) could reside in any natural object and that it habitually resides in natural phenomena such as the sun, moon, thunder, clouds, stars, and wind. Any individual could seek power for purposes such as hunting and gambling, but only shamans possessed enough to call on it to do good for others. Not all modern representatives of animal species were necessarily supernatural, but occasionally, such a special animal was encountered. A rich body of myth and legend, the former involving the activities of animal ancestors, set values and taught a moral and ethical code. Today, people remember parts of these old narratives and often mix them with various Christian beliefs (Advameg, Inc., n.d.). Information for specific resources (e.g., wildlife and water) is, in part, summarized from ethnographic data collected prior to consultation for the Project; however, it is important to note that many tribes continue to use, regard, and follow practices related to the resources.

Botanical Resources (Medicine). Botanical resources continue to provide important healing properties used by tribes for traditional medicine.

Wildlife. Wildlife, including game and fish species, has spiritual, cultural, and economic values to the Native American tribes in the region**.**

Water. Water is an essential prerequisite for life in the arid areas of the Great Basin. Bodies of water, including wetlands, hold spiritual significance to the Northern Paiute and are also sources of food. The Project would be developed primarily on alluvial fans at the base of the Wassuk Mountain Range. The gen-tie line would cross the Walker River near the Mason Valley WMA, which is a critical area for waterfowl and other game species.

Geologic Features. Black Mountain is a place of spiritual significance for Native American tribes and also contains significant archaeological resources. Black Mountain is also a National Conservation Area (NCA).

Archaeological Resources. Section *3.5 Cultural Resources* discusses tribal cultural resources identified in the D-APE and VAA APE. It is important to note that Native Americans view cultural resources differently than how they are they are analyzed for eligibility in the NRHP; resources not eligible for listing in the NRHP may still be significant to tribes.

Native American Concerns Identified through Consultation

The BLM initiated consultation and requested assistance from affected Tribes in identifying any issues or concerns, including the identification of sacred sites and places of traditional religious and cultural significance that could be affected by the Project. The Pistone-Black Mountain NCA is located on Black Mountain above a segment of the gen-tie. The NCA contains petroglyphs and sites significant to tribes.

During tribal consultation, the Black Mountain/Pistone Archaeological District was expressed to hold a special spiritual energy that should not be disturbed.

Another tribal concern expressed during consultation was energy being emitted under the gen-tie line that can be felt, often referred to as the “corona effect”. Tribes expressed concern about how this corona effect would affect the passage of big game species passage around and under the gen-tie; this concern was also identified for cumulative impacts from other existing or planned projects in the area.

3.6.4 Environmental Consequences

3.6.4.1 *Methods*

The primary method to identify Native American concerns for the Project continues to be consultation and coordination between the BLM and affected tribes. Government-to-government consultation between the BLM and federally recognized Native American Tribes continues and is ongoing pursuant to the 1994 Government-to-Government Relations with Native American Tribal Governments Executive

Memorandum and BLM Manual 1780. Chapter 4: Consultation and Coordination provides details about the consultation process and includes the BLM's consultation efforts with affected tribes to date.

3.6.4.2 *Proposed Action*

Construction and Operations and Maintenance Impacts

Impacts to resources of concern by Native Americans can occur through the destruction or degradation of important plant, animal, and water resources and/or the destruction of habitat and creation of impediments to the movement of wildlife. Impacts can also occur through the destruction of culturally significant archaeological and historic resources, destruction of or disruption to TCPs, and alteration of significant spiritual geologic formations or geographic locations.

Botanical Resources. The Project area is vegetated primarily by a Great Basin Salt Desert Scrub community, best described as a *Sarcobatus baileyi* community, commonly referred to as Bailey's greasewood. Construction and O&M of the Project would disturb two vegetation types associated with Bailey's greasewood; however, these are not the same as the more common greasewood (*Sarcobatus vermiculatus*), whose flowers are edible, and which has been used by Native Americans for weaving objects, in making scrapers, arrow points, digging sticks, and in other uses (National Park Service (NPS), n.d.). No specific concerns regarding disturbance of this habitat type were expressed by tribes during consultation for the Project.

Wildlife. Tribes raised specific concerns during consultation for the Project regarding audible energy emissions from the gen-tie that could deter big game from hunting, particularly in areas near the Walker River. The Project would impact some common wildlife species from loss of habitat and displacement to surrounding areas with abundant similar habitat; however, it is not expected to adversely affect hunting or change wild game behaviors. Impacts to big game from construction noise would be short in duration (a few weeks at any given point) and localized. During O&M, audible energy emissions from the gen-tie is not expected to deter big game species or change game behaviors; however, and with the exception of anecdotal reports of pronghorns in the area where there are existing transmission lines (e.g., the LADWP line) few studies have been undertaken to understand if transmission lines, due in particular to the noise they generate, are avoided by big game species such as mule deer and pronghorn. Gen-tie noise would drop-off to ambient levels within a few hundred feet, and the gen-tie siting would occur near existing transmission lines**.** Gen-tie access roads may provide improved access for hunters into hunting territories, which could be a positive benefit.

Water. The Project would be developed primarily on alluvial fans at the base of the Wassuk Mountain Range and would have limited impacts on water bodies, natural springs, and groundwater and thus would also have limited impacts on these values. The gen-tie line would cross several landforms including foothills of the Wassuk Range and wetlands around the Walker River. Wetlands and springs are significant to tribes and can be sources spiritual sources of life and sustenance. The proposed gen-tie was sited to avoid the Mason Vallely WMA wetland areas. The gen-tie line would span the open water and poles would be sited to minimize effects to riparian habitat. The CRMP *Applicable to All* SOP 10 requires implementation of measures to reduce the potential for pollution or siltation of the Walker River and surrounding areas. Adverse effects to water bodies and sources of water are therefore not expected. An analysis of groundwater impacts from groundwater pumping for use by the Project showed that no impacts to rivers, springs, or other groundwater users would occur (see Section *3.9: Water Resources*).

Geologic Features and Archaeological Resources. During consultation for the Project, tribes expressed concerns about the visibility of the gen-tie line from Pistone-Black Mountain NCA, sounds generated by the Project that could be heard from the NCA, and increased human presence (such as workers accessing the NCA) which could adversely affect archaeological and spiritual resources.

The visual effects analysis for cultural resources concluded that neither the Project solar site nor the gen-tie is readily visible from Black Mountain. Solar facilities would not be visible from Black Mountain due to intervening topography. The proposed gen-tie alignment is at least 2.5 miles west of Black Mountain

and would be sited at the base of a dry lake valley between steep volcanic slopes; it would be below the skyline and not discernible at this distance.

Noise generated during construction and O&M would dissipate quickly with distance and is not expected to be heard on Black Mountain; any negligible noise heard from Black Mountain would be temporary (during construction) and intermittent (O&M).

An existing trail leads up to Black Mountain from east of the solar site. The trail is extremely rugged, not passable with passenger vehicles, would require a long, strenuous uphill hike which ASM was not able to complete during their assessment of the VAA APE for cultural resources. The trail is not readily visible from the Project and is not expected to be visited by workers during construction, O&M activities, or otherwise.

Three archaeological resources, prehistoric (pre-contact) historic properties (refer to Section *3.5: Cultural Resources* for more information), were identified within the Project's D-APE and would avoided through implementation of MM CR-1. MM CR-1 requires that an EEA is established around the three sites sites. Additionally, a Cultural Resources Monitoring and Post-Review Discovery Plan (Appendix D) has been developed to ensure that any cultural resources encountered during construction that were not visible during the cultural resources inventory would be evaluated and impacts minimized. Prehistoric (pre-contact) resources found to be not eligible for listing in the NRHP would also be avoided to the extent practicable, per MM CR-3, to lessen cumulative effects from the loss of these resources.

3.6.4.3 *Decommissioning Impacts*

The Applicant would limit reclamation and decommissioning activities to previously disturbed areas and existing access roads to the extent practicable. Consistent with a Decommissioning and Site Reclamation Plan and several Western Solar Plan PDFs and the CRMP SOPs, the Applicant would perform restoration and revegetation of the Project site. Impacts to natural resources of Native American would be reduced as perennial plants and animals would naturally, gradually, return.

3.6.4.1 *Cumulative Impacts*

Many developments in the area, including the Project, would involve vegetation removal or changes to the existing habitats, which could cumulatively affect populations of plant and game species important to Native Americans. Other proposed solar projects in the region that are located closer to tribal land and the Mason Valley WMA could result in cumulative impacts when could occur, given the location of the Project solar site and the limited habitat and wildlife effects from the gen-tie, the Project's contribution to a cumulative impact on important vegetation and game species would not be adverse. Impacts to Black Mountain and other archaeological resources could also be considered cumulatively significant. The Greenlink West proposed alignment is located at higher elevations east of the Project, closer to Black Mountain and, thus, would likely be more visible and audible than the Project's gen-tie, situated at the base of the mountain in a valley. The Project, due to its location and its being not visible or audible from Black Mountain, would not contribute to cumulatively considerable impacts. The development of more extensive renewable energy, transmission, and mining along the east side of Mason Valley and Pumpkin Hollow, however, would have the potential to result in a cumulative transformation of a natural area to an industrialized area, which could have an adverse impact on ecological values tied to nature and the earth. The Project would contribute to this potentially adverse impact.

3.6.4.2 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction, O&M, decommissioning, and cumulative impacts from Alternative 1 would be largely the same as for the Proposed Action, except that more vegetation would be left in place under the solar array blocks. This approach would allow regrowth of plants during O&M and after decommissioning, reducing the long-term effects to habitats and ecological systems and values. The same Western Solar Plan PDFs, Project MMs, SOPs, and management plans as identified for the Proposed Action would apply. Implementation of these measures would ensure restoration as best as possible and avoidance of known Native American resources. Implementation of a Cultural Resources Monitoring and Discovery Plan would address any resources found during construction.

3.6.4.3 *Alternative 2 – Alternative Supplemental Access During Construction*

Construction, O&M, decommissioning, and cumulative impacts from Alternative 2 would be the same as for the Proposed Action. This alternative utilizes supplemental access during construction. The same Western Solar Plan PDFs, Project MMs, SOPs, and management plans as identified for the Proposed Action would apply. Implementation of these measures would ensure restoration as best as possible and avoidance of known prehistoric (pre-contact) Native American resources. Implementation of a Cultural Resources Monitoring and Discovery Plan would address any resources found during construction.

3.6.4.4 *Alternative 3 – Alternative Gen-tie Connecting to Greenlink West*

Alternative 3 would also have similar construction, O&M, decommissioning, and cumulative impacts as the Proposed Action for the access road and the solar site. The impacts from the gen-tie would be greatly reduced since this alternative would eliminate the 24.1-mile-long gen-tie under Black Mountain and through the Mason Valley WMA. Instead, a 0.54-mile-long gen-tie would connect the solar site to the Greenlink West line through a new switching station. The gen-tie and switching station would be built within the alluvial fan areas directly to the east of the solar site, within the existing dedicated energy corridor and below the mountains. The gen-tie and switch station would not be visible or audible from Black Mountain and, thus, are not expected to have direct or indirect physical effects. Cumulative impacts related to the gen-tie would thus also be greatly reduced.

3.6.4.5 *No Action Alternative*

Under the No Action alternative, the solar field, gen-tie line, BESS, and associated linear facilities would not be developed because the BLM would not issue the ROW grant. No ground disturbance would occur, and there would be no changes or alterations to the landscape. Therefore, there would be no impacts to Native American concerns. Existing conditions in the analysis area would continue.

3.6.4.6 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize Native American concerns.

Table 3.6-1 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• CR1-1, 2-1, 3-1, 3-3
Carson City CRMP SOPs	• N/A
Management Plans	• The Project would implement MM CR-1 from Section 3.5 to minimize adverse impacts to Native American concerns.

Mitigation Measures

The Project would implement MM CR-1 from Section 3.5 as well to minimize adverse impacts on cultural resources.

3.6.4.7 *Irreversible and Irretrievable Impacts and Residual Effects*

Irreversible or irretrievable impacts are those that cannot be reversed or recovered. The loss of habitat and the cumulative industrialization of the area would be an adverse effect but could be reversed after decommissioning although it could take centuries. Residual impacts would not occur unless inadvertent

damage to prehistoric (pre-contact) Native American archaeological resources occurred during the Project construction or other phases. With the Western Solar Plan PDFs, this scenario and resulting impacts are unlikely.

3.7 Vegetation, Special Status Plants, and Noxious Weeds

3.7.1 Introduction

The following sections describe the existing native vegetation communities, special status plant species (including cacti), and invasive and noxious weeds that are present within the Project area. Field surveys were conducted in 2022 and 2023 to assess general vegetation characteristics, presence of special status plants, cacti density estimates, and invasive plant populations. The botanical resources survey followed the protocol described in the BLM Carson City District Office's guidance (BLM Handbook 6840). The methods and detailed results of these studies are documented in the Botanical Resources Report: Libra Solar Project (Phoenix 2022). Several regulations and laws apply to management of vegetation resources in the Project area, including the federal ESA, BLM Manual 6840 Sensitive Species Management, NAC chapter 527: Protection and Preservation of Timbered Lands, Trees and Flora, and Executive Order 13112 Invasive Species. The BLM published an updated list of BLM Nevada special status species in November 2023 (BLM 2023g). The species list was screened to determine if habitat was present and if there is potential for these species to occur on the Project site. None of the plant species included on the list that occur in the Carson City District are expected to occur on the Project site.

3.7.2 Analysis Area

The analysis area for vegetation communities comprises the entire Project site (which includes the solar site, gen-tie, and access road) plus a 100-foot buffer, which was surveyed for botanical resources and noxious weeds. For the cumulative effects analysis, the analysis area includes the Mason Valley and the Wassuk Range.

3.7.3 Affected Environment

3.7.3.1 *Topography and Climate*

The Project is located within the Central Basin and Range ecoregion, which consists of northerly trending fault-block ranges and intervening drier basins. Valleys, lower slopes, and alluvial fans are either shrub- and grass-covered or shrub-covered. The Project site is situated along the lower part of a gently sloping bajada that extends up into the Wassuk Range, located approximately 6 miles to the east. The topography is flat, with areas of gently sloping terrain, alluvial floodplains, and small hills with an occasional bedrock outcropping. Numerous shallow washes and ephemeral drainages flow westward through the site. Elevations across the site range from approximately 4,985 feet to 5,495 feet above mean sea level (amsl), with the highest elevations in the east and the lowest elevations in the west. The climate of the Central Basin and Range is characterized by arid conditions and dramatic daily and seasonal temperature fluctuations.

3.7.3.2 *Vegetation Communities*

The Project site has experienced some level of disturbance, with evidence of grazing, soil compaction, and OHV use. Numerous boreholes and spoils piles from exploratory mining between the 1920s and 1960s occur throughout the Project area, including on the solar site. Many of these borings are visible in aerial imagery. The southern portion of the solar site is bisected by a distribution power line and by Reese River Road and Old State Road 2C. Two-track unpaved roads occur throughout the site.

Vegetation is relatively sparse across the Project area, including the entirety of the solar site as well as areas adjacent to the access roads and within most of the gen-tie alignment. Some invasive plant species are present across the solar site. Natural vegetation communities consist primarily of Bailey's greasewood (*Sarcobatus baileyi*) shrubland alliance. Within this alliance, at least two associations were observed

within the solar site: Bailey's greasewood – bud sagebrush – shadscale/James' galleta (*Sarcobatus baileyi – Picrothamnus desertorum – Atriplex confertifolia/Pleuraphis jamesii*) shrubland association (38.7 percent) and Baileys' greasewood – Nevada ephedra (*Sarcobatus baileyi – Ephedra nevadensis*) shrubland association (55 percent). Community associations within the Bailey's greasewood shrubland alliance are considered less common due to the limited distribution of Bailey's greasewood. Little information regarding the distribution and extent of these vegetation types is available. Numerous drainage features are present and contain desert wash communities vegetated by rubber rabbitbrush (*Ericameria nauseosa*) shrubland alliance (0.3 percent), fourwing saltbush (*Atriplex canescens*) shrubland alliance (1.8 percent), and North American Warm-Desert Xeric-Riparian Scrub (4.2 percent) (Peterson 2008). Vegetation communities are shown in Figure 3.7-1.

The gen-tie, for the majority of its length (approximately 20.6 out of 24.1 miles) is entirely within scrub/shrub vegetation land cover types, similar to the solar site. The 3.5-mile segment in closest proximity to the Fort Churchill substation is either within or immediately adjacent to woody wetland vegetation cover types associated with the Walker River. More detailed information on vegetation communities and species observed within the study area is found in the Botanical Resources Report: Libra Solar Project (Phoenix 2022).

3.7.3.3 *Special Status Plants*

Special status plant species include State or federally listed as threatened, endangered, proposed, or candidate species; BLM sensitive species; species protected under the NAC §527.010; and other at-risk taxa tracked by the Nevada Natural Heritage Program (NNHP). Removal or destruction of State-protected flora species requires a special permit from Nevada Division of Forestry (NRS § 527.270). The BLM also has a special policy regarding the salvage of cacti species.

Five special status plant species have been observed within the Proposed Project site. Four taxa of special status plants were identified within the solar site, including Lahontan beardtongue (*Penstemon palmeri* var. *macranthus*), Nevada oryctes (*Oryctes nevadensis*), sand cholla (*Grusonia pulchella*), and Tonopah milkvetch (*Astragalus pseudiodanthus*). Species statuses are listed in Table 3.7-1 and observed locations are shown in Figure 3.7-2.

Figure 3.7-1 Vegetation Communities within in the Proposed Project Solar Site

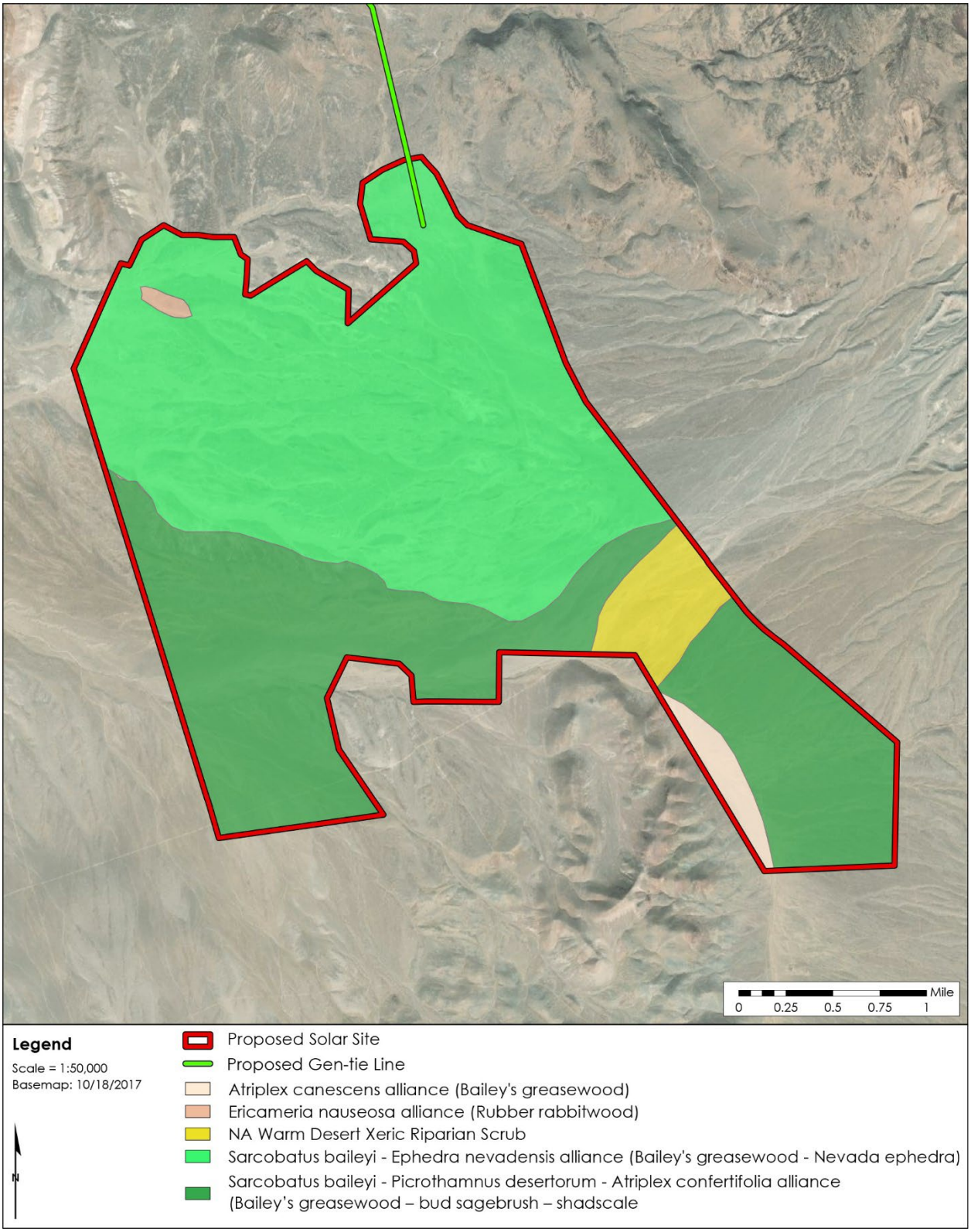
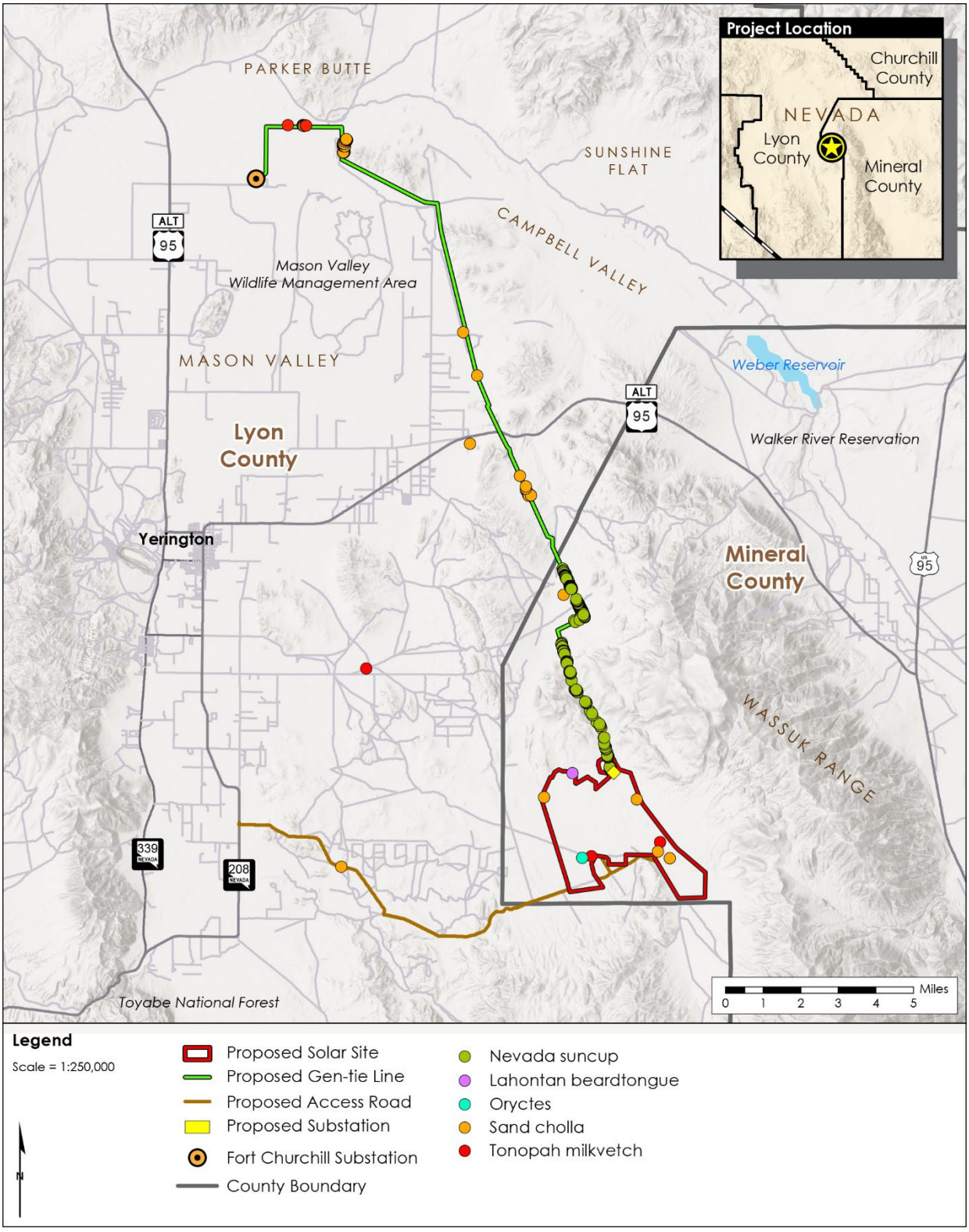


Figure 3.7-2 Special Status Plant Locations within the Study Area



Source: (Phoenix 2023, Fig. 9)

Table 3.7-1 Special Status Plant Species Found within the Study Area

Species	Conservation status	Habitat	Location within the study area
Lahontan beardtongue (*Penstemon palmeri var. macranthus*)	BLM-S; G4G5T, S2	Diversity of habitats including washes, roadsides, and canyon floors, particularly on carbonate-containing substrates	Dry wash on northern boundary of the solar site
Nevada oryctes (*Oryctes nevadensis*)	BLM-S; G3S2S3	Found in deep and loose sandy habitats of stabilized dunes, washes, and valley flats	Southern end of the solar site in areas of deep alluvial sand
Sand cholla (*Grusonia pulchella*)	BLM-S, G3G4S3	Common desert scrub habitat types, including sandy to rocky flats and slopes	Scattered throughout the solar site and not concentrated in any one location
Tonopah milkvetch (*Astragalus pseudiodanthus*)	BLM-S; G3QS2	Found in deep sandy substrates in desert communities	Southern end of the solar site in areas of deep alluvial sand
Nevada suncup (*Eremothera nevadensis*)	BLM-S; G3S3	Found in vernally wet areas, on gravel, sandy, or clay soils, and it can somewhat tolerate alkali soils	Along the gen-tie alignment, just south of the Mineral County border

Notes:

BLM-S = Bureau of Land Management sensitive species

G = Global rank

T = Subspecific or variety taxonomic level (used in conjunction with G rank)

Q = Questionable taxonomy

S = State rank (state population of a species, subspecies, or variety)

1 = Critically imperiled; 2 = Imperiled; 3 = Vulnerable; 4 = Apparently Secure; 5 = Secure

A numeric range rank (e.g., S2S3 or S1S3) is used to indicate uncertainty about the exact status of a taxon.

Source: (Phoenix 2022; 2023)

Apart from one individual of sand cholla, no special status species were found along the access road. Within the gen-tie alignment, approximately 250 individuals of sand cholla were identified, consolidated along the northern portion prior to the alignment turning west over the Mason Valley WMA; two individuals of Tonopah milkvetch were identified on sand dunes west of the Walker River, along the northern portion of the alignment; and approximately 3,500 individuals of Nevada suncup (*Eremothera nevadensis*) were found south of the Mineral County boundary and interspersed along the southern portion of the gen-tie to the solar site.

All species observed are BLM sensitive species and are on the list of Nevada Division of Natural Heritage (NDNH) at-risk plant species. Taxa considered at risk and actively inventoried by NDNH commonly include those with federal or other Nevada agency status and those with global and/or state ranks of 1 to 3, indicating some level of imperilment. Sand cholla is also a protected cacti species under the BLM and

NDOW. No State-protected flora has the potential to occur within the Project site. A complete list of all plant species identified during the surveys is included the Botanical Resources Report: Libra Solar Project (Phoenix 2022).

One other BLM sensitive species was evaluated for the potential to occur within the study area: Churchill Narrows buckwheat (*Eriogonum diatomaceum*). This species is considered critically imperiled in Nevada (S1) by the NNHP. It occurs in specific locations within clay to silty diatomaceous deposits of the Coal Valley Formation, with a variable volcanic cobble overburden. These soils are not present in the study area, and no suitable habitat was identified during literature review or field surveys. This species is not expected to be present.

3.7.3.4 *Cacti*

Two species of cacti were documented during the belt transects: grizzlybear prickly pear (*Opuntia polyacantha* var. *erinacea*) and sand cholla (described above in 3.7.3.3 Special Status Plants). No species of yucca were seen during the belt transects or other botanical surveys as the Project site is too far north for yucca. The belt transects are used to extrapolate estimated densities and the total number of individuals expected based on actual counts observed. The majority of cacti noted during surveys were grizzlybear prickly pear, with an estimated total of 1,318 expected across the study area. Sand cholla were much less prevalent, at an estimated 35 of the total expected. All cactus sampled were less than 3 feet tall.

Along the gen-tie alignment, approximately 250 sand cholla were identified, as previously described. Approximately 25 grizzlybear prickly pear were observed. The results of the belt transect sampling for cacti are detailed in the Botanical Resources Report: Libra Solar Project (Phoenix 2022).

3.7.3.5 *Invasive Species*

Six invasive weed species were documented during the botanical survey of the Project solar site. Only one, perennial pepperweed (*Lepidium latifolium*), is listed as a noxious weed by the Nevada Department of Agriculture (NDA) (Category C). The other invasive weeds observed but not classified as noxious include cheatgrass (*Bromus tectorum*), red brome (*Bromus rubens*), halogeton (*Halogeton glomeratus*), prickly Russian thistle (*Salsola tragus*), and barbwire Russian thistle (*Salsola paulsenii*). These other species, although not listed by the NDA, are of concern due to their ability to invade and dominate areas of ground disturbance. Of particular concern are the two brome grasses: cheatgrass and red brome. The Project site was remarkably free of cheatgrass compared to adjacent areas, where it forms a dense understory. However, cheatgrass was the most commonly recorded invasive species (32 plants per acre), followed by barbwire Russian thistle (2.41 per acre). The other species observed had densities of less than 1 per acre.

No Category A noxious weeds were identified along the gen-tie. Halogeton, prickly Russian thistle, and cheatgrass were found throughout the gen-tie alignment. Some Saharan mustard (*Brassica tournefortii*), which is Category B noxious weed, was identified north US 95A. Perennial pepperweed (*Lepidium latifolium*) and tamarisk (*Tamarix*) (both Category C noxious weeds) were found near the Walker River and by the northwestern terminus of the gen-tie alignment. More information on invasive species is found in the Botanical Resources Report: Libra Solar Project (Phoenix 2022) and the Botanical Resources Addendum: Libra Solar Project (Phoenix 2023).

3.7.4 Environmental Consequences

3.7.4.1 *Methods*

Project impacts on vegetation are analyzed as either temporary or permanent. Temporary impacts would occur during Project construction and O&M. Some temporary impacts would be short-term and include areas of disturbance that can be reclaimed and revegetated following Project construction, within 3 to 5 years. Long-term temporary impacts include those that would not prevent recovery following Project completion but would remain throughout the duration of the Project's O&M phase, such as vegetation trimming or fugitive dust emissions. Permanent impacts would occur in areas that are paved or otherwise precluded from restoration to a pre-Project state for a decade or more. All ground-disturbing activity

where plants are removed by the roots are considered a permanent impact. The definition of a permanent impact also reflects the slow recovery rates of plant communities in desert ecosystems.

Direct effects to vegetation include damage or mortality to individual plants and an overall reduction in the total number of plants as well as effects that result in the loss of total area, biodiversity, vigor, structure, and/or function of vegetative habitat. Indirect effects are those that occur not as immediate effects of a Project-related action but are reasonably foreseeable consequences that would alter the characteristics or quality of a vegetative community due to changes in the surrounding conditions (e.g., spread of invasive species, changes in temperature, fugitive dust, herbicide drift).

3.7.4.2 *Proposed Action*

Construction Impacts

Native Vegetation Communities. Under the Proposed Action, disk and roll and grading methods that remove, crush, and bury vegetation would occur across most of the Project site to develop the solar panel arrays and other associated facilities. Vegetation would be permanently cleared from access roads as well as the footprints of concrete foundations for the inverter equipment, battery systems, substation, and O&M facilities. The gen-tie construction would require grading for the development of access roads and installation of tower foundations, with a total of 104 acres of permanent impacts. Improvements to Reese River Road would include widening from 15 to 24 feet and would permanently impact 10 acres of roadside vegetation. Other areas would be disturbed by temporary work areas, including laydown yards and conductor string locations along the gen-tie. In total, Project construction would cause the direct and permanent loss of up to 3,420 acres of native vegetation and the habitat that vegetation provides within the Project area. CRMP SOP 6 (SOPs Common to All) requires minimization of disturbance to the minimum amount needed; however, disturbance is still needed.

Grading, leveling, and disc and roll site preparation would remove vegetation (including root structures) and topsoil, resulting in high levels of soil compaction, and is expected to lead to permanent impacts to perennial vegetation, which could take decades to a century or more to recolonize the site even with restoration efforts (Grodsky and Hernandez 2020; Abella 2010). Anywhere soil disturbance is incorporated into site preparation, impacts to vegetation would occur and could persist well past the anticipated 30-year Project duration (Abella 2010; Chambers et al. 2013; Copeland and Butterfield 2017; Lovich and Ennen 2011; Lovich and Bainbridge 1999). Removal of native vegetation communities affects ecosystem functions such as wildlife cover, forage, migration corridors, species interactions, mycorrhizal associations, nutrient cycling, soil retention, and carbon sequestration (Beatty et al. 2017; Grodsky et. al 2020). Permanent vegetation loss would occur on up to 3,420 acres and is considered an adverse effect. Construction of the gen-tie would permanently disturb 104 acres of native vegetation, including shrubland vegetation but also some areas of riparian or woody wetland vegetation within the final 3.5-mile segment extending to the Fort Churchill substation (approximately 15 acres). Restoration of temporary disturbance areas would be implemented in accordance with the BLM-approved standards and requirements outlined in the Site Restoration and Revegetation Plan and in accordance with CRMP SOP 18 (SOPs Common to All).

Indirect impacts from construction of the Project are likely to include the potential for proliferation of existing and new invasive species within and outside of the Project area in adjacent undisturbed areas, which would result in a degradation of adjacent vegetation communities. Indirect impacts could also include generation of additional fugitive dust, which can impede photosynthesis and other metabolic processes of native plants, particularly along the access road. Increases in surface water runoff from the Project site could also affect hydrologic characteristics of these communities. The introduction of contaminants into these downstream habitats could result from accidental release of fuels or other substances, such as herbicides and dust palliatives, used in the Project area. Herbicides could drift off site and impact native plant communities or suppress restoration efforts after Project completion.

An Integrated Weed Management Plan would be implemented to control the spread of invasive species in the native plant communities of the Project area and adjacent areas. The plan would follow the Western Solar Plan PDFs, including PDF ER3-1, which requires implementation of principles of integrated pest

management and includes biological controls to prevent the spread of invasive species per the 2015 Final PEA Integrated Weed Management Plan (BLM 2015); tired from the 2016 PEIS for Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (BLM 2016), the National Invasive Species Council's Management Plan (NISC 2016), and a PUP. Air, Soils, and Water SOP 7 also requires noxious weed control in upland and riparian areas. These measures would reduce potentially adverse effects. Western Solar Plan PDFs SR2-1 and AQC2-1, as well as MM AQ-1, require soil stabilization measures to minimize air quality impacts from wind-blown dust on site, minimizing the off-site impacts. MM WR-3 would include bank stabilization and erosion repair. Surface-water run-off patterns would be managed through the use of detention basins to capture sediment and reduce off-site flow velocities, which would minimize the potential for off-site erosion. Current wash patterns may shift as a result of the Project, but current sediment loads are high due to existing limited cover. Contaminants would be contained through a SPCCP during and after construction to minimize the potential for off-site contamination that could impact vegetation communities, and only approved dust palliatives that are known to be habitat safe would be used.

Special Status Plant Species. A few populations or individuals of sensitive plant species are in areas proposed for disturbance. Some of these areas would result in unavoidable impacts, in particular those occurrences within the proposed solar site development areas. Several locations of sand cholla and one location of Tonopah milkvetch would be permanently lost through direct removal or crushing during disk and roll, grading, and other construction activities. However, the majority of occurrences of Tonopah milkvetch populations are located outside areas proposed for development or ground disturbance, so direct impacts to these populations would be avoided. Sand cholla was observed during belt transect surveys and is estimated at approximately 22 individuals within the solar site area of permanent disturbance. Based on the distribution throughout the solar site, it would be expected that the density of sand cholla would be similar in undisturbed areas outside the solar site. Direct impacts on occurrences and habitat of Tonopah milkvetch and sand cholla would be adverse but would not be expected to jeopardize the viability of either species in the region. Special status species could also be directly affected by the proposed access road improvements and construction of the gen-tie line. Only one individual of sand cholla that could be impacted was identified during surveys of the road, and no other species were located. However, construction of the gen-tie could impact additional sand cholla, two individuals of Tonopah milkvetch, and, potentially, a larger population of Nevada suncup. Direct impacts on occurrences and habitat of sand cholla and Nevada suncup within the gen-tie would be adverse but would not be expected to jeopardize the viability of either species in the region. Direct adverse effects on Lahontan beardtongue and Nevada oryctes are not anticipated since all observations are located outside areas proposed for disturbance. Indirect impacts to special status plants from construction of the solar site and gen-tie, as well as access road improvements and Project-related use, would include potential introduction, spread, and proliferation of invasive species. Herbicide drift and fugitive dust could also impact adjacent populations.

Project MM VG-2 would reduce impacts to rare plant populations, which includes pre-construction surveys for special status species; avoiding individuals or populations where possible in areas proposed for disturbance, particularly along the gen-tie alignment; seed collection of special status plants that cannot be avoided; restrictions on herbicide use within occupied habitat; and discussing avoidance of special status plants in a Worker Environmental Awareness Program (WEAP). Implementation of MM VG-2 would be required for any known locations of special status plant species or those discovered during pre-construction surveys, and restoration of temporary disturbance areas would be implemented in accordance with the BLM-approved standards and requirements outlined in the Site Restoration and Revegetation Plan, including using collected seeds of special status plants in restoration efforts. Seed sources used for restoration of temporary impact areas should be free of Palmer’s penstemon in order to protect existing populations of Lahontan beardtongue within the Project site and vicinity. Western Solar Plan PDFs SR2-1 and AQC2-1 require soil stabilization measures to minimize impacts from wind-blown dust on nearby special status species individuals or populations. An Integrated Weed Management Plan would be implemented to minimize impacts to habitat occupied by special status species as a result of weed infestations. Additional requirements for inclusion in the Integrated Weed Management Plan are

provided in MM VG-1 and include removal and monitoring of invasive species. The CRMP SOP 7 (Air, Soils, and Water) also requires noxious weed control in upland and riparian areas in coordination with other agencies. These measures would reduce potentially adverse effects; however, some disturbance to individuals or populations may be unavoidable and impacts would remain adverse.

Cacti. Project construction would have direct and indirect adverse effects on cacti. Approximately 3,420 acres of habitat for cacti would be permanently disturbed on the solar site, with an additional 104 acres for construction of the gen-tie. Access road improvements would include already disturbed areas, with approximately 10 acres proposed for new permanent disturbance from widening, which could contain some cacti. According to the results of the belt transect surveys, the estimated number of cacti potentially present across the solar site ROW is roughly 839. The majority of these cacti would be expected to be grizzlybear prickly pear; however, 22 individuals could likely be the BLM sensitive sand cholla, and other species of cacti may have gone undetected during surveys. Approximately 250 sand cholla and up to 25 grizzlybear prickly pear that could be impacted were identified along the gen-tie alignment.

Potential direct adverse impacts to cacti from the Project include mortality, morbidity, and disturbance to individuals or populations (Grodsky, Tanner, and Hernandez 2020). Indirect impacts from increased invasive species densities within the Project site and surrounding area could reduce growth and reproduction of cacti and increase the risk of fire, which cacti are not adapted to and cannot survive.

Cacti in areas of permanent disturbance where vegetation is removed (e.g., disk and roll site preparation, grading for roads and gen-tie lines, O&M buildings) would be salvaged and transplanted across the site or sold, in accordance with Project MM VG-1, the Site Restoration and Revegetation Plan, and the BLM regulations (e.g., SOP 18 [Common to All]). Of the approximately 839 or more cacti that may be encountered on the solar site, an estimated 65 percent would be permanently lost. With implementation of MM VG-1, cacti in temporary disturbance areas would be avoided or transplanted out of the way and then replanted at the site after construction. Some additional cacti would be lost for gen-tie and gen-tie access road construction, within the estimated 104 acres of disturbance, along with at least one sand cholla along the Project access road.

The cacti species found within the Project area are widespread, but they are long-lived and provide an important habitat for wildlife. The loss of up to 3,420 acres that contain cacti would be significant because even after Project decommissioning, these species would likely not occupy the site again for decades to a century or more (Abella 2010). Implementation of MM VG-1 includes measures that would reduce impacts and protect some cacti, such as by avoiding individuals where possible (particularly along the gen-tie) and salvaging and relocating healthy individuals outside of the impact areas. Prior to construction, the BLM would be provided with the number of cacti, by species, in permanent disturbance areas that would not be salvaged for replanting in temporary disturbance areas. The BLM Nevada IM No. NV-2019-036 stipulates that forest products, which include cacti, "will be sold at no less than their appraised price and/or the minimum price." The Applicant would pay for a plant permit per the BLM forestry regulations and according to the appraised price schedule currently in effect for all cacti destroyed during construction, in accordance with MM VG-1 and the BLM regulations.

Loss of cacti would still occur, and direct impacts to the majority of these plants within the Project area would be adverse. An Integrated Weed Management Plan that limits invasion and spread by invasive plant species would be vital to conservation of the remaining cacti in the solar site. Additional requirements for inclusion in the Integrated Weed Management Plan are provided in MM VG-1, as described above for vegetation communities, and include eradication and monitoring of invasive species and salvage/transplant of individual cacti that are found within disturbance areas. CRMP SOP 7 (Air, Soils, and Water) also requires noxious weed control in upland and riparian areas in coordination with other agencies. These measures would reduce potentially adverse effects. Western Solar Plan PDFs SR2-1 and AQC2-1 requires soil stabilization measures to minimize air quality impacts from wind-blown dust. Project MM PS-3 requires a Fire Prevention and Safety Plan/Management Plan to minimize the risk of wildfires caused by construction and O&M of the Project. Western Solar Plan PDFs WF1-1 and WF2-1 also require that solar developments be sited and designed to minimize the risk of fires and that fire

prevention measures are implemented for the life of the Project in coordination with the BLM, including inspections, monitoring, a WEAP, and adaptive management protocols.

Invasive Species. Invasive plant species are common throughout the solar site; however, because the landscape is mostly undisturbed, the existing densities are low. The Project has a high potential to increase invasive species densities and introduce other invasive or noxious weed species within areas of construction impacts, given the level of soil disturbance and vegetation removal proposed. Increased densities of weeds on site would affect the surrounding landscape by modifying native plant assemblages, reducing biodiversity, increasing competition with native species including sensitive plants, altering hydrologic conditions and soil characteristics, and increasing fire hazards.

The treatment (mechanical or chemical) of invasive plant species and noxious weeds could result in inadvertent injury or mortality to native plants and special status species that are in close proximity. The amount of herbicide needed to control weeds on the solar site after construction could also kill the remaining native seed banks in the soil that survived construction disturbance and impede the establishment of new vegetation; however, establishment of new vegetation is unlikely given the use of the disk and roll site preparation method. Many weed species actively germinate year-round, which would require year-round maintenance of the site. In the experience of the BLM, implementation of invasive species management plans is challenging due to rapid colonization of disturbed areas. If invasive species are managed, there is still a high likelihood that edge effects from the Project would increase invasive and noxious weeds in the surrounding off-site areas.

An Integrated Weed Management Plan, CRMP SOP 18 (SOPs Common to All), MM VG-1, Western Solar Plan PDFs ER1-1 and ER2-1, and CRMP SOP 7 (Air, Soils, and Water) would be implemented. These measures would reduce potentially adverse effects, but the Project could still result in a higher cover and density of invasive plant species within the solar site and in adjacent habitat over time. Construction of the gen-tie, as a linear feature, could also result in the spread of additional weed species along its length. These measures could reduce some adverse effects on native vegetation and special status species from the spread of invasive weeds. However, adverse direct and indirect impacts would still occur from increased disturbance in the area and expected introduction and proliferation of these invasive species.

Operation and Maintenance Impacts

O&M activities would involve less repetitive ground disturbance than construction and would not extend outside of areas initially disturbed for construction. Areas of temporary disturbance would be restored and allowed to recover to the extent possible. Monitoring for restoration progress and invasive species management would occur during O&M, as outlined in the Site Restoration and Revegetation Plan and Integrated Weed Management Plan. Native vegetation would not be expected to regrow during the O&M period in areas that were cleared by grading or disk and roll methods (approximately 65 percent of the application area).

O&M impacts are anticipated to result in continued reduction of perennial vegetation cover throughout the site across the 3,420 acres of permanent disturbance. Herbicides would be used to control the establishment and spread of invasive species, which could have indirect effects on adjacent vegetation communities. Vegetation removal and soil compaction across the site would also result in increased runoff of surface water during precipitation events, which could result in erosion and some increased sediment transport downstream of the Project site. To manage stormwater flows during O&M and reduce downstream sedimentation impacts, the Project would include detention basins to capture surface water runoff and sediment. New roadways could create erosion during O&M. All roads used for O&M would be inspected, and erosion would be repaired as part of the maintenance (MM WR-3) to avoid off-site impacts to vegetation.

Solar panels create shade that can alter soil temperature, soil moisture, and the amount of light available for plants to photosynthesize (Grodsky and Hernandez 2020; Vervloesem et al. 2022; Tanner et al. 2020). These altered microhabitat conditions may affect the abundance, survival, and reproduction of native desert plants and could result in the loss of native plant communities for the duration of the Project and

likely for decades to a century or more after decommissioning. This long-term loss of native vegetation can lead to increased weeds, dust emissions and erosion, loss of wildlife habitat and biodiversity, and adverse visual effects.

Western Solar Plan PDF ER3-1 requires the Applicant to maintain native vegetation to the extent possible and control invasive species during O&M of the Project. Western Solar Plan PDFs SR3-1, SR3-2, and AQC2-1 would be implemented to control sources of fugitive dust generated during O&M, including use of water and/or soil palliatives approved by the BLM. Consultation with the BLM would be maintained throughout O&M in accordance with Western Solar Plan PDFs ER3-1 and ER3-2, which require utilizing integrated pest management and an adaptive management strategy, as necessary.

Decommissioning Impacts

Decommissioning is anticipated to only directly affect areas that were previously disturbed during Project construction and O&M. With the soil disturbance and compaction from Project construction, most of the native seed bank in the soil would not be viable, so other sources of native seed would be needed for restoration. This need could put added pressure on regional seed sources, resulting in an adverse impact on adjacent communities where seeds are sourced. Vegetation communities could take as long as a century to fully recover to pre-disturbance conditions, if they do at all (Abella 2010). Over a long period of time, the cover of perennial plants would be reestablished. The Decommissioning and Site Reclamation Plan would include a description of acceptable seed types, seeding techniques, a monitoring and reporting plan, and performance standards, per MM VG-1. Decommissioning would set the Project site on a trajectory to regain some percentage of native perennial species cover; however, some species are not expected to ever recolonize the site given the level of disturbance, which would be an adverse effect.

Impacts to special status plant species from decommissioning would not be expected because individuals of sensitive species would likely be permanently lost during the construction and O&M phases of the Project. Implementation of a Decommissioning and Site Reclamation Plan would reduce potential adverse effects to sensitive plant habitats. Should newly discovered sensitive plant species be identified prior to decommissioning, MM VG-2 would also apply to these locations. Western Solar Plan PDFs SR4-1, SR4-2, and SR4-3 would also be applicable as they address reclamation, applying design features to avoid soil erosion, restoring original grades as much as possible, and restoring native plant communities.

Cumulative Impacts

A number of projects and other management actions in the region could potentially contribute to cumulative impacts to vegetation, including other current and proposed utility-scale solar development projects, transmission lines, and pit mining as proposed as part of the Pumpkin Hollow Copper Mine Expansion. Other proposed solar projects within the Western Solar Plan variance areas and transmission line projects would involve ground disturbance and vegetation clearing, resulting in the loss of native vegetation communities, cacti, and special status plant species. Similar to the Project, these cumulative projects would also likely result in the proliferation of invasive species and fugitive dust. The cumulative projects could result in increased fire frequency or intensity resulting from a combination of abundant invasive plant fuels and higher likelihood of anthropogenic ignitions that could have potentially severe ecosystem effects, adversely affecting sensitive plant communities and wildlife (Abella 2010; Jeanne C. Chambers et al. 2013; Grodsky and Hernandez 2020). Cumulative impacts on regional vegetation resources include the loss of native vegetation, increased spread of invasive species, disturbance of the soil seed bank, and loss of both perennial and annual plant diversity. Slow recovery from disturbance means impacts to these vegetation communities accumulate over time.

Most vegetation within the region that would be affected by other actions is on BLM-managed land. Other solar projects within the variance areas would need to adhere to Western Solar Plan PDFs to avoid or reduce impacts to vegetation resources. Implementation of Western Solar Plan PDFs for the protection of ecological resources, soils, air quality, and wildland fire as well as all relevant MMs and BLM-required plans developed for the construction, O&M, and decommissioning of the Project would reduce the Project's contribution to adverse effects on vegetation resources. Cumulative impacts would remain due to the amount of areas within the region that could potentially be developed for solar.

3.7.4.3 *Alternative 1 – Major Drainage Avoidance, Fenced Corridors, and Vegetation and Topography Maintenance*

Construction Impacts

Alternative 1 would result in fewer impacts to vegetation from construction of the Project compared to the Proposed Action. This alternative would include site preparation and construction methods that avoid major washes and maintain more areas of native perennial vegetation than the Proposed Action, including limited overland travel that keeps vegetation intact (40 percent of the solar arrays at approximately 1,220 acres) or overland travel that crushes vegetation but leaves the root masses intact (another 40 percent of the solar arrays at approximately1,220 acres). Traditional construction methods (i.e., disk and roll and grading) would be allowed on up to approximately 20 percent of the solar array blocks (612 acres). This alternative would result in an increase in the acreage of native vegetation that would be maintained or potentially restorable within the solar arrays (2,450 acres), which would be a reduction in that same amount of native vegetation lost from grading and disk and roll under the Proposed Action. At the end of construction, approximately 60 percent of the application area would have vegetation maintained versus 36 percent under the Proposed Action. Within most construction areas for the solar panel arrays, topography, soils, and vegetation would be left in place, and the installation of solar array components would occur over these existing resources. Vegetation not subject to grading, crushing, or other disturbance would be trimmed, but only if its height would interfere with the installation of the solar panels or safety. All other Project components would remain the same as the Proposed Action.

With the reduction in areas that would be permanently impacted through grading or disk and roll, as well as a maximum threshold set for native perennial vegetation loss, this alternative would result in fewer impacts to native vegetation communities, special status plant species, and cacti within the Project solar site as compared to the Proposed Action. In areas where soils remain intact, there would be a reduced likelihood of invasive species infestations and loss of soil seed banks (Jeanne C. Chambers et al. 2013; Copeland and Butterfield 2017; Grodsky, Tanner, and Hernandez 2020; Jeffrey E. Lovich and Ennen 2011a). Although disturbances to vegetation and soils across the Project site would be reduced, construction activities could still introduce new weed species to the Project area or spread seeds of existing weeds. Western Solar Plan PDFs, Project MMs, and the Integrated Weed Management Plan as described above for the Proposed Action would be implemented under this alternative and would likely be more successful, with fewer infestations, due to the reduction in ground disturbance. With the implementation of these combined measures and the reduced overall disturbance to vegetation from construction, this alternative would result in fewer impacts to native vegetation communities as compared with the Proposed Action, but impacts would still occur and thus remain adverse.

Operation and Maintenance Impacts

Under Alternative 1, vegetation would be maintained across the Project site during the O&M phase of the Project. O&M vehicle use within the solar site could result in ground disturbance and crushed vegetation but would be limited to access roads and the shortest routes possible off roads. When possible, work activities would be performed on foot. Vegetation would be trimmed as needed to prevent interference or safety issues within the solar facilities, which may reduce plant vigor and survival and may remove flowers and seeds depending on when the plants are trimmed. Ground disturbance associated with trimming may also result in additional crushing or other damage of vegetation. However, compared with the Proposed Action, this alternative is expected to result in survival of perennial plants, including cacti. Determinations for trimming would be made on an individual solar array basis so that there would be no mass trimming actions on large areas of vegetation. During O&M of the Project, drive and crush areas would be actively restored. Approximately 40 percent (1,220 acres) of the areas under the panels would be constructed using drive and crush methods. At least 20 percent of those areas are expected to be restored to native vegetation types during the 30-year O&M phase, for a total of 245 acres. By the end of the O&M phase, up to 65 percent of the application area is expected to have native vegetation cover (as compared to 36 percent under the Proposed Action). The Integrated Weed Management Plan would be implemented and would result in reduced impacts to vegetation during O&M. This alternative would also result in reduced indirect impacts from temperature increases during O&M of the Project. Retaining

vegetation within solar panel arrays would maintain the temperature of the site as compared to projects where vegetation is completely removed (Abella 2010; Barron-Gafford et al. 2019; Devitt et al. 2022; Williams et al. 2023).

Decommissioning Impacts

Decommissioning and site restoration would be more successful than under the Proposed Action due to a reduced area of permanent disturbance, with vegetation recovering more easily and intensive restoration likely needed only in graded areas. The long-term impacts to vegetation communities would be reduced. Implementation of the Decommissioning and Site Reclamations Plan would further reduce potential adverse effects on vegetation during decommissioning. Decommissioning under Alternative 1 would therefore result in an overall reduced impact to native vegetation.

Cumulative Impacts

Less impactful construction techniques and retention of vegetation during construction and O&M would result in higher vegetation survival and plant diversity, which would reduce the contribution to cumulative losses and/or adverse effects to native vegetation within the region. Because the anticipated recovery time post-Project is expected to be less for this alternative than for the Proposed Action (5 to 10 years for the majority of the Project site, as opposed to hundreds of years), cumulative impacts would be reduced. Retaining vegetation also improves vegetation community resiliency for adapting to climate change impacts. Cumulative impacts to native vegetation communities would still be adverse due to ground disturbance, crushing, trimming, dust emissions, and invasive species; however, these impacts would be reduced under this alternative and would result in a reduced contribution to any cumulative impacts to vegetation resources within the Mason Valley.

3.7.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Construction, O&M, and decommissioning impacts from this alternative would be the same as described for the Proposed Action for the solar site. Impacts could vary from the use of supplemental access roads. These routes have already been disturbed and are not likely to contain suitable habitat for special status plants directly adjacent. No upgrades or new disturbance would be associated with the use of supplemental access roads, so there would be no direct impacts to vegetation; however, there could be indirect impacts. Roads are common vectors for invasive species, and the use of additional access routes could contribute to the proliferation of weeds. The increased use of unpaved segments of roads could also contribute to an increase in impacts on nearby vegetation from fugitive dust. Because these roads are currently used and maintained, it is unlikely that these effects would be noticeable beyond existing conditions. The routes would only regularly be used as supplemental access during Project construction and would not be used during O&M, so there would be no impacts from O&M. Supplemental access routes may be used during decommissioning as well, depending on timing, but resulting impacts are not expected to exceed those from construction. This alternative would result in the same contribution to cumulative impacts as described for the Proposed Action.

3.7.4.5 *Alternative 3 – Alternative Gen-tie Connecting to Greenlink West*

Construction, Operation and Maintenance, and Decommissioning Impacts

Construction, O&M, and decommissioning impacts from this alternative would be the same as described for the Proposed Action for the solar site and the access road. The gen-tie would be reduced from a 24.1-mile-long line from the solar site to the Fort Churchill substation to a 0.54-mile-long gen-tie line extending from the eastern boundary of the solar site to a new switching station under the adjacent Greenlink West line. The new gen-tie and switching station would result in disturbance of just under 12 acres, a reduction of 92 acres of permanent disturbance and 100 acres of temporary disturbance as compared with the Proposed Action. Direct and indirect impacts to vegetation from construction, O&M, and decommissioning would thereby be reduced as compared with the Proposed Action.

Cumulative Impacts

Cumulative impacts to vegetation would be similar to those for the Proposed Action. The gen-tie length would be reduced from 24.1 miles to 0.54 mile, which would reduce the Project's contribution to native

vegetation disturbance and removal within the Mason Valley. The reduction in impacts would be limited, as the solar field would contribute the largest cumulative loss of vegetation within the analysis area.

3.7.4.6 *No Action Alternative*

Under the No Action alternative, the Project would not be constructed, and existing land uses would continue. The BLM would continue to manage the land consistent with the CRMP. There would be no impacts to vegetation from large scale solar construction, and existing habitat conditions and trends would remain. The vegetation communities currently exhibit gradual encroachment from invasive species, which may continue to exist or expand over time.

3.7.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize vegetation impacts.

Table 3.7-2 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• AQC2-1 • ER1-1, ER2-1, ER3-1, ER3-2, ER4-1, • SR2-1, SR3-1, SR3-2, SR4-1, SR4-2, and SR4-3 • WF1-1 and WF2-1
Carson City CRMP SOPs	• Soil, Watershed, and Air SOP 7 • Common to All SOPs 6 and 18
Management Plans	• Site Restoration and Revegetation Plan (Available on the Project website) • Integrated Weed Management Plan (Available on the Project website) • Workers Environmental Awareness Program • Fire Prevention and Safety Plan/ Management Plan • Site Decommissioning and Reclamation Plan

Mitigation Measures

The Project would comply with the mitigation measures in Table 3.7-3 to minimize adverse impacts to vegetation.

Table 3.7-3 Vegetation Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM VG-1: Site Revegetation, Weed Management, and Reclamation	The Site Restoration and Revegetation Plan, Integrated Weed Management Plan, and Decommissioning and Site Reclamation Plan shall include the following requirements, at a minimum: • Weeds – A Pesticide Use Proposal shall be completed and signed prior to the need for the use of pesticides. – The Applicant is responsible for treatment and control of all non-native and noxious weeds for the lifetime of their ROW and until

Mitigation Measure Identifier and Title	Description
	all restoration/decommissioning standards have been met. Specific control measures shall be identified in an Integrated Weed Management Plan. – The contractor used for weed treatments shall be familiar with local vegetation to the extent that they are able to identify habitat for, and identify plant material belonging to, the sensitive plant species within the Project area. – Vector areas, including along roadways, shall be cleared (through biological and/or chemical control) of any weed species that have or shall have seeds present, prior to ground disturbance. – A BLM-approved botanist shall conduct periodic surveys for weed species throughout construction and O&M. Surveys shall be conducted when weed species are detectable but before they are anticipated to have gone to seed each year. – The Applicant is responsible for the treatment of any new weeds that are introduced or existing weeds that spread to new areas as a result (as far as can be reasonably determined) of Project activities during construction, restoration of temporary disturbance, and O&M. – All weeds shall be treated before they go to seed. If any weeds are discovered that are beginning to go to seed before they have been treated, they shall be hand-pulled, bagged in a puncture-proof bag or container, and disposed of in an enclosed, off-site trash receptacle. – Reporting shall be conducted biannually during construction, restoration of temporary disturbance areas, and the first 3 years of operation and maintenance. This monitoring shall be compiled into an annual report that details all dates when monitoring occurred; the dates of all weed treatments; the number and types of weeds found; if any new weeds were located; and the amount, types, and locations of herbicides used (in accordance with the PUP). Reporting shall be submitted to the BLM on or before December 31 of each year. During the initial years when biannual reporting is required, reports shall also be submitted on or before July 1 (to document that spring surveys and treatments for weeds took place). – Weed vectors (e.g., roads, transmission lines) associated with the Project shall also be monitored and treated according to the Integrated Weed Management Plan. – Only certified weed-free materials shall be used during construction, restoration, and O&M. This includes gravel, seed mixes, and any waddles or other erosion control devices. – Prevention measures shall be implemented, including Worker Environmental Awareness Program (WEAP) training and vehicle and equipment cleaning protocols (as described in the Integrated Weed Management Plan) as well as construction reporting. • Cacti

Mitigation Measure Identifier and Title	Description
	– Where feasible, healthy, viable cacti within permanent disturbance areas where vegetation is removed (e.g., roads, battery storage areas, traditional development areas, transmission line towers) shall be salvaged and planted in an on-site nursery for use in restoration areas, per BLM's forestry program guidance. More details shall be included in the Site Restoration and Revegetation Plan.
MM VG-2: Special Status Plant Pre-Construction Surveys	• Prior to construction, a botanical survey for special status plant species shall be performed to identify and flag individuals or populations that are present within potential impact areas. These species shall be avoided where possible, and where it is possible for the individual to survive after construction (e.g., along the edge of the solar facility or temporary construction areas along the gen-tie). • Herbicide treatment shall be completed in special status plant habitat prior to March 15 to avoid non-target impacts to sensitive plant species. After March 15, only hand-pulling of weeds in any sensitive milkvetch habitat is permitted. • Where avoidance is not possible, seed collection of special status plants that would be affected shall occur in accordance with the Site Restoration and Revegetation Plan. Collections shall follow the Center for Plant Conservation (CPC) guidelines for seed collection and include storage at a qualified CPC regional seedbank. Collection of seeds shall be used in project revegetation efforts. • Workers Environmental Awareness Program (WEAP) training shall include information on habitat for all sensitive species, including how that habitat is marked on the ground (e.g., flagging, flagging color) in order for contractors to follow appropriate avoidance and weed treatment stipulations.

3.7.4.8 *Irreversible, Irretrievable, and Residual Impacts*

Irreversible or irretrievable impacts are those that cannot be reversed or recovered. The Proposed Action would result in the permanent loss of native vegetation on 3,420 acres within primarily Bailey's greasewood shrublands. Site reclamation, even with substantial effort, is not expected to restore these impacted areas to pre-Project conditions for decades to a century or more. Repeated restoration efforts would be necessary. Many species, such as cacti and other perennial shrubs, would not be expected to recolonize the site, and changes to native species composition would be considered permanent. Approximately 839 individual cacti could be permanently lost from Project construction. Most of these are the more common grizzlybear prickly pear, but some special status species of sand cholla (an estimated 22 individuals, with potentially more along the gen-tie) would be lost and are not likely to grow back in areas of disturbance. Permanent loss of native vegetation communities would remain with the construction techniques identified in the Proposed Action even with the identified mitigation measures. These losses would be considered irretrievable. Alternative 1 would have similar effects but they would be reduced, and native vegetation cover would be more retrievable. Alternatives 2 and 3 would have impacts the same as or similar to the Proposed Action.

Residual effects would include the direct and indirect impacts from the Project, including soil erosion, fugitive dust, and the spread of invasive weed species that would persist even with mitigation measures. These impacts would be minimized with Western Solar Plan PDFs, management plans, and Project-specific MMs, but would likely not be eliminated. Alternative 2 would reduce residual effects the most, as compared with the Proposed Action and other alternatives.

3.8 General Wildlife; Special Status Wildlife Species; and Threatened, Endangered, Proposed, and Candidate Species

3.8.1 Introduction

This section outlines wildlife resources, including special status species, within the Project area affected by construction, O&M, and decommissioning. General wildlife includes non-listed species, while special status species encompass BLM sensitive species, MBTA/BGEPA-protected avian species, USFWS BCC birds, NAC Chapter 503-protected species, and NDOW SGCN. Threatened, endangered, proposed, and candidate species are identified under the ESA. The Project does not fall within Bi-State sage grouse habitat outlined in the 2016 Plan Amendment. In November 2023, BLM published an updated list of BLM Nevada special status species, screened for potential occurrence on the Project site. The BLM manages wildlife and their habitats according to the CRMP, BLM Manual 6500 Fish and Wildlife Conservation, and the BLM Manual 6720 Aquatic Resource Management. The BLM provides policy and guidance for the conservation of BLM special status species and habitat on BLM-administered lands, including through BLM Manual 6840. Wildlife conservation by the State of Nevada is regulated under NRS Title 45 and is further guided by the Nevada Wildlife Action Plan (NDOW 2022).

The following survey reports were used to determine the likelihood that special status species are present within the Project area and could be affected by construction, O&M, and decommissioning of the Project.

- Botanical Resources Report: Libra Solar Project (Phoenix 2023b)
- Golden Eagle (*Aquila chrysaetos*) Survey Report, Libra Solar Project (Dugan and Phoenix 2022)
- Memorandum – Preliminary Results for Libra Solar Avian & Raptor Surveys (Phoenix 2023)
- Bat Acoustic Activity Surveys for the Libra Solar Project, Final Report (Western Ecosystems 2023)
- Pale and Dark Kangaroo Mouse Survey Report, Libra Solar Project (Phoenix 2022a)
- Biological Habitat Assessment for Libra Solar, LLC (Phoenix 2022a)

3.8.2 Analysis Area

The analysis area encompasses the Project site, including the solar site, gen-tie corridor, and access roads, along with adjacent mountain ranges and the Mason Valley. This section evaluates impacts on habitat connectivity and migration for various wildlife, including wide-ranging species like bats, birds, and large mammals. For species with smaller home ranges (e.g., reptiles, small mammals), impacts are primarily confined to the Project area and nearby surroundings. Additionally, the analysis extends up to 10 miles from the Project site for golden eagle protection, as per USFWS guidelines (USFWS 2020).

Cumulative effects are assessed within the Mason Valley and Wassuk Range, considering similar special status species populations and habitats that may be impacted by other projects or management actions in the region, aiming to maintain long-term sustainability of species diversity.

3.8.3 Affected Environment

3.8.3.1 *General Wildlife*

The area hosts a diverse range of wildlife, including mammals, reptiles, birds, and occasional wild horses. Evidence suggests cattle grazing on the solar site, indicated by fencing, watering improvements, and cow manure. While not within a BLM-designated herd management area, wild horses occasionally utilize the land. Terrestrial invertebrates, vital for ecosystem health, include moths, butterflies, bees, ants, beetles, spiders, scorpions, grasshoppers, and crickets. Surveys conducted on the solar site identified special status species such as small mammals, burrowing owls, avian species, and bats. Reconnaissance surveys were performed in December 2021 and January 2022 to identify general wildlife habitats (Phoenix 2022b).

3.8.3.2 *Big Game Species*

Big game species in the region include desert bighorn sheep (*Ovis canadensis nelsoni*) and pronghorn antelope (Antilocapra americana), both managed as game animals by NDOW. Although desert bighorn sheep are not found within the Project area, they may inhabit higher elevations in the Wassuk Range to the east, adjacent to the solar site, and in the Singatse Range to the west (>10 miles away from the solar site, as shown in Figure 3.8-1). Pronghorn antelope, while primarily distributed further east and west from the solar site, have been observed foraging and migrating within the Project area (as shown in Figure 3.8-1). While winter fat, a critical forage component for big game species, is present in the landscape, the study area is not considered a vital migration corridor for these species.

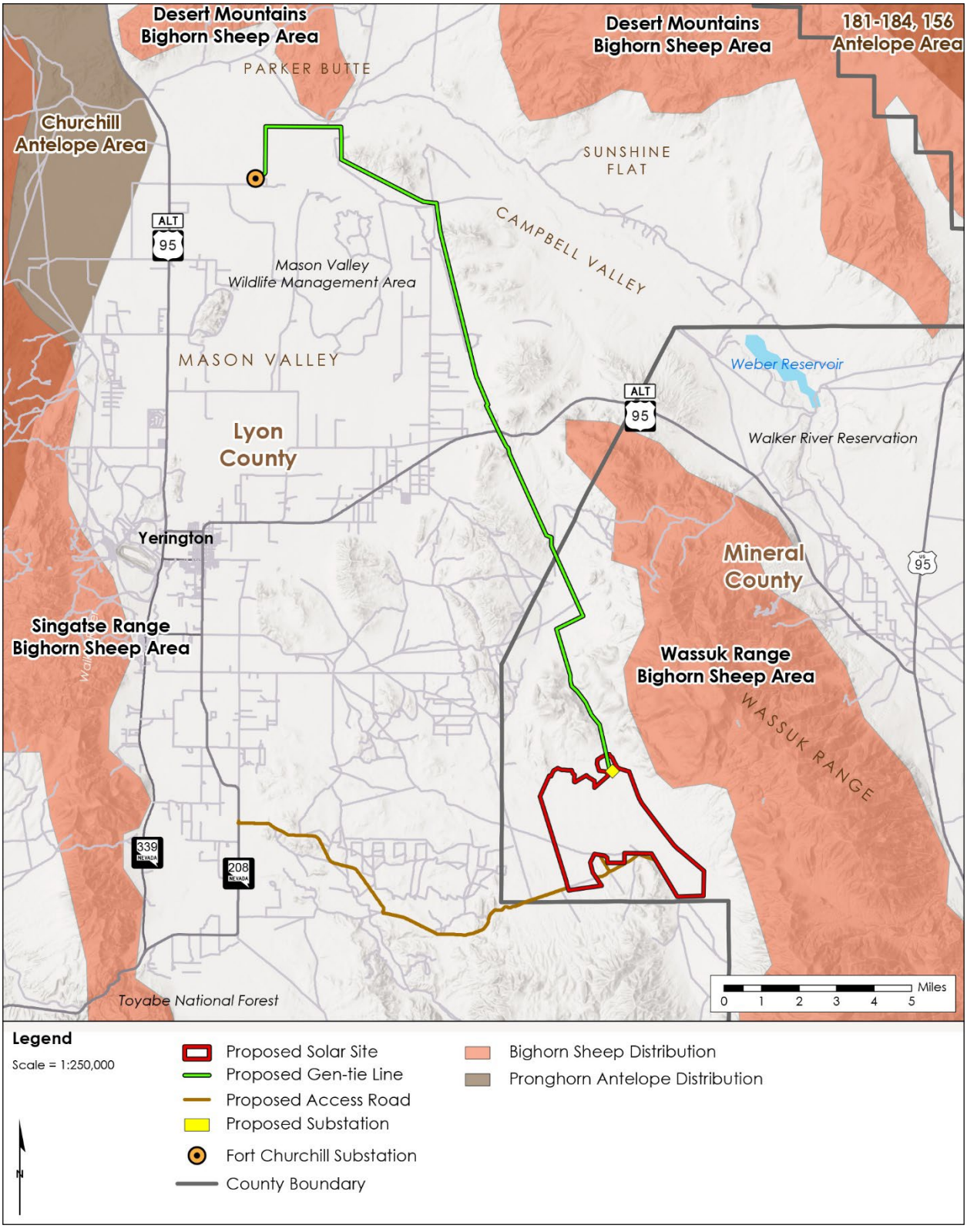
3.8.3.3 *Small Mammals and Amphibians*

A small-mammal trapping study was performed for the study area to determine whether two BLM sensitive species, dark kangaroo mouse (*Microdipodops megacephalus*) and pale kangaroo mouse (*Microdipodops pallidus*), were present, as an initial study indicated a potential to occur. Neither was captured during the trapping sessions (Phoenix 2022a). However, one NDOW Species of Conservation Priority (Wildlife Action Plan Team 2012), which was also included in the November 2023 list of BLM sensitive species, the desert kangaroo rat (*Dipodomys deserti*), was captured. This species is found in a wide range of arid habitats in the Great Basin, usually low deserts with sandy soil and sparse vegetation (Nevada Department of Wildlife (NDOW) 2022).

A few additional small mammal species that are on the November 2023 list of BLM sensitive species could occur in riparian areas around the Walker River (in the vicinity of the gen-tie), including the western water shrew (*Sorex navigator*), the Inyo shrew (*Sorex tenellus*), and the Walker river pocket gopher (*Thomomys battae cinerus*).

One amphibian was added to the BLMs list of sensitive species in November 2023, which could also occur along the Walker River, the northern leopard frog (*Lithobates pipiens*).

Figure 3.8-1 Desert Bighorn Sheep and Pronghorn Antelope Ranges within the Vicinity of the Proposed Project



Source: (NDOW 2010)

3.8.3.4 *Bats*

Bat activity was monitored at two stations within the study area, representing desert scrub typical of the solar site, from March to October 2022. Of the 19 potential bat species, 18 were detected, excluding the uncommon spotted bat (Western Ecosystems 2023). All bats are protected under Nevada law and are considered Species of Conservation Priority by NDOW (NDOW 2022). Overall bat activity was lowest in spring and highest in fall, during migration (Western Ecosystems 2023). Results suggest consistent bat habitat quality across the study area. While detectors were not near attractants like water bodies or abandoned mines, which are absent in the solar site, the gen-tie crosses permanent water sources that could attract bats. The study area offers marginal habitat for roosting or foraging, with more suitable areas around Walker Lake and abandoned mines southeast of the site.

3.8.3.5 *Birds*

Golden Eagle

Mountainous areas in the Wassuk Range, particularly to the north, northeast, east, and southeast of the study area, contain prime golden eagle nesting habitat. Conversely, the western and central parts, including the solar site and its vicinity within 3 miles, lack suitable nesting spots due to flat terrain and absence of vertical cliffs. However, the Project site serves as foraging habitat for golden eagles.

Surveys following USFWS protocols in winter, spring, and summer of 2022 identified six golden eagle nests across three locations within the study area and its 10-mile buffer (Dugan and Phoenix 2022). None were active or contained eggs or chicks, with no signs of recent use. Moderate human activity was observed, including paved roads, OHV travel, farming, and mining operations. Live golden eagles were also spotted. No nests were found near the gen-tie alignment or Greenlink West transmission line.

Migratory Birds

Migratory birds, protected under the MBTA and NAC Section 503.050, were surveyed during avian point-count surveys in spring, summer, and fall of 2022. Overall, species diversity and abundance were low, likely due to below-average rainfall in preceding years affecting avian productivity. The surveys identified 11 species: American kestrel (*Falco sparverius*), barn swallow (*Hirundo rustica*), Brewer's sparrow (*Spizella breweri*), common raven (*Corvus corax*), house finch (*Haemorhous mexicanus*), horned lark (*Eremophila alpestris*), loggerhead shrike (*Lanius ludovicianus*), mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), sagebrush sparrow (*Artemisiospiza nevadensis*), sage thrasher (*Oreoscoptes montanus*), and western meadowlark (*Sturnella neglecta*).

Additionally, call broadcast surveys for burrowing owls were conducted at 20 sites throughout the solar site during spring 2022, but no vocalizations were recorded, indicating their absence (Phoenix 2023). However, the revised gen-tie alignment remains unsurveyed, potentially harboring burrowing owls and other MBTA-protected species.

In addition to the avian point-count surveys, raptor surveys were conducted in October 2022 (Phoenix 2023). Incidental observations of raptors were also recorded during the golden eagle protocol surveys (Dugan and Phoenix 2022). Additional species observations include Cooper's hawk (*Accipiter cooperii*), ferruginous hawk (*Buteo regalis*), northern harrier (*Circus hudsonius*), osprey (*Pandion haliaetus*), prairie falcon (*Falcomexicanus*), sharp-shinned hawk (*Accipiter striatus*), and turkey vulture (*Cathartes aura*). Raptor nests were also observed during golden eagle surveys, including six red-tailed hawk nests, four common raven nests, and one unidentified falcon nest. All were unoccupied except one red-tailed hawk nest. The occupied red-tailed hawk nest was observed in a large tree; all other nests were located on rocky substrates including vertical cliff faces, rocky buttes, rock cavities, and ledges.

Several avian species with potential to occur in the Project area are on the BLM's November 2023 list of BLM sensitive species, including sagebrush sparrow, short-eared owl (*Asio flammeus),* long-eared owl (*Asio otus*), ferruginous hawk, Swainson's hawk (*Buteo swainsoni*), Peregrine falcon (*falco peregrinus*), bald eagle (*Haliaeetus leucocephalus*), least bittern (*Ixobrychus exilis*), long-billed curlew (*Numenius americanus*), and bank swallow (*Riparia riparia*). Of these, the long-eared owl, Swainson's hawk, bald

eagle, least bittern, long-billed curlew, and bank swallow do not have habitat within the solar site, but could be found along the Walker River in the vicinity of the Walker River.

Bi-State Sage-grouse

The Bi-State greater sage-grouse, a genetically unique population, resides in the California/Nevada Bi-State area. Currently under review for ESA listing, this distinct population segment (DPS) consists of several small, localized breeding populations distributed among sagebrush habitats (Bi-State Technical Advisory Committee Nevada and California 2012). The solar site falls partially within the Mount Grant PMU, where habitat limitations affect nesting and brood rearing. While the solar site lacks sagebrush species supporting Bi-State sage-grouse, the nearest suitable habitat is approximately 0.25 miles from the gen-tie, located in a valley over 300 feet lower in elevation (see Figure 3.8-2). This habitat is of low value or transitional, with no known leks present.

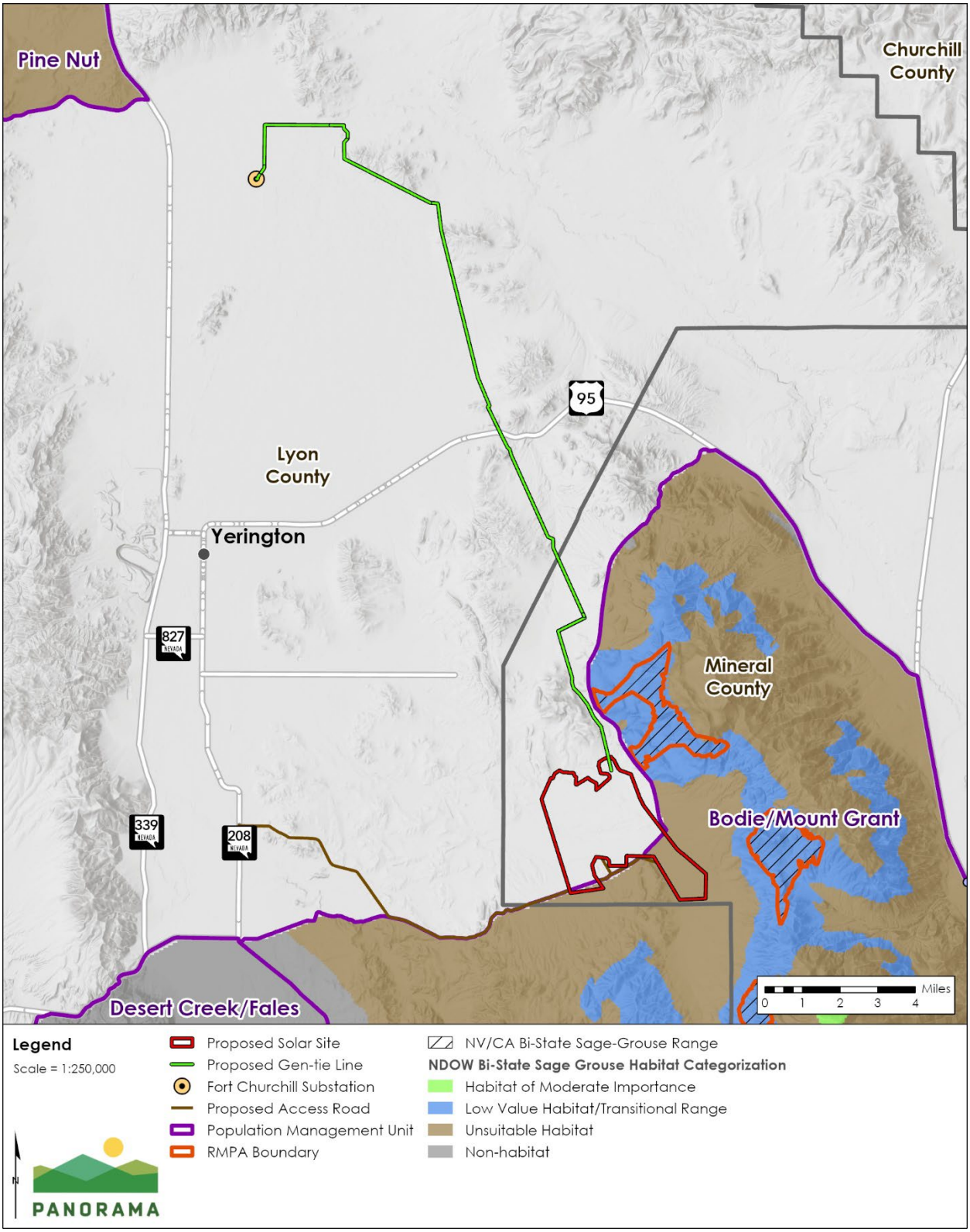
Western Yellow-billed Cuckoo

The western yellow-billed cuckoo (*Coccyzus americanus*) is a migratory bird species, traveling between its breeding grounds in North America (Continental U.S. and Mexico) and its wintering grounds in Central and South America each spring and fall, often using river corridors as travel routes (USFWS 2014; Johnson et al. 2008).

On October 3, 2014, the USFWS listed the western Distinct Population Segment (DPS) of the yellow-billed cuckoo as threatened under the ESA (79 FR 59991). Historically, these cuckoos bred in riparian areas across North America, but their habitat distribution, range, and population numbers have declined significantly over the past 50 years (Johnson et al. 2008; USFWS 2014). Currently, they are only known to breed in isolated locations in Idaho, Wyoming, Colorado, Utah, Arizona, Nevada, California, and parts of northern Mexico (Johnson et al. 2008; USFWS 2021).

Western yellow-billed cuckoos require riparian vegetation with tall trees and a dense understory, often near water sources like rivers, lakes, and wetlands. While they breed in riparian woodlands with cottonwoods and willows, their winter habitat preferences are less understood but include areas with brushy savannas and woodlands near water. Critical habitat was designated in 2021, excluding Nevada(U.S. Fish and Wildlife Service (USFWS) 2021). Despite three documented sightings near the gen-tie, including one in Mason Valley WMA in 2016 and a pair near Schurz in 2013, the marginal habitat quality within the gen-tie area makes it unlikely for western yellow-billed cuckoos to be present there (Enders, Mark 2023).

Figure 3.8-2 Bi-State Greater Sage Grouse Population Management Units and Habitat Suitability



Source: (BLM 2016; NDOW 2015; 2017)

3.8.3.6 *Monarch Butterfly*

The monarch butterfly (*Danaus plexippus plexippus*), a federal candidate species for ESA listing and a BLM sensitive species, may not be abundant in arid environments like the Project site due to limited nectar-producing plants. However, narrowleaf milkweed, a host plant for monarch larvae, was observed within the gen-tie analysis area. Although no milkweed species were found in the solar site or access road areas, sightings of monarchs in Mason Valley WMA, where milkweed is more prevalent, have been reported, albeit dating back to the 1980s (Phoenix 2023b). Recent sightings from 2016 and 2020 have occurred around agricultural fields north and south of Yerington, outside the Project vicinity.

3.8.4 Environmental Consequences

3.8.4.1 *Methods*

The Project may directly impact wildlife, including special status species, through noise disturbance, harassment, entrapment, injury, and mortality, as well as changes in habitat use or behavior. Indirect effects may include alterations to habitat characteristics or quality, such as loss, degradation, or modification.

These effects can be categorized as short-term, occurring during construction and expected to last up to 5 years post-construction; long-term, occurring during the 30-year O&M phase; and permanent, resulting from complete removal of native vegetation. In desert ecosystems, permanent effects may last for a century or longer, or may not recover at all. Predicting long-term effects beyond 30 years is challenging due to uncertainties in species interactions and environmental variables over time.

3.8.4.2 *Proposed Action*

Construction Impacts

General Wildlife. Project construction would impact native vegetation, reducing habitat for wildlife. The construction would lead to 3,420 acres of permanent ground disturbance across the solar site, access roads, and gen-tie. CRMP SOP 6 requires minimizing vegetation disturbance. While locally adverse, the loss of habitat during construction would not meaningfully affect the Central Basin and Range Province, covering 42,486 square miles (27,191,040 acres), with 8,752 square miles (5,601,280 acres) in northern Nevada. Wildlife is unlikely to remain on site due to ground disturbance, human presence, and vegetation removal. Direct effects like injury or mortality may occur from contact with Project facilities. Visual, noise, and vibration disturbances could alter wildlife behavior, impacting foraging and breeding. Mitigation measures include MM WILD-1, requiring on-site biologists, MM WILD-2 discussing wildlife avoidance in the WEAP, and MMs WILD-3 and WILD-4 to prevent injuries and provide escape methods. These measures would reduce adverse effects, though not entirely avoidable. Impacts are short-term, not resulting in meaningful loss of local wildlife.

Exposure to herbicides or hazardous materials, such as oil, can directly harm wildlife, affecting their hormones, behavior, and reproduction. Herbicide use would follow BLM regulations, employing low-toxicity options according to label requirements and agency guidance. Integrated Weed Management Plans and PUPs would manage herbicides, aligning with BLM manuals and PEIS guidelines (BLM 2007).

Construction could indirectly impact wildlife by causing habitat loss and introducing invasive species. This loss reduces forage, shelter, and nesting opportunities, potentially leading to increased competition and barriers to gene flow. Stress and disruption to breeding periods may occur due to habitat loss (Grodsky et. al 2017). Construction activities could also alter disturbance regimes, facilitating invasive species spread (Lovich and Ennen 2011; Tanner et al. 2020) Alternative 1 methods, like drive and crush over vegetation, would reduce habitat impacts. Mitigation measures, including the BLM-required Integrated Weed Management Plan and MM WILD-1, would help mitigate these effects, but some adverse impacts would still occur.

Other MMs and Western Solar Plan PDFs would be enacted to minimize direct and indirect effects on wildlife during construction. These include the development of a Site Restoration and Revegetation Plan

to reduce habitat loss and accelerate habitat recovery, and the designation of a qualified biologist to oversee compliance with ecological protection measures. These measures aim to mitigate impacts on special status wildlife in coordination with relevant agencies. While these efforts would reduce adverse effects, some habitat loss and disturbance to wildlife would be unavoidable. However, given the availability of habitat outside the Project site, meaningful impacts on local wildlife populations are not anticipated. The gen-tie's crossing of an upland area of the Mason Valley WMA would be offset through compensatory mitigation funding, as outlined in MM WILD-8, in coordination with NDOW.

Big Game Species. The Project site is not within the known range of bighorn sheep, which typically inhabit higher elevations in the Wassuk Range. However, pronghorn antelope utilize habitats within the Project area for foraging, particularly due to the presence of winter fat, a vital food source for these animals. Permanent security fencing around the site could obstruct the movement and habitat use of large animals like pronghorn antelope. Despite this, pronghorn could still traverse similar habitats if passing through the area. Concerns have been raised regarding the potential impact of the gen-tie on the migration of big game near the Mason Valley WMA. During construction, human activity may deter big game species from certain areas, but the gen-tie development area as a whole would not be entirely obstructed, allowing individuals to move through unaffected areas. The Project would not impede access to riparian areas or water sources, as the gen-tie over the Walker River would facilitate movement, and the nearest springs are located several miles from the solar site. Adverse impacts are not anticipated for bighorn sheep; however, loss of foraging habitat and movement barriers for pronghorn antelope could occur. These impacts would be addressed through MM WILD-8, which includes compensatory mitigation measures such as installing a new guzzler and restoring natural springs used by pronghorn antelope to the south of the Project site, coordinated with NDOW.

Small Mammals and Amphibians. The construction of the Project poses risks to desert kangaroo rats, as ground-disturbing activities could destroy their burrows and directly harm or kill individuals. Vegetation removal during site preparation could also reduce foraging opportunities for small mammals. However, given the sparse detections of small mammals in trapping surveys, adverse impacts to species and population viability are not expected. To reduce impacts to desert kangaroo rats, MM WILD-10 would involve trapping and relocation prior to active construction, with an on-site biological monitor present to halt work if any individuals are found. Despite these measures, some individuals may still be lost, but population-level impacts are not anticipated.

The gen-tie construction along the Walker River could potentially affect BLM sensitive species such as the Inyo shrew, western water shrew, Walker River pocket gopher, and the northern leopard frog. However, construction design includes avoiding riparian and riverine habitat to minimize impacts. Pre-work clearance surveys and monitoring, as required by MM WILD-1, would further reduce potential effects on these species during gen-tie construction near the Walker River.

Bats. The solar site and access road lack roosting habitat for bats due to the absence of caves, mines, cliffs, or structures near perennial water sources. Although potentially suitable foraging habitat exists on the solar site, its marginal quality is attributed to the lack of a permanent water source. However, the gen-tie alignment intersects permanent water sources where bats could occur in larger numbers. While there is limited information on the effects of utility-scale solar development on bats, the Project would result in habitat loss and fragmentation, potentially reducing overall bat activity (Tinsley et al. 2023). Artificial lighting associated with construction, primarily during daylight hours, may adversely affect nocturnal bats, leading to disorientation and potential habitat disruption. However, construction-related lighting would be temporary, and measures outlined in the Bird and Bat Conservation Strategy (BBCS), including detection and avoidance or protection of bats during construction, would minimize adverse effects.

Birds. *Golden Eagles.* The Project's construction activities are unlikely to directly impact nesting golden eagles due to the considerable distance between the nesting locations and the solar site, as well as the protective features of the cliff habitats where nests are situated. While the solar site lacks suitable nesting habitat, golden eagles may forage within the area, potentially experiencing indirect impacts such as habitat loss and reduced prey populations during construction. However, their foraging behavior may be influenced by increased human disturbances. Despite these impacts, golden eagles have access to

undisturbed habitat in the surrounding area and nearby Wassuk Mountain range. The gen-tie's construction, located within an existing transmission corridor, is not expected to affect foraging or nesting golden eagles due to its localized nature and avoidance of steep mountain ranges where nests are located. *Migratory Birds and BLM Special Status Bird Species*. The Project's construction poses risks to migratory birds by altering and removing potential habitat, potentially disturbing active bird nests, and causing displacement of bird populations. Direct impacts could include nest abandonment, destruction, and loss of chicks or eggs due to ground disturbance and vegetation removal. Additionally, construction activities may cause visual and auditory disturbance, leading to habitat avoidance and increased stress for birds. Indirect effects could result in birds nesting and foraging in less suitable habitats due to disturbance. Direct and indirect impacts to avian species would be minimized with implementation of conservation measures to protect migrating and nesting birds through MM WILD-6, as well as CRMP SOP 9 (Common to All), and the BBCS. Measures include conducting ground-disturbing activities outside the migratory bird breeding season when practical or avoiding active nests if the work cannot be conducted outside this period (February/March through August) and conducting pre-construction surveys prior to vegetation clearing during the breeding season for nesting birds. If any occupied nests (those containing eggs or young) are found, an appropriate buffer around the nest site must be avoided until the young birds fledge. Measures to protect migratory birds would reduce effects, but habitat loss and disturbance to birds would still occur and impacts would remain adverse. Due to the amount of available habitat outside of the Project site, it is not expected that local bird populations would be substantially affected.

Burrowing owls are not expected within the solar site based on surveys. However, they could be present along the gen-tie. Construction methods could harm owls or their nests if present. MM WILD-6 requires pre-construction surveys along the gen-tie to identify owl presence. Nests would be avoided by at least 250 feet until young have fledged. Measures in the BBCS would further mitigate impacts. *Bi-State Sage Grouse.* No impacts are anticipated on Bi-State sage grouse or their habitat from the Project. The solar site and gen-tie are not within suitable habitat for Bi-State sage grouse. Patches of low-quality habitat nearby lack known leks and are at higher elevation. Even the closest point to identified habitat on the gen-tie is at a lower elevation. Indirect impacts, like visual disturbance, are unlikely due to the absence of leks in the area. Dust from gen-tie construction would be controlled, limiting its impact. Thus, no impacts are expected on Bi-State sage grouse or their habitat.

Yellow-billed Cuckoo and other BLM Special Status Bird Species Found along the Walker River. No suitable habitat for the yellow-billed cuckoo is found within the solar site nor areas proposed for disturbance from construction of the gen-tie. Although never observed directly in the area of the gen-tie construction, if individuals were to be migrating along the Walker River, they could be disturbed by construction activities. Impacts to western yellow-billed cuckoo would be avoided with implementation of MM WILD-1 and MM WILD-6, which requires pre-construction surveys, biological monitoring, and implementation of a limited operating period if the species is found within 0.5 mile of work areas along the Walker River. With implementation of these measures, no impacts to western yellow-billed cuckoo would occur. Several other BLM special status avian species could also occur along the Walker River. MM WILD-1 and MM WILD-6 would be implemented as well to avoid impacts to these species from gen-tie construction.

Pollinators and Monarch Butterfly.

The Proposed Project area hosts diverse desert communities crucial for insect pollinators and coevolved plants. Solar energy development has been shown to adversely affect pollinators, potentially impacting biodiversity and imperiled cacti populations reliant on insect pollination (Grodsky, Campbell, and Hernandez 2021). To mitigate impacts, MM WILD-7 requires pre-construction surveys to identify and avoid bee overwintering sites, and MM VEG-1 requires rapid restoration of temporary disturbance areas with flowering plants. However, construction would still lead to adverse impacts by displacing large areas of flowering perennial vegetation, notably cacti and yucca.

Monarch butterflies are unlikely to be present due to limited foraging habitat and lack of recent detections nearby. However, adverse impacts could occur if undetected milkweed plants, critical for monarch reproduction, are removed or crushed during construction. MM WILD-7 requires pre-construction

surveys to identify and avoid milkweed plants, minimizing potential impacts. Overall, adverse impacts to monarch butterflies are not expected with proper implementation of mitigation measures. (Grodsky, Campbell, and Hernandez 2021; Wagner et al. 2021)

Operation and Maintenance Impacts

General Wildlife. O&M activities would lead to long-term and permanent disturbances to habitat within the Project site, impacting wildlife through habitat loss, fragmentation, movement barriers, and increased noise, dust, light pollution, and fire risk. While O&M disturbances would be less than during construction, ongoing impacts would still affect wildlife. Permanent security fencing could hinder movement of larger animals, shifting their habitat use to adjacent areas. Smaller wildlife may still occupy the site, but habitat quality would be diminished. Management of rangeland resources would adhere to CRMP SOP 5. Permanent lighting for operational safety may cause light pollution, but a Lighting Management Plan aligned with PEIS PDF VR2 2 would mitigate direct and indirect effects on nocturnal wildlife. Overall, adverse effects from lighting on wildlife are not expected during the Project's operational lifespan if the Lighting Management Plan is implemented effectively. Routine O&M activities may slightly increase traffic along regional and internal access roads, raising the risk of wildlife mortality or injury from vehicle strikes and disturbance from noise, dust, and ground vibrations. However, due to the low level of O&M-related vehicle use, the risk of collisions is minimal, and measures outlined in Western Solar Plan PDFs, including reduced speed limits and dust-control measures, would further reduce risks. Despite these measures, O&M activities could still contribute to the introduction and spread of invasive weeds, increasing fire risk and habitat degradation. While the Integrated Weed Management Plan and Fire Management Plan aim to minimize these risks, the Project may still lead to higher invasive species cover and density both on-site and in adjacent habitat, potentially resulting in adverse impacts.

Herbicides may be necessary for invasive species control, while other hazardous materials like fuel could be used during operations, posing risks to wildlife. Herbicides would only be used in accordance with an approved PUP and in accordance with the BLM Manuals and guidance provided in the Western Solar Plan on vegetation treatments using herbicides (Abella 2010). Implementation of Western Solar Plan PDF HMW1 1, along with SWPPP and other relevant plans, would ensure proper handling, storage, and spill prevention of hazardous materials, minimizing wildlife exposure to harmful substances.

Big Game Species. During O&M, the solar site would remain inaccessible to big game species due to perimeter fencing, maintaining impacts observed during construction. The gen-tie is not anticipated to alter behaviors of big game species in its vicinity, given existing transmission infrastructure. MM WILD-8 would mitigate impacts, including funding restoration efforts for Summit Spring, degraded by cattle and wild horses, as per NDOW support.

Small Mammals and Amphibians. During O&M, impacts to small mammals would be reduced compared to construction activities. No new ground disturbance would occur, although the loss of perennial vegetation would reduce cover and foraging opportunities. The Site Restoration and Revegetation Plan would include BLM-approved seed mixes with some forage species. Sparse detections of small mammals during surveys suggest minimal occupancy during O&M, further reducing potential effects. A Raven Management Plan would also be implemented to address predation impacts. MM WILD-9 would also require that bird perching deterrent BMPs be added to all transmission line structures for the Project to limit raven perching and nesting. Direct impacts to desert kangaroo rats during O&M are expected to be minimal since ground disturbance would be minimal during O&M and occupation of the site is expected to also be minimal under the Proposed Action. Inyo shrew, western water shrew, Walker River pocket gopher, and northern leopard frog could be found along the Walker River; however, during O&M no ground disturbance along the river would occur that could impact this species.

Bats. Bat fatalities have been documented at solar projects, primarily due to collisions with infrastructure and fencing. A recent study in southern California found thousands of bat fatalities annually at solar sites (Smallwood 2022). Although impacts on bats are expected to be minimal due to the lack of roosting features nearby, ongoing monitoring required by the BBCS would address potential effects. Despite efforts to minimize impacts, adverse effects from collision risk and night-lighting would persist.

Birds. *Golden Eagles and Migratory Birds, including BLM Sensitive Avian Species*. Impacts on birds would primarily stem from habitat loss and collision risks associated with the gen-tie construction. Waterfowl, particularly abundant near the Walker River and Mason Valley WMA, could be vulnerable to collisions with overhead power lines. To reduce these impacts, the Project would adhere to guidelines for avian-safe designs and implement measures such as marker balls and strategic siting of tall structures in accordance with APLIC suggested practices (APLIC 2006). Despite these efforts, some avian deaths may be unavoidable. A BBCS, including an Avian and Bat Mitigation Monitoring Plan (ABMMP), would monitor mortality rates and species composition, allowing for adaptive management measures if necessary. Coordination with relevant authorities would ensure appropriate mitigation measures are in place.

Large-scale solar installations can potentially impact migrating birds, particularly waterfowl, due to the "lake effect" phenomenon caused by polarized light pollution (PLP) reflected from PV solar arrays. Migrating birds may mistake the reflective panels for water bodies and collide with them while attempting to land (Horváth et al. 2009; Chock et al. 2021; Kagan et al. 2014; Smallwood 2022; Kosciuch et al. 2020; 2021). Although this theory is actively studied, limited research exists to evaluate its validity. To mitigate impacts, the Project would adhere to measures outlined in the Western Solar Plan PDF ER3 1, such as turning off unnecessary lights and removing nests from hazardous areas. Monitoring, reporting, and adaptive management protocols outlined in the BBCS and ABMMP would track bird fatalities and overall mortality rates, allowing for adjustments as needed. While adverse impacts during O&M are possible, they are not expected to meaningfully affect bird populations. (Chock et al. 2021; Kosciuch et al. 2021; Smallwood 2022)

Bi-State Sage Grouse. No impacts would occur to Bi-State sage grouse, as described under Construction.

Yellow-billed Cuckoo. No impacts to yellow-billed cuckoo would occur during O&M. As described under Construction, no yellow-billed cuckoo have been found in the vicinity of the Project; however, the gen-tie crosses the Walker River in one location. During operation, the gen-tie would not directly or indirectly impact yellow-billed cuckoo migration. The gen-tie would be installed above the riparian brush.

Pollinators and Monarch Butterfly. During O&M, impacts to pollinators would be similar to those during construction, primarily stemming from the loss of native vegetation cover and diminished foraging habitat. The Site Restoration and Revegetation Plan would reduce these impacts by reintroducing native plant species, including some flowering plants, into disturbed areas to sustain pollinator forage during the O&M phase. While these efforts would alleviate some habitat loss, the removal of certain perennial vegetation like prickly pear cacti may persist, although regeneration could occur over time. Despite restoration efforts, adverse impacts on pollinators may persist. Milkweed along the gen-tie would remain undisturbed during O&M, thereby avoiding additional impacts on monarchs.

Decommissioning Impacts

Decommissioning and site reclamation at the end of the life of the Project could result in short-term adverse effects to general wildlife and special status wildlife species within and adjacent to the Project site. Decommissioning is anticipated to only directly affect habitat that was previously disturbed during the Project construction and O&M phases and would likely result in fewer direct impacts due to reduced habitat likely at the time of decommissioning. Temporary disturbances to wildlife and special status wildlife species from noise, dust and dust suppression, ground vibrations, and humans and vehicles associated with decommissioning would be comparable to those from construction. The use of heavy equipment and other activities associated with decommissioning would result in impacts to wildlife similar to those described above for construction, including injury, mortality, or avoidance behavior.

Following decommissioning activities and removal of the perimeter fence, wildlife species would be able to access and move through the Project site. However, desert ecosystems can take decades to a century or more to recover from disturbance (Abella 2010), and long-term habitat quality would be degraded, which could have persistent adverse impacts on wildlife populations and adjacent habitat. Restoration following construction per the Site Restoration and Revegetation Plan and Western Solar Plan PDFs would set the Project site on a trajectory to regain native species cover and habitat function; however, restoration is a

long, slow process in desert environments, and it would likely still take several decades following decommissioning for the site to regain full habitat function for wildlife (Lovich and Ennen 2011; Abella et. al 2021). Even with PDFs and a Site Restoration and Revegetation Plan and Decommissioning and Site Reclamation Plan, the overall impacts to wildlife from decommissioning the Project would remain adverse, but given the scale of surrounding similar habitat, it is not expected that wildlife would be considerably affected.

Cumulative Impacts

A number of projects and other management actions in the region would contribute to cumulative impacts to wildlife, including other existing and proposed utility-scale solar development projects, transmission lines, and mining located on other BLM and private lands. Similar to the Project, these cumulative projects would involve ground disturbance and vegetation clearing and would also likely result in habitat degradation and disturbances to wildlife. The cumulative projects could result in increased fire frequency or intensity from a combination of abundant invasive plant fuels, higher likelihood of anthropogenic ignitions, and introduction of solar infrastructure with ecosystem effects, adversely affecting sensitive plant communities and wildlife (Abella et. al 2021; Chambers et al. 2013; Grodsky et. al 2020b). Construction and O&M of the cumulative projects considered could also directly harm or kill wildlife or cause avoidance or other changes in behavior. Direct and indirect cumulative effects on wildlife could occur from herbicide use, dust and dust suppression, noise, lighting, spread of invasive species, and other changes in the area. Cumulative impacts to golden eagles could occur from aggregated loss of foraging areas. Security fencing around the perimeter of other solar development sites would be similar to that of the Project and would result in movement barriers for some wildlife across the region. The cumulative effects would be adverse. The Project would involve the use of equipment and vehicles that could directly or indirectly harm wildlife during construction and O&M and would result in habitat loss, also similar to the cumulative projects. The Project would contribute to the adverse cumulative effects on wildlife. Implementation of various management plans and mitigations, including the Lighting Management Plan, PUP, and MMs WILD-1 through WILD-5, however, would reduce the Project's contribution to cumulative adverse effects.

3.8.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction Impacts

Alternative 1 presents a reduction in the permanent disturbance areas within the Project site compared to the Proposed Action. This reduction, from 64% to ultimately 35% of the application area, would lead to minimized impacts on wildlife and special status species and their habitats. With larger areas of native habitat remaining undisturbed, the recovery process in disturbed areas would be accelerated.

By decreasing the extent of heavy soil disturbance and preserving larger areas of native plant communities, Alternative 1 would likely result in fewer invasive species infestations and less loss of the soil seed bank. Natural plant recruitment would be facilitated, particularly in areas constructed using drive and crush methods. While some adverse effects on burrowing species and ground-nesting birds would still occur due to ground disturbance, these impacts would be mitigated by the reduction in habitat loss.

During Project O&M, fenced corridors would be maintained across the site, enabling larger animals like big game species to move through. This feature would enhance the site's accessibility for species unable to access it under the Proposed Action.

Although Alternative 1 would not completely eliminate adverse impacts on wildlife and special status species, it would meaningfully reduce them compared to the Proposed Action. All required measures for reducing adverse impacts to wildlife and special status species, as outlined in the Western Solar Plan PDFs, CRMP SOPs, MMs, and BLM management plans, would remain unchanged from those identified for the Proposed Action.

Operation and Maintenance Impacts

Under Alternative 1, the maintenance of vegetation throughout the solar site during the 30-year Project lifespan would contribute to wildlife habitat. However, the preservation and restoration of more native vegetation during O&M could necessitate additional vegetation maintenance, such as trimming, which may impact wildlife within the Project site. Vegetation trimming would be conducted as needed to prevent interference or safety issues with the solar array components, but it could also reduce cover and forage opportunities for wildlife. While there is concern that preserving more habitat areas could increase the potential for harm to wildlife from the solar facility, such as collisions with equipment or disturbance during maintenance activities, the long-term benefits of habitat preservation and reduced fragmentation beyond the Project lifespan outweigh these risks.

Reduced disturbance areas would require less dust abatement and herbicide use, and adherence to Western Solar Plan PDFs for wildlife protection, particularly PDF ER 3-2, would be implemented. This PDF requires project proponents to manage projects to minimize impacts to wildlife during O&M, employing an adaptive management strategy as necessary and approved by the BLM. These measures aim to balance the needs of wildlife with the operational requirements of the solar facility while prioritizing habitat preservation and minimizing adverse effects.

Decommissioning Impacts

Decommissioning under Alternative 1 is anticipated to affect areas previously disturbed during Project construction. Decommissioning would result in direct and indirect impacts to wildlife and special status wildlife species similar to those described for construction for this alternative. With less impactful construction methods, vegetation communities would likely recover more quickly during O&M, resulting in more areas of suitable habitat and thereby increasing potential for direct impacts to wildlife during decommissioning. These impacts would be short-term, and site reclamation would be more successful due to fewer areas of permanent disturbance. Habitat within the Project area would recover more easily after decommissioning than under the Proposed Action (Abella 2010; Chambers et al. 2013; Hernandez et al. 2014; Lovich and Bainbridge 1999). Even though short-term impacts could be greater during decommissioning under this alternative, restoration of these habitats would likely be more successful, with reduced long-term impacts to wildlife habitat. Implementation of the Site Decommissioning and Reclamation Plan and Western Solar Plan PDFs as described for the Proposed Action would further reduce potential adverse effects on wildlife from decommissioning.

Cumulative Impacts

Alterative 1 would still have adverse impacts, but the reduced Project impacts would result in fewer cumulative effects on wildlife and habitats within the analysis area. Because the anticipated recovery time post-Project is expected to be much less for this alternative (5–10 years as opposed to hundreds of years), cumulative adverse impacts to the area (specifically, wildlife habitat) would be reduced over time. Retaining vegetation would also improve habitat resiliency for adapting to climate change, as compared to the Proposed Action.

3.8.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Construction, O&M, and decommissioning impacts under this alternative would be as described for the Proposed Action on the solar site and gen-tie. However, the use of supplemental access routes may introduce minor differences. These routes, already disturbed, would not directly impact wildlife habitat. Minor proposed improvements would be within the existing roadway footprint. Yet, increased traffic could lead to temporary disturbances from noise, dust, and potential collisions. As these routes are temporary and already maintained, any impacts are expected to be limited. During O&M, these routes would not be used, minimizing further impacts. While their use during decommissioning could occur, impacts would align with those of construction. Overall, this alternative would contribute to cumulative adverse impacts on wildlife akin to the Proposed Action.

3.8.4.5 *Alternative 3 – Alternative Gen-tie Connecting to Greenlink West*

Construction, Operation and Maintenance, and Decommissioning Impacts

Construction, O&M, and decommissioning impacts under this alternative would be as described for the Proposed Action for the solar site and access road. However, meaningful reductions in impacts are seen in the gen-tie, which is shortened from 24.1 miles to just 0.54 miles. This results in a decrease from 92 acres to just under 12 acres of permanent disturbance to wildlife habitat, with a corresponding reduction in temporary disturbance. Consequently, direct and indirect impacts to wildlife are reduced due to the smaller footprint of the gen-tie. Additionally, this alternative avoids disturbance near sensitive riparian habitats along the Walker River and the Mason Valley WMA, reducing potential impacts on various wildlife species, including golden eagles, migratory birds, bats, monarch butterflies, pollinators, and big game species in that area.

Cumulative Impacts

Cumulative impacts to wildlife would be similar to the Proposed Action. There would be no construction of the 24.1-mile gen-tie line, which would reduce the Project's contribution to native vegetation disturbance and removal within the Mason Valley. The difference in impacts would be small as the solar field would contribute the largest cumulative loss of habitat within the analysis area.

3.8.4.6 *No Action Alternative*

Under the No Action alternative, the Project would not be constructed, and existing land uses would continue. The BLM would continue to manage the land consistent with the CRMP. There would be no impacts to wildlife from Project implementation, and existing habitat conditions and trends would remain.

3.8.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize wildlife impacts.

Table 3.8-1 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• AQC 2-1 • ER1-1, ER2-1, ER3-1, ER3-2, ER4-1 • HMW1-1 • SR2-1, SR3-1, SR3-2, SR4-1, SR4-2, SR4-3 • VR 2-2
Carson City CRMP SOPs	• • Common to All SOPs 5, 6, 9, 19, 22
Management Plans	• Site Restoration and Revegetation Plan (Available on the Project website) • Integrated Weed Management Plan (Available on the Project website) • Workers Environmental Awareness Program • Lighting Management Plan (Available on the Project website) • Dust Control and Air Quality Plan (Available on the Project website) • Hazardous Materials and Waste Management Plan • Bird and Bat Conservation Strategy (Available on the Project website)

Mitigation Measures

The Project would comply with the mitigation measures in Table 3.8-2 to minimize adverse impacts on wildlife resources.

Table 3.8-2 Wildlife Resources Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM WILD-1: Biological Monitoring	The Applicant shall designate a BLM-approved biologist to be responsible for overseeing compliance with mitigation measures related to the protection of ecological resources throughout all Project phases, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species. Additional qualified biological monitors may be required on site during all Project phases as needed to ensure protection of sensitive resources. For work conducted in proximity to the Walker River, where Inyo shrew, western water shrew, Walker River pocket gopher, and northern leopard frogs could occur, clearance surveys shall be performed daily prior to ground disturbing work. If any of these species are found during the clearance surveys, work shall halt until the animal is safely out of harm's way, as determined by the qualified biologist.
MM WILD-2: Worker Environmental Awareness Program	WEAP training shall include identification and protection of ecological resources, including knowledge of mitigation measures required by federal, State, and local agencies.
MM WILD-3: Elimination of Wildlife Hiding Locations	The number of areas where wildlife could hide or be trapped (e.g., open sheds, pits, uncovered basins, laydown areas) shall be minimized. For example, an uncovered pipe that has been placed in a trench shall be capped at the end of each workday to prevent animals from entering the pipe. If a special status species is discovered inside a component, that component must not be moved or, if necessary, moved only to remove the animal from the path of activity until the animal has escaped. Workers shall not approach or feed wildlife.
MM WILD-4: Elimination of Conflicts with Wildlife	Access roads shall be appropriately constructed, improved, maintained, and provided with signs to minimize potential wildlife/vehicle collisions and facilitate wildlife movement through the Project site. Project vehicle speeds shall be limited in areas occupied by special status animal species. Appropriate speed limits shall be determined through coordination with federal and State resource management agencies. Traffic shall be required to stop to allow wildlife to crossroads. Unless authorized, personnel shall not attempt to move live, injured, or dead wildlife off roads, ROWs, or the Project site. Honking horns, revving engines, yelling, and excessive speed are inappropriate and considered a form of harassment. If traffic is being unreasonably delayed by wildlife in roads, personnel shall contact the Project biologist and security, who shall take any necessary action. Pet animals shall not be permitted on the Project site.

Mitigation Measure Identifier and Title	Description
	If any approved-PUP allowable chemicals are used in the construction-water storage ponds that are not bird or wildlife compatible, or if injuries to birds occur due to increased flocking at the ponds, the ponds shall be fitted with exclusion devices such as floating balls or fencing. Textured material shall be placed on the bottom of the ponds to minimize the likelihood of wildlife drowning.
MM WILD-5: Bird and Bat Conservation Strategy Requirements	The BBCS shall include a robust systematic monitoring and adaptive management plan to assist in avoiding and minimizing Project impacts on migratory birds. The monitoring shall include overall annual mortality, species composition, and spatial differentiation based on established searcher efficiency and carcass persistence trials, being established through other studies at solar facilities, at the site and shall be designed to account for seasonal differences and fatality events of rare species.
MM WILD-6: Nesting Bird Avoidance and Minimization	Habitat-altering activities shall be avoided during bird breeding season (February 15–August 31) to the extent possible. If a Project-related activity must occur during the breeding season, a qualified biologist shall survey the area for nests immediately prior to commencing construction activities. The surveys shall include burrowing and ground-nesting species in addition to those nesting in vegetation. If any active nests are found, an appropriately sized buffer area shall be established in coordination with the BLM and maintained until the young birds fledge. This buffer shall be required to connect to another suitable undisturbed habitat. The above dates are a general guideline, and any active nests observed outside of this range shall also be avoided. If burrowing owls are suspected (e.g., along the gen-tie), pre-construction surveys shall be conducted in accordance with the USFWS's latest burrowing owl guidance. If an active nest is identified, construction activities shall cease within 250 feet of the burrowing owl nest location to prevent disturbance until the chicks have fledged or the nest has been abandoned, as determined by a qualified biologist. Buffers may be increased or reduced as needed with the approval of the BLM and USFWS. For western yellow-billed cuckoo, a limited operating period (LOP) shall be implemented from June through August if this species is located within 0.5 mile of work areas during pre-construction surveys or monitoring. All construction activities within 0.5 miles shall cease until the LOP has ended, or a qualified biologist has determined the species is no longer present.
MM WILD-7: Protection of Native Pollinators and Monarch Butterflies	Prior to construction, pre-construction surveys shall include identification of locations of bee overwintering sites and milkweed (*Asclepias* spp.). Ground disturbance or noise shall be avoided near bee overwintering sites, particularly during peak foraging and breeding. Milkweed shall be flagged for avoidance. Herbicides with long residual toxicities and long-lived toxic nitroguanidine neonicotinoids shall not be used within the Project area, and herbicides shall only be applied during appropriate weather windows (wind <10 mph, in mornings or evenings or when cool temperatures reduce likelihood of evaporation). Seed mixes used for restoration shall include species of flowering plants to provide continued sources of foraging for pollinators.

Mitigation Measure Identifier and Title	Description
MM WILD-8: Pronghorn Antelope and Mason Valley WMA Compensatory Mitigation	The Applicant shall work with NDOW to provide funding to support restoration of one spring south of the Project site that has been degraded by cattle and wild horses, Summit Spring. The funding shall be applied towards upgraded fencing and rebuilding of a new guzzler, or other water developments local to the Project site. Work at Summit Springs would be on existing infrastructure and would all be under maintenance; it would not require additional NEPA analysis. Other work may require its own NEPA analysis and the appropriate BLM authorization/decision. The Applicant shall also work with NDOW to provide compensatory mitigation funding, in coordination with other approved Projects for its share of impacts to upland areas of the WMA for the gen-tie construction. Mitigation shall be documented in a Cooperative Mitigation Agreement between the Applicant and NDOW, per NDOW's Commission Policy Number 62.
MM WILD-9: Bird Perching Deterrents for Transmission Structures	The Applicant shall ensure that bird perching deterrent Best Management Practices are added to all transmission line structures for the Project to limit raven perching and nesting during Final design.
MM WILD-10: Trapping and Relocation of Desert Kangaroo Rats During Construction	Desert kangaroo rat trapping shall be performed prior to grading in areas of habitat throughout the Project site. The trapping shall follow protocols and/or guidance provided by the BLM or NDOW and shall be presented in a Desert Kangaroo Rat Trapping and Relocation Plan that shall be prepared and approved by the BLM prior to construction. The plan shall identify when and where trapping is needed, including timing prior to ground disturbance and types of habitat. The plan shall also identify where trapped desert kangaroo rats shall be relocated to, in order to reduce the number of desert kangaroo rats that could be harmed. The plan shall also identify the in-field monitoring responsibilities and methods, and the reporting methods for identifying the number of rats trapped and relocated.

3.8.4.8 *Irreversible, Irretrievable, and Residual Impacts*

The Proposed Action would result in irreversible or irretrievable impacts on up to 3,420 acres of wildlife habitat. Alternative 1, however, would reduce this long-term loss to approximately 1,903 acres. Despite reclamation efforts, these areas would not be expected to fully recover to their pre-project conditions due to the arid environment and the difficulty in restoring habitats of this size. Some species, such as cacti and other perennial vegetation, may not recolonize the site, resulting in permanent changes to native species composition and habitat. While mitigation measures would reduce impacts, Alternative 1 substantially lessens them compared to the Proposed Action.

Residual impacts within the Project area would persist, including habitat fragmentation caused by the perimeter security fence, hindering the movement of larger species. Additionally, approximately 3,420 acres of native wildlife habitat would be permanently altered under the Proposed Action, reducing overall regional habitat. Indirect impacts, like fugitive dust and spread of invasive weed species, would continue despite mitigation efforts. While measures outlined in the Western Solar Plan PDFs and other management plans would lessen impacts during construction, O&M, and decommissioning, they would

not fully eliminate them. However, Alternative 1 meaningfully reduces residual impacts compared to the Proposed Action.

3.9 Water Resources

3.9.1 Introduction

This section presents the potential impacts on water resources from construction, O&M, and decommissioning of the Project. The water resources within the Project area include surface water and groundwater. Both surface waters and groundwater are managed through a variety of State and federal rules and regulations pertaining to the quantity and quality of the waters .

The information in this section is based on the following studies:

- Preliminary Drainage Study: Libra Solar Project, Mineral County, Nevada, June 16, 2023 (Westwood 2023a).
- Libra Solar Project: Informational Summary of Water Rights, Supply, and Use, June 2023 (Panorama 2023).
- Groundwater Impact Analysis Report, Libra Solar Project, Mineral County, Nevada, June 2023 (West Yost 2023).
- Aquatic Resources Delineation Report (Phoenix 2022).

Surface and groundwater are managed under the following regulations.

- All waters in Nevada are public property and are subject to the laws described in NRS Chapters 532 through 538.
- The Nevada Division of Water Resources (NDWR), led by the State Engineer, is responsible for managing surface and groundwater resources, including overseeing water right applications, appropriations, and intercounty and inter-basin transfers (NDWR 1999).
- The Clean Water Act (33 USC §1251–1387) is the primary law protecting water quality in surface waters by limiting polluting discharges.
- Executive Order 11990 Protection of Wetlands provides additional protections to wetlands (OFR 1977b).
- Executive Order 11988 Floodplain Management provides additional protections to floodplains (OFR 1977a).
- Mineral and Lyon counties participate in the National Flood Insurance Program created through the National Flood Insurance Act of 1968.
- Mineral County Code Section 17.37.020 (L)-(M).

3.9.2 Analysis Area

The analysis area for surface water resources consists of the 5,141-acre solar site, the entire gen-tie alignment, the access roads, and downstream areas in the Mason Valley. The analysis area for groundwater and water consumption consists of the Project area and the Mason Valley Hydrographic Basin (Basin 9-108) (Figure 3.9-1), which is bounded by the Desert Mountains to the north, the Wassuk Range to the east, the Cambridge Hills and Gray Hills to the south, and the Singatse Range to the west.

3.9.3 Affected Environment

3.9.3.1 *Surface Water*

Onsite Conditions

The Project solar site, located on Black Mountain Well and Pumpkin Hollow HUC-12s[3] at the foot of Black Mountain, is relatively flat with slopes of less than 3 percent, though some areas exceed this. Many braided washes flow westward through the site, originating there and having an ephemeral flow regime . They only carry water during heavy precipitation, and sometimes convey snowmelt . The drainages found along the access road and solar site have shallow gradients and banks of silty or sandy sediment. No evidence of groundwater discharges has been observed within the solar site. A cluster of active springs between the Gray Hills and the Wassuk Range, 2.5 to 3.5 miles southeast and east of the solar site, drain groundwater from the Wassuk Range's fractured basement rocks, likely due to faulting of the Wassuk Range (West Yost 2023).

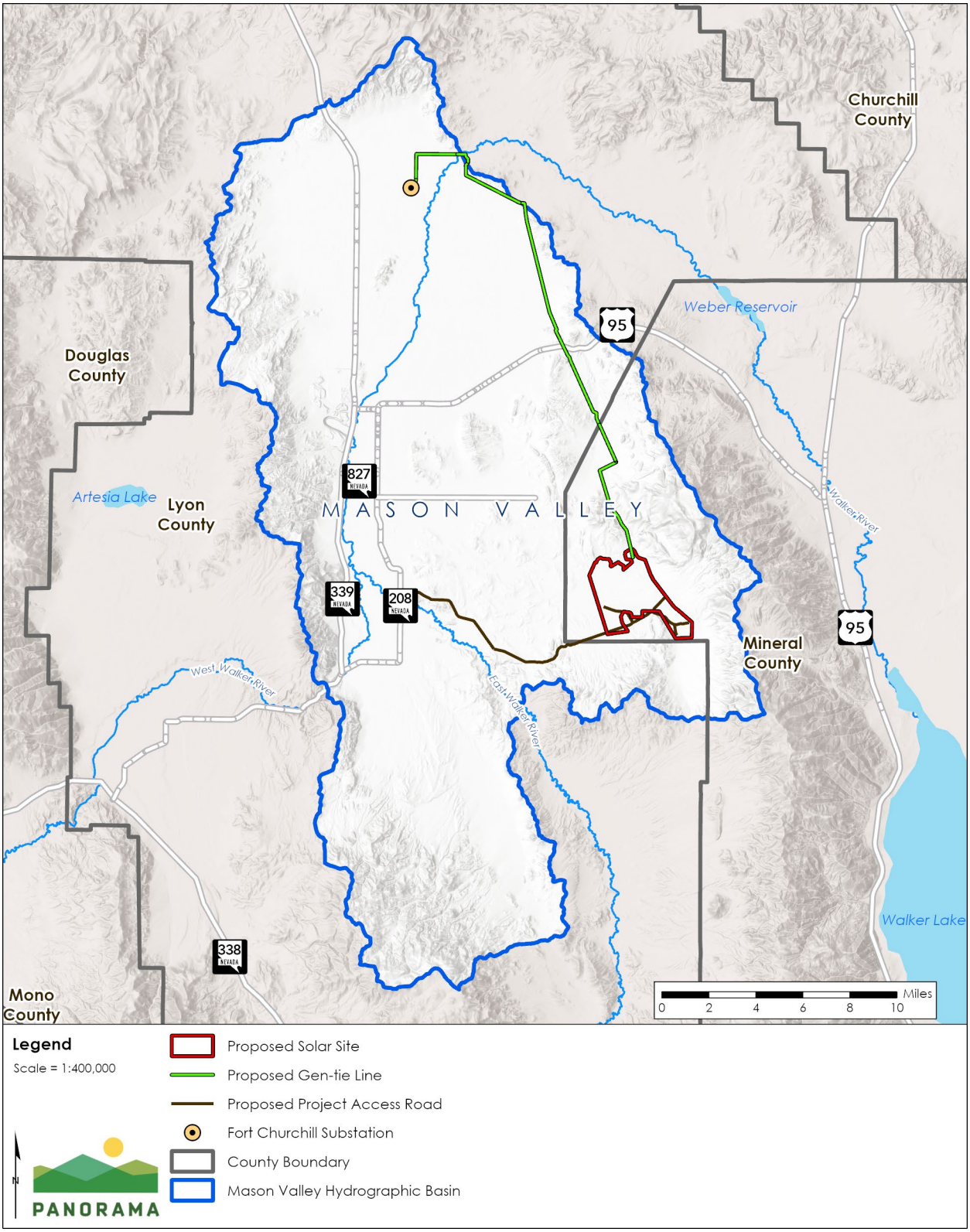
The access road crosses the East Walker River, a perennial river and two irrigation ditches about 0.5 miles east of its intersection with SR 208. This area has a riparian corridor around the river. The road also crosses dry washes, including a large one about 1.9 miles east of East Walker Road's intersection with Reese River Road. The gen-tie crosses numerous ephemeral drainages and the Walker River's main stem.

Jurisdictional Waters

An Aquatic Resources Delineation Report (Phoenix 2022) was provided to the USACOE. During the initial field delineation, conducted in June 2022, 520 ephemeral desert wash channels (non-relatively permanent water [RPW]) with ordinary high watermark (OHWM) characteristics were identified within the solar site and access road buffer. The washes have low vegetation cover due to storm discharge events, lack of developed soils, and well-drained coarse soil textures that lack soil moisture. Species found within the dry washes were also found in adjacent upland habitats. The USACOE on October 19, 2023, issued an approved jurisdictional delineation finding that there are no jurisdictional waters within the solar site or along the access road to the solar site. The letter states that, "Of the aquatic resources, we have determined that those features totaling 12.35 acres and 537,977 linear feet are not waters of the U.S. regulated under Section 404 of the Clean Water Act or under Section 10 of the Rivers and Harbors Act."

[3] Watersheds are delineated by USGS using a nationwide system based on surface hydrologic features. This system divides the country into 22 regions (2-digit), 245 subregions (4-digit), 405 basins (6-digit), ~2,400 subbasins (8-digit), ~19,000 watersheds (10-digit), and ~105,000 subwatersheds (12-digit). A hierarchical hydrologic unit code (HUC) consisting of 2 additional digits for each level in the hydrologic unit system is used to identify any hydrologic area.

Figure 3.9-1 Mason Valley Hydrologic Basin



In June 2023, a survey was conducted for the gen-tie alignment and proposed access road improvements. Wetland delineation identified nine wetlands totaling 5.4 acres within the northern part of the gen-tie alignment. Additionally, 251 streams were delineated, mostly ephemeral washes, except for the perennial East Walker River.

Washes and irrigation ditches in the basin drain towards the Walker River but do not all reach it directly. Washes within the solar site and along Reese River Road are non-jurisdictional as they lose their banks and infiltrate the subsurface. Thus, they lack a hydrologic nexus to the Walker River.

Jurisdictional waters likely include wetlands adjacent to the Walker River, primarily in the northern portion of the gen-tie within the Walker River WMA. Further details are in the Final Aquatic Resources Delineation Report (Phoenix 2022).

Floodplains

The Federal Emergency Management Agency (FEMA) has not completed a study to determine flood hazards for the solar Project area; the solar Project is covered by Flood Insurance Rate Map (FIRM) panels 32032C0300C and 32021C0500C. The solar Project area contains areas of FEMA Zone D flood hazards. FEMA Zone D areas are where flood hazards are possible but are undetermined as no flood hazard analysis has been conducted. Where the gen-tie crosses the Walker River, FIRM panel 32019C0575E is mapped for Zone A, indicating a 1 percent annual chance of flooding. No preliminary or pending FEMA changes are proposed within the Project area, the solar site or gen-tie.

3.9.3.2 *Groundwater*

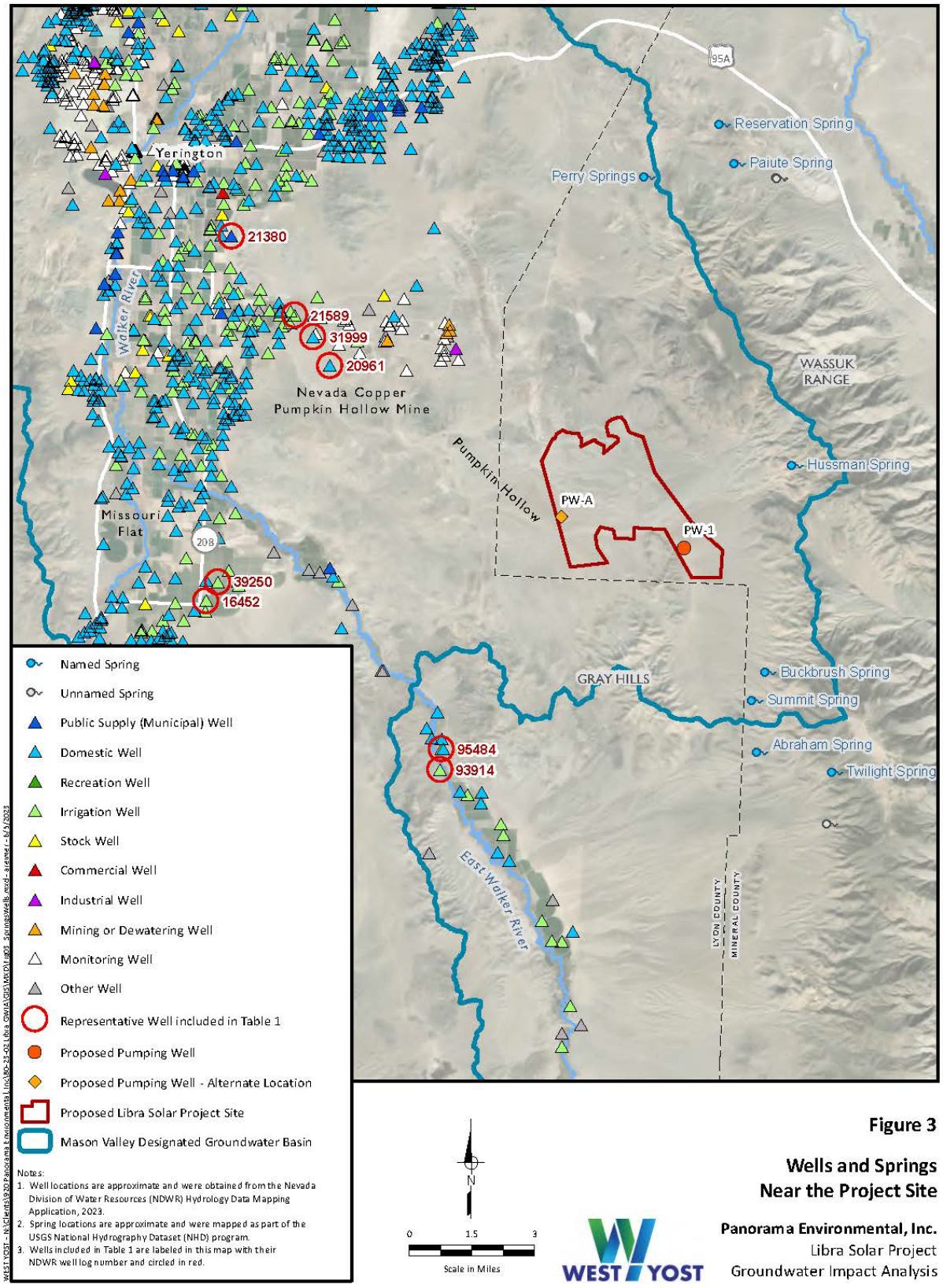
Groundwater Resources

Regionally, groundwater flows northward through the Mason Valley Hydrographic Basin, following the Walker River's direction (Huxel and Harris 1969). Groundwater in the Mason Valley Hydrographic Basin is controlled by topography, flowing from mountain blocks to flats, valleys, and eventually the Walker River. At the Project solar site, groundwater flows north and west, with faults acting as barriers or conduits.

The main source of groundwater recharge in the basin is percolation from irrigation water, mainly from Walker River diversions, with some recharge from Wassuk Range snowmelt. Springs northeast of the Buck Brush Spring Fault and within the Wassuk fault block that are not used for grazing stock water, recharge the aquifer. The Walker River channel's seepage and about 1 percent of annual precipitation also contribute to recharge.

In the Mason Valley Hydrographic Basin, irrigation makes up about 86 percent of groundwater usage (NDWR 2022), followed by industrial use (4.3 percent), recreation (4 percent), and municipal supply (< 2 percent). The city of Yerington's water comes from four wells about 18 miles northwest of the solar site. Groundwater wells near the Project area are along the East Walker River, the mainstem Walker River, and the Nevada Copper Pumpkin Hollow Mine (as shown in Figure 3.9 2). The depth to groundwater varies across Mason Valley. The closest wells to the Project area, at the Pumpkin Hollow Copper Mine, show a decline in groundwater levels over the last decade, with levels in 2022 at 300 to over 500 feet or deeper for the southernmost wells closest to the Project solar site (NDWR 2023) levels. Groundwater under the solar site is also expected to be several hundred feet deep. Near the East Walker and Walker Rivers, groundwater is just a few feet deep. Additional detail is provided in the Groundwater Impact Analysis Report (West Yost 2023).

Figure 3.9-2 Groundwater Basins in the Proposed Project Area



Groundwater Rights

Overview. Nevada water rights are guided by two principles: the prior appropriations doctrine and the concept of beneficial use (NDWR n.d.).[4] A water right establishes an appropriation amount, diversion rate, a point of diversion, a place and manner of use, and a priority date. Water rights are treated as both real and personal property and can be transferred independent of land ownership (Hecox 2001) The amount of groundwater available for extraction, and therefore permitting, is based on the *perennial yield*, which is the maximum amount of groundwater that can be salvaged (i.e., extracted) each year over the long term without depleting the groundwater reservoir and that does not exceed the natural recharge to the aquifer. The Mason Valley Hydrographic Basin is a designated basin having an estimated perennial yield of 25,000 acre-feet (NDWR 2022) but committed groundwater resources of 145,346 acre-feet per year. No new allocations of surface water or groundwater are available from this basin. This means that the Applicant must find a water right from existing allocations or from sources outside the basin. Groundwater rights are administered solely by the Nevada State Engineer at the Nevada Division of Water Resources. Two methods for obtaining water for the Project are included in Table 3.9-1.

Table 3.9-1 Methods for Obtaining Project Water

Method	Description
Temporary Uses and Transfers in Designated Basins	This method of obtaining water for the Project includes leasing or buying water rights and requesting a temporary change of use. NRS §533.345 specifically allows temporary or permanent change of the place, point of diversion, or manner of use of existing groundwater rights, creating a pathway by which new water uses could be accommodated in a designated basin, including temporary changes up to 3 years for renewable energy generation projects.
Intercounty Transfers	This pathway to acquiring water for the Proposed Project is obtaining water from other counties or basins. Use of water in a different county from which it is diverted requires county notification, public hearings, and ultimately approval from both the State Engineer and counties involved, per NRS §533.363 (NDWR 1999). Use of more than 250 acre-feet of water in a different hydrographic basin from the one in which it is diverted requires a hydrologic inventory study of the surface and groundwater sources and uses in the respective basins (NRS §533.364).

3.9.4 Environmental Consequences

3.9.4.1 *Methods*

Surface Water

Surface water flow was modeled using FLO-2D, an industry-accepted physical process model appropriate for estimating hydrological parameters based on input parameters including rainfall, topography, and

[4] Examples of beneficial uses include irrigation, mining, stock watering as well as recreation, commercial, industrial, and municipal uses.

groundcover. The methods and assumptions, and model inputs of the analysis are detailed in the Preliminary Drainage Study (Westwood 2023a).

Groundwater

The potential effects of the Project on groundwater, primarily from groundwater pumping for construction, O&M, and decommissioning water, were assessed using the USGS groundwater model WTAQ (Barlow and Moench 1999). The methods and assumptions, and model inputs of the analysis are detailed in the groundwater impacts analysis report (West Yost 2023).

3.9.4.2 *Proposed Action*

Construction and O&M Impacts

Surface Water. Surface grading and removal of vegetation would disturb ephemeral washes and alter drainage patterns during both construction and the O&M phase of the Project. Potential impacts include (1) changes in water quality, primarily from transport of sediments, and also due to potential chemical releases from equipment or herbicides; and (2) increased risks of flooding on-site and downstream from increased surface flows to the major washes.

Water Quality and Sedimentation. BMPs would be implemented throughout construction to reduce erosion and subsequent sedimentation of washes. The washes level out to sheet flows (i.e., lose their beds and banks) and rapidly infiltrate downstream of the solar site before reaching any water bodies, including before reaching the manmade feature, High Ditch. Accordingly, increased sediment transport is not anticipated to have adverse effects during construction. Western Solar Plan WR1-1 would require that Project site drainage, erosion, and sedimentation related to stormwater runoff is minimized, and the CRMP SOPs 4, 7, 10, and 18 (Common to All) require rehabilitation and restoration of disturbed areas to minimize soil erosion (BLM 2001).

Construction poses the highest risk of sedimentation due to continuous soil disturbance. To minimize this, a SWPPP would be implemented, following the Construction Stormwater General Permit NVR100000. This plan includes site-specific erosion control BMPs such as directing water runoff to temporary settling basins, minimizing vegetation removal to active construction areas, and using erosion control measures like erosion matting blankets and dust palliatives. These BMPs, required by the Western Solar Plan PDF SR2-1, aim to minimize soil erosion throughout construction (BLM and U.S. DOE 2012, app. A).

Washes, where sedimentation could occur, are expected to level out to sheet flows during construction, infiltrating downstream before reaching water bodies. Western Solar Plan WR1-1 requires minimizing stormwater runoff impacts, while CRMP SOPs 4, 7, 10, and 18 require rehabilitation and restoration of disturbed areas to reduce soil erosion. Additionally, MM SOILS-1 requires phased disturbance, limiting destabilized soil areas to 1,000-acre units at a time. This approach reduces soil erosion and downstream sedimentation by stabilizing ground before opening new development areas.

The widening of Reese River Road and the creation of road spurs and access roads for the gen-tie, along with the installation of gen-tie poles, could introduce new sources of stormwater runoff and sedimentation during construction. The northern end of the gen-tie alignment would cross the Walker River through a riparian area and over open water, with poles sited adjacent to wetlands to minimize impacts. CRMP SOP 10 requires measures to reduce pollution or siltation of the Walker River and surroundings.

The SWPPP would apply to gen-tie and access road construction, reducing effects. MM WR-4 requires avoidance of jurisdictional drainages where possible. Construction near the Walker River may require a Clean Water Act Section 404 Nationwide Permit and Section 401 Certification, imposing additional mitigation measures.

During construction and O&M, sediments may flow off East Walker Road into waters leading to the East Walker River, as currently occurs. Although the road would not be widened, the first 1.5 miles may be resurfaced or paved, similar to its current compacted state. MM WR-1 requires coordination with Lyon County for road drainage and maintenance plans, reducing erosion and sedimentation risks.

During construction and O&M, spills and accidents involving fuel, herbicides, and other chemicals could occur across all Project components (the solar site, access road, and gen-tie). A SPCCP would be developed before construction, meeting regulatory standards to address fuel tank spills. The SWPPP would establish procedures to minimize the impact of accidental releases of other hazardous materials on water quality. Herbicide application would strictly adhere to a PUP and Integrated Weed Management Plan to protect water quality.

While spills remain possible, the likelihood is low. Any effects would be short-term and localized, with no lasting impact on regional water quality. Water ponds, primarily for dust control, may be created on site, potentially sourced from an on-site well. These ponds would feature liners and berms to contain water, with measures in place to prevent overflow during storm events, as outlined in MM WR-2. Additionally, water retention basins (stormwater features) would be constructed on site to reduce off-site sediment transport during construction and O&M.

Flooding. Adverse flooding resulting from construction activities or during O&M is not expected. Flow2D modeling for the Project predicts that flows would remain confined within established washes even during a 6-hour, 100-year storm event (see Figure 3.9-3 through Figure 3.9-6). The modeling accounts for the removal of 64 percent of vegetation and maintenance of the existing drainage network.

Results indicate that flood depths across most of the Project site and immediately downstream would be only 0.5 feet, with velocities under 1 foot/second, even during a 100-year storm event Table 3.9-2. Discharge points were evaluated (Figure 3.9-4 and Figure 3.9-6), showing minimal changes in flow volumes and velocities compared to baseline conditions. Table 3.9-3 presents the results of the modeling of flow volume and velocity changes as compared with the baseline conditions from the Project for each discharge point.

Perimeter fencing and piling installation are not anticipated to increase flooding risks. Piles would not be installed in drainages less than 3 feet in diameter, which are typically avoidable. MM WR-3 requires erosion control and bank stabilization devices in and around washes, with routine site inspections to identify and repair erosion areas as needed.

Figure 3.9-3 Existing Conditions: Maximum Flow Depths in 6-Hour 100-Year Storm Event of the Proposed Solar Site

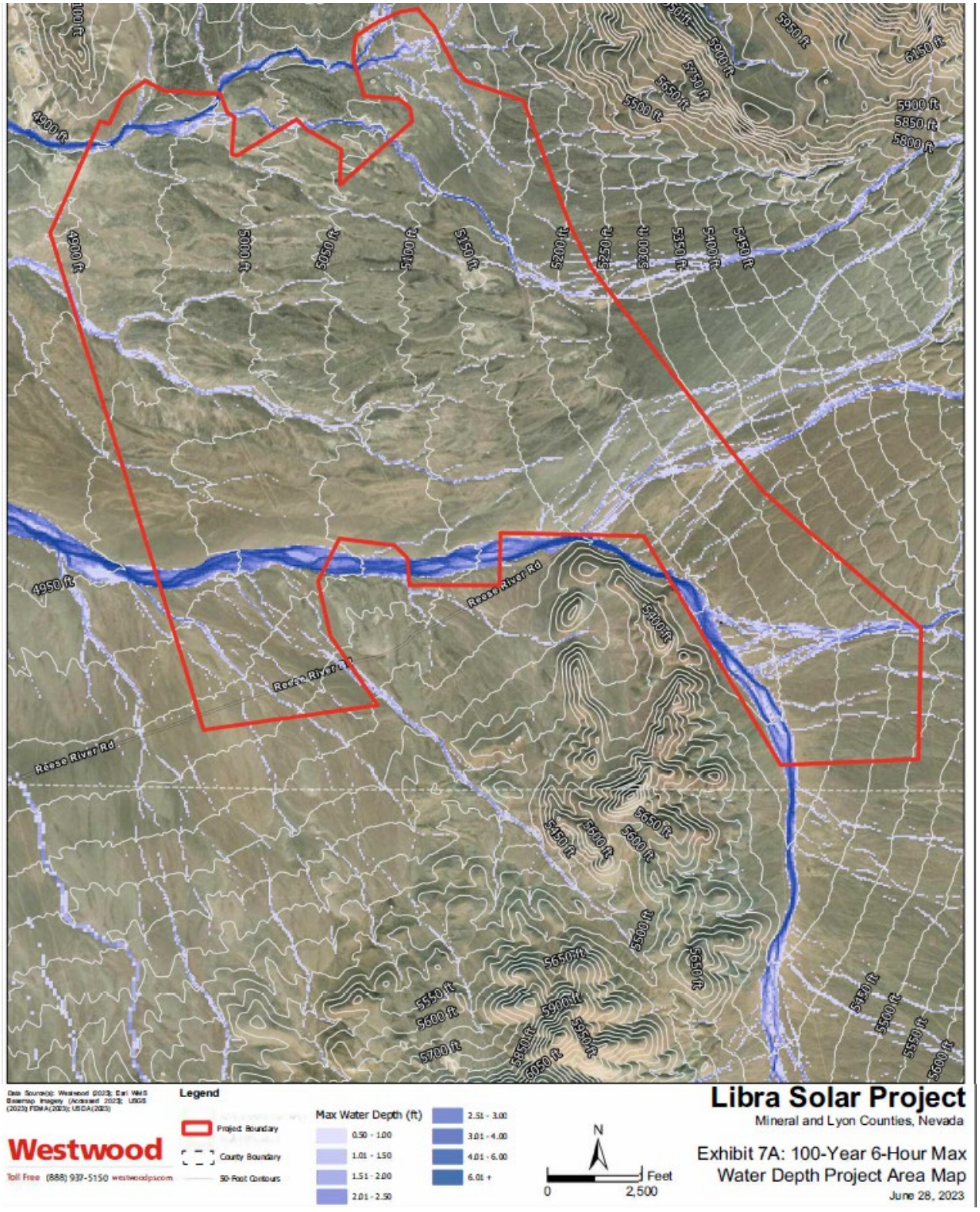


Figure 3.9-4 Project: Maximum Flow Depths in 6-Hour 100-Year Storm Event of the Proposed Solar Site

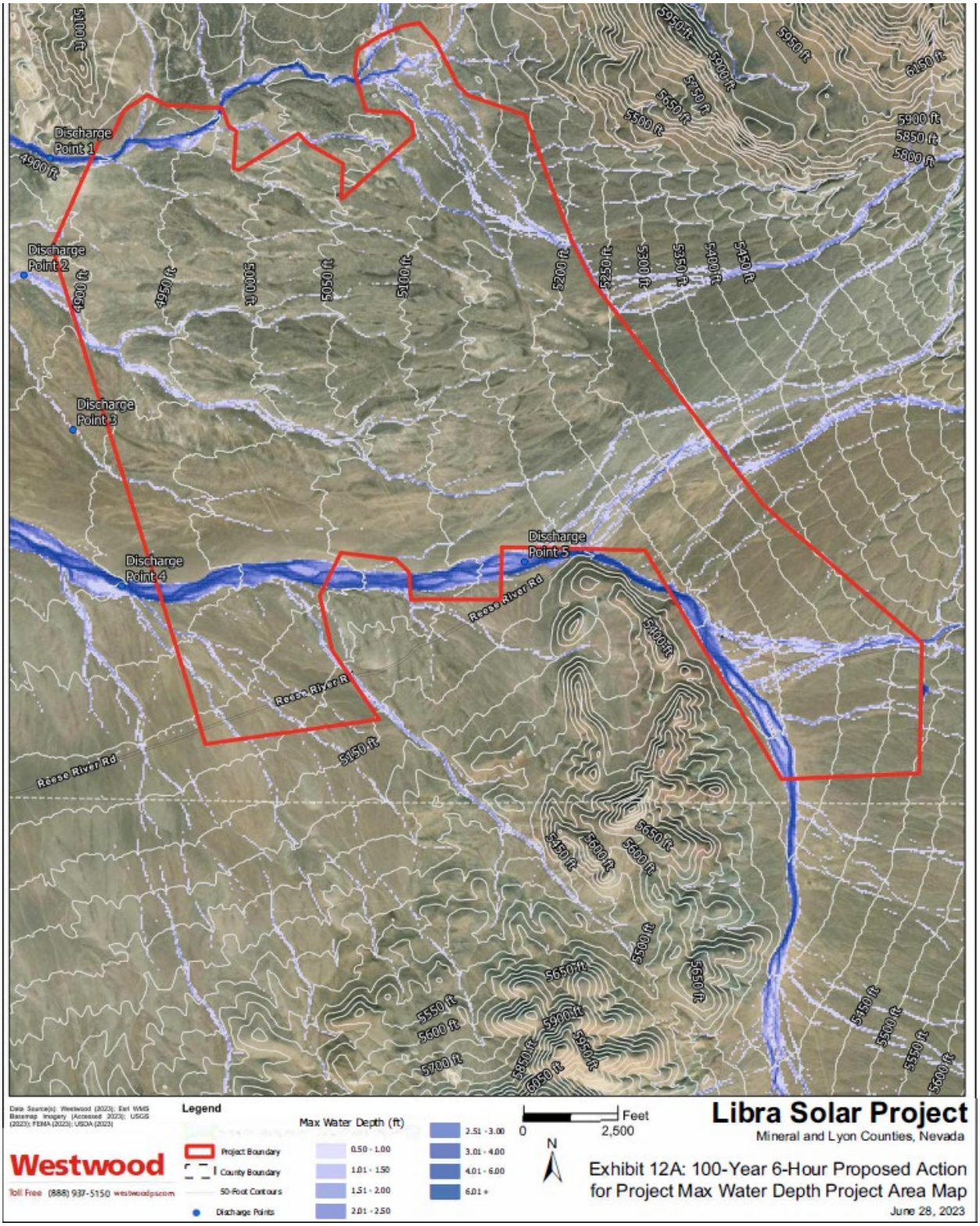


Figure 3.9-5 Existing Condition: Peak Velocities under the 6–Hour 100-Year Storm Event of the Proposed Solar Site

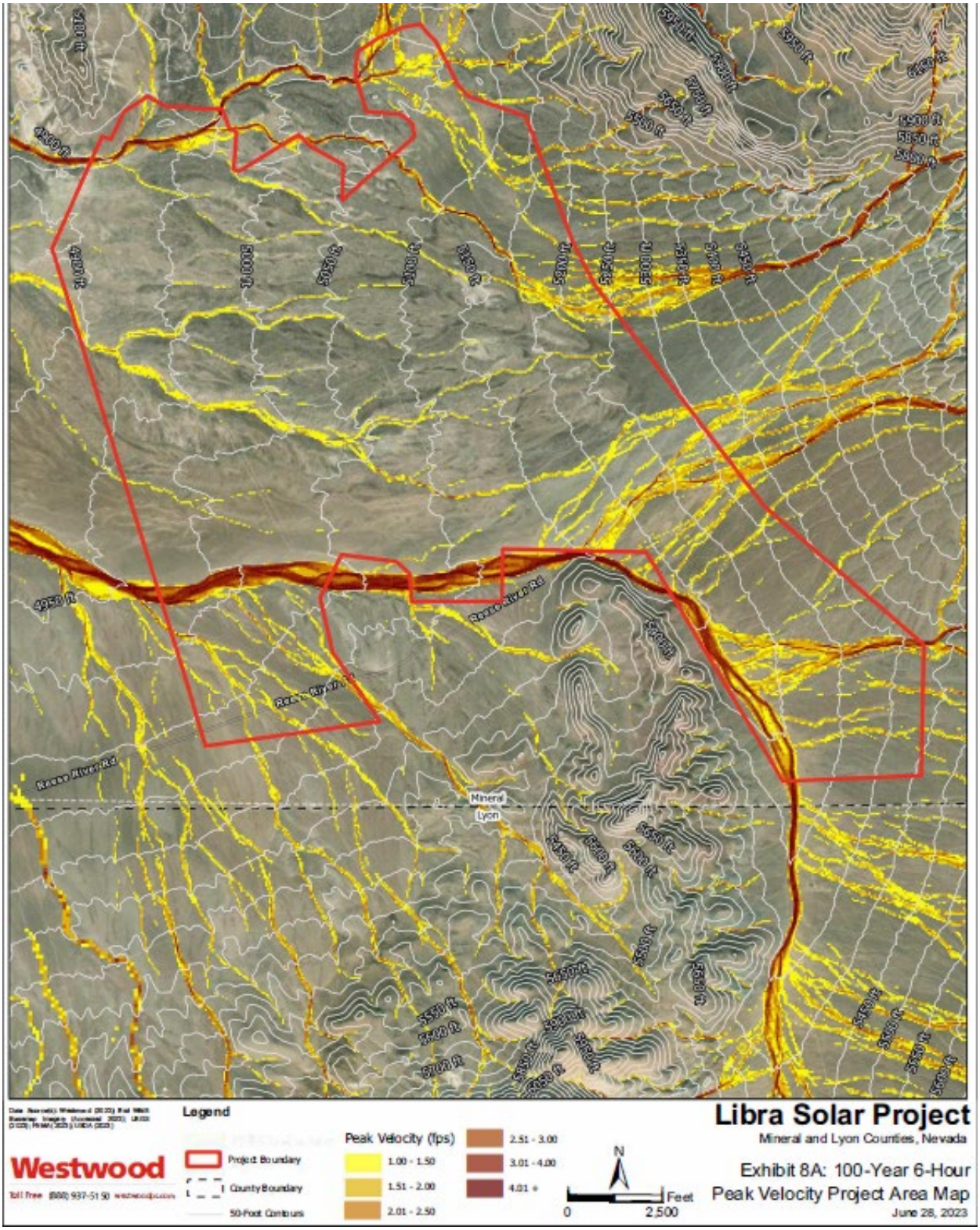


Figure 3.9-6 Project: Peak Velocities under the 6–Hour 100-Year Storm Event of the Proposed Solar Site

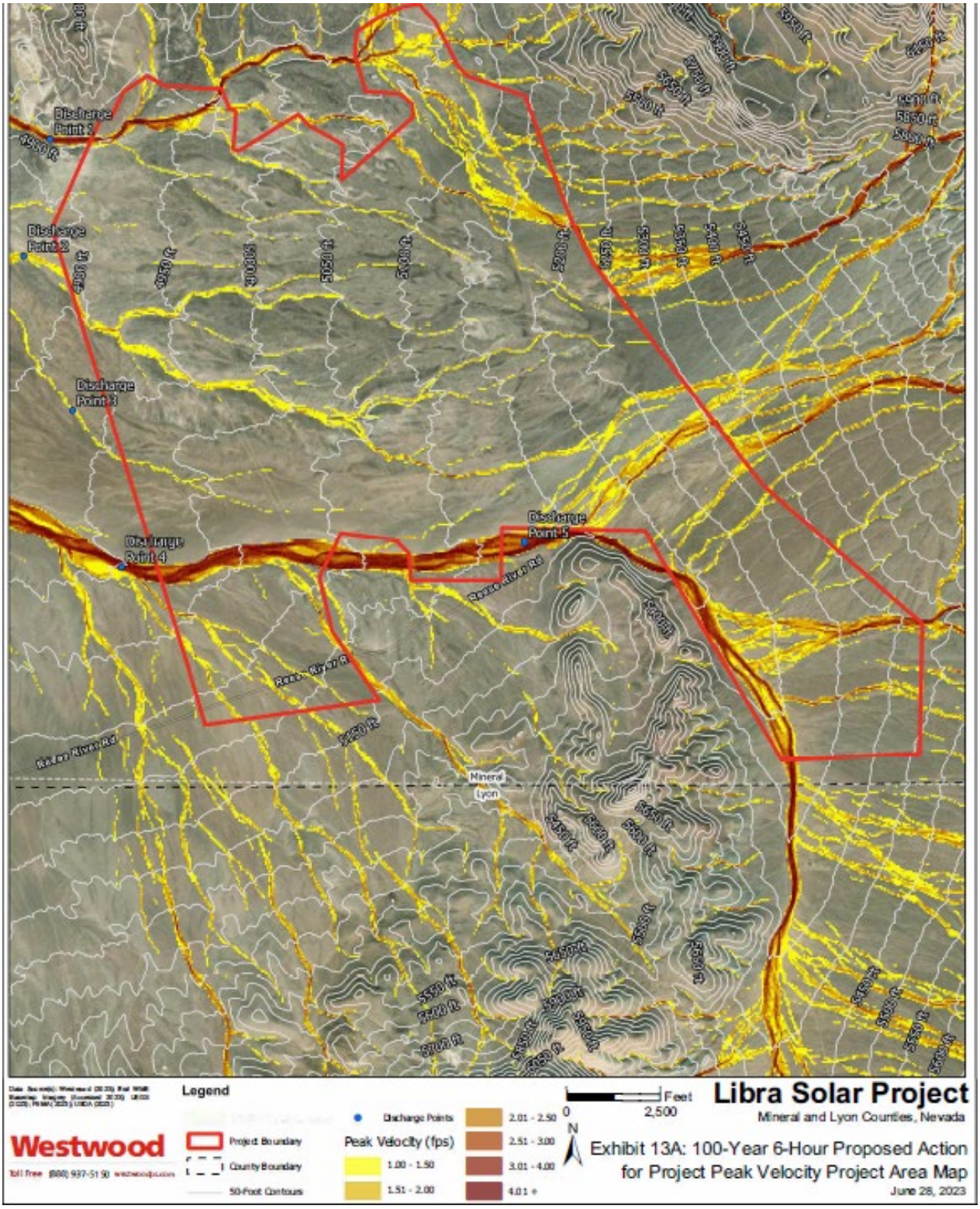


Table 3.9-2 Flood Depth Onsite for the Proposed Action

Peak flow depth (feet)	Percent of Project solar site covered by peak flow depths
0.00–0.49	89.9%
0.50–1.00	4.9%
1.01–1.50	1.8%
1.51–2.00	1.0%
2.01–2.50	0.7%
2.51–3.00	0.6%
3.01–4.00	0.8%
4.01–6.00	0.3%
6.01	0.0%

Source: (West Yost 2023)

Table 3.9-3 Existing and Proposed Action Channel Volumes for the 6-Hour 100 Year Storm Event

Discharge point	Existing channel volume (acre-feet)	Project volume (acre-feet)	Difference (cfs)	Increase (%) [a]
1	544	564	20	3.6
2	129	148	20	13.3[a]
3	24	32	8	24.1[a]
4	1,139	1,167	28	2.4
5	936	956	20	2.1
Overall	2,771	2,867	96	3.3

Notes: [a] The percent increase for these discharge points shows a relatively large increase as the drainages originate on the Project site. These drainages are smaller drainages and have lower velocity flows than drainages 4 and 5. Additionally, all the drainages converge further west of the site and thus the total change of 3.3 percent increase in volumes is most representative of the impacts and considered minor.

Source:(West Yost 2023)

Table 3.9-4 Existing and Project Maximum Flow Rates for the 6-Hour 100-Year Storm Event

Discharge point	Existing channel flow rate (cfs)	Initial channel flow rate (cfs)	Difference (cfs)	Increase (%)
1	751	750	(1)	-0.1
2	634	798	163	20.5 [a]
3	107	191	84	43.9 [a]
4	1464	1465	0	0.0
5	1276	1276	0	0.0
Overall	4232	4479	247	5.5

Notes: [a] The percent increase for these discharge points shows a relatively large increase as the drainages originate on the Project site. These drainages are smaller drainages and have lower velocity flows than drainages 4 and 5. Additionally, all the drainages converge further west of the site and thus the total change of 5.5 percent increase in velocities is most representative of the impacts and considered minor.

Source: (West Yost 2023)

Mitigation measures are in place to minimize erosion and scour impacts across the solar site. Portions of Reese River Road and East Walker Road, the Project's access roads, are within large washes and could be affected by flooding, which could result in washout of the road and could make travel unsafe during construction or O&M. MM WR-1 requires that the roads be designed to minimize flood hazard risks. Improvements along Reese River Road and East Walker Road would be made to the BLM road standards and Lyon County standard, respectively, and the road sections would be engineered to reduce effects. regulations. The area most at risk was determined by the USACOE to not be jurisdictional and thus Section 404 and 401 permits would not be necessary for this work.

The gen-tie poles occupy a small surface area and are not expected to meaningfully alter surface water flows or impact 100-year floodplains (West Yost 2023). Gen-tie access roads, approximately 20 feet wide and result in approximately 64 acres of vegetation removal but would largely follow land contours to minimize disruption. To avoid adverse effects on the Walker River and connected drainages, per MM WR-4, fill would only be allowed if unavoidable and would be permitted through USACOE's Section 404 NWP program if unavoidable.

Although minor changes in runoff patterns may occur from the construction of access roads, these effects would be localized and away from structures or infrastructure, reducing adverse impacts.

Groundwater. A groundwater right for Project construction and O&M would most likely be purchased (and transferred to the place of use under an NDWR-approved permanent or temporary change application) and accessed through construction of an on-site groundwater well. A primary pumping well location (PW-1) and an alternative well location (PW-A) were identified for the Project (Figure 3.9-7). The well would be designed to produce up to approximately 466 gallons per minute (1,000 acre-feet over the 16-month period) and then would provide up to 28 acre-feet per year for the O&M phase of the Project. In order to assess whether groundwater level drawdown could occur from the groundwater pumping on the Project site, a modeling effort was undertaken. The results of modeling showed maximum groundwater drawdown of 5.83 feet within 2,000 feet of the well but 0.76 feet at 8,000 feet, as shown in Figure 3.9-7 and listed in Table 3.9-5.

Figure 3.9-7 Results of Groundwater Drawdown Analysis showing Maximum Drawdown

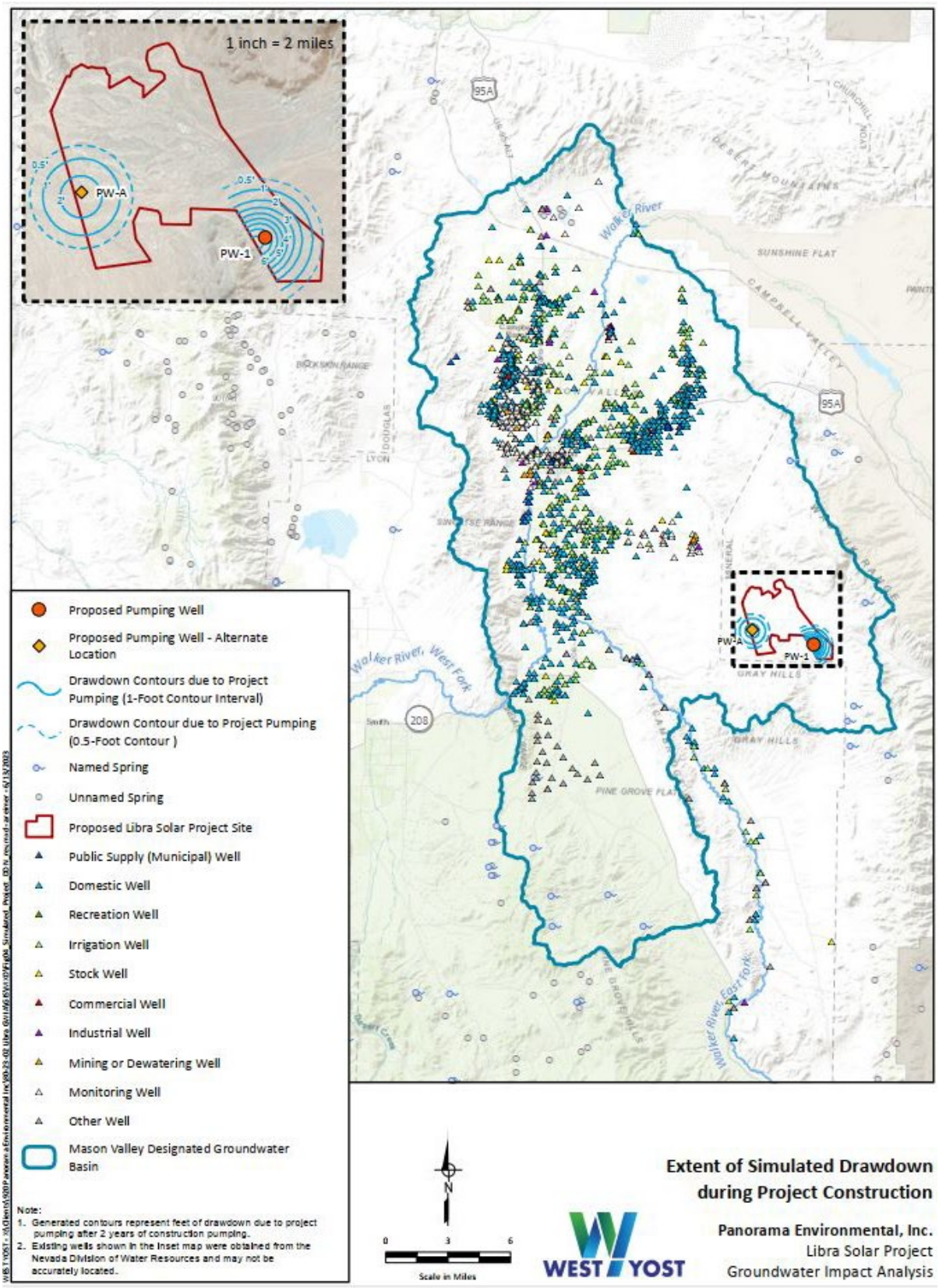


Table 3.9-5 Groundwater Drawdown Simulations Results

Well	Distance downgradient of pumping well (feet/miles)	Drawdown after 16 months of construction, feet [1]	Drawdown after 30 years of construction and O&M [2]	Maximum drawdown (feet)	Elapsed time at maximum drawdown (years) [3]
PW-1 (proposed well)	2,000/0.38	5.07	0.89	5.83	31.4
PW-1 (proposed well)	4,000/0.76 mile	1.25	0.64	2.09	31.7
PW-1 (proposed well)	8,000/1.5 mile	0.06	0.41	0.76	38.5
PW-A (alternate well)	2,000 /0.38	2.53	0.44	2.92	31.4
PW-A (alternate well)	4,000/0.76 mile	0.63	0.32	1.04	31.7
PW-A (alternate well)	8,000/1.5 mile	0.03	0.21	0.38	38.5

Notes:

1. Drawdown 16 months (1.3 years) after start of Project construction, prior to start of operations pumping
2. Drawdown 30 years after start of Project construction, prior to start of decommission pumping
3. Years after the start of Project construction. Project pumping ended 31 years and 4 months (31.3 years) after the start of Project construction.

No known wells that are currently in use and no known springs are located within 8,000 feet of the proposed pumping well site (or alternative site). Buckbrush Spring is the nearest spring to the Project solar site and is located 3.6 miles (19,000 feet) southeast of PW-1. Most of the wells in the region are agricultural and industrial wells near the East Walker River, approximately 5.5 to 8.5 miles northwest of the proposed pumping wells PW-A and PW-1, respectively. No measurable impact is anticipated to occur at springs or existing water supply wells due to Project pumping. The springs south of the project area are inferred to discharge groundwater from a bedrock fault zone on the western portion of the Wassuk Mountains and are hydrologically disconnected from the alluvial aquifer targeted by the Project well. Western Solar Plan WR13 considers water conservation measures related to solar energy technology water needs to reduce Project water requirements and a Groundwater Monitoring and Reporting Plan would be implemented. Adverse effects to groundwater or groundwater uses would not occur. The use of the well would require purchase of a water right with a change in Point of Diversion, Place of Use, and Manner of Use from the State Engineer and could potentially require the process for intercounty transfers since the water would be used for dust control along the access road and gen-tie in Lyon County (while the well would be built in Mineral County). Refer to the Informational Summary of Water Rights, Supply, and Use for the Libra Solar Project (Panorama 2023) for more information on the process. Purchasing and transferring an existing groundwater right ensures that basin-wide pumping does not increase. Because the pumping under the transferred water right would be moved from an existing water right located

mostly likely nearer to other wells and the Walker River, the net effect of the transfer would be to benefit other groundwater users and river.

The Project's construction would create approximately 184 acres of impervious surfaces, including compacted internal access roads. Additionally, about 3,062 acres of vegetation removal could lead to compaction. However, these areas represent only a small fraction of the 287,360-acre Mason Valley Groundwater Basin. Given that rainwater contributes only 1 percent to recharge, the Project is not anticipated to meaningfully impact groundwater infiltration in the basin. Furthermore, most of the groundwater recharge occurs in high-altitude areas in the Wassuk Mountains and Pine Grove Hills and upper reaches of the alluvial fans, with very little recharge occurring across the Project site.

Decommissioning Impacts

During decommissioning, the solar facility would be removed, and the site would be reclaimed according to a Decommissioning and Site Reclamation Plan. Similar to construction, erosion impacts and risks to water quality from accidental spills during demolition would be managed through the implementation of SWPPP, erosion control BMPs, Stormwater Quality Management Plan, Site Drainage Plan, and SPCCP. Areas of vegetation removal and soil compaction on the solar site and gen-tie alignment may take decades to recover. CRMP SOPs 4, 7, and 18 require the rehabilitation and restoration of disturbed areas to minimize soil erosion (BLM 2001). Stormwater drainage volumes and flows would remain similar to those during O&M, with no anticipated adverse impacts.

Groundwater use for the Project O&M would cease although water may continue to be provided for grazing. The modeling presented previously describes the impacts including decommissioning. Groundwater impacts would not be adverse as groundwater drawdown would not affect other groundwater users or any surrounding surface water features, such as springs or streams.

Cumulative Impacts

The Proposed Action is not expected to cumulatively affect groundwater. Acquisition of water rights in Mason Valley would undergo a rigorous review and approval process as discussed above to ensure no adverse effects. No other projects nearby are projected to utilize groundwater thus compounded impacts of drawdown to other groundwater users would not occur.

Among past, present, or foreseeable projects, only Greenlink West aligns somewhat with the Project's drainage systems, potentially leading to minor increases in flow volumes. However, given its nature as a linear feature alongside existing infrastructure, effects would be minimal, with no meaningful cumulative impact on stormwater flows.

Solar site drainage converges away from nearby projects like the Nevada Copper Pumpkin Hollow Expansion, preventing adverse cumulative effects. The access road would remain unaffected by cumulative projects.

Although the gen-tie runs close to other potential solar projects, because of flow, adverse drainage changes are not expected. These projects would likely implement drainage control measures similar to the Project, further reducing the likelihood of adverse cumulative impacts.

3.9.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction, Operations and Maintenance, and Decommissioning

Impacts from Alternative 1 on water quality, drainage, and stormwater flows for the access road and gen-tie would be as described for the Proposed Action, necessitating similar mitigation measures.

Construction-related impacts on water quality and sedimentation at the solar site would be similar to the Proposed Action but minimized due to Alternative 1's reduced ground disturbance, preserving up to 40 percent of vegetation within the solar array blocks. Implementation of a SWPPP, erosion control BMPs, and an SPCCP would further mitigate effects.

Modeling for Alternative 1 demonstrates a reduction in stormwater flow volumes and velocities compared to the Proposed Action. Peak volumes during a 6-hour, 100-year storm event would decrease by 0.1 percent, and peak velocities would decrease by 0.5 percent, resembling existing conditions and avoiding adverse impacts on drainage and flooding. Table 3.9-6 shows the stormwater flow volumes and velocities modeled under existing conditions and Alternative 1. Figure 3.9-8 and Figure 3.9-9 depict the results.

Table 3.9-6 Existing and Alternative 1 Maximum Channel Volumes for the 6-Hour 100 Year Storm Event

Discharge point	Existing channel volume (acre-feet)	Proposed Action volume (acre-feet)	Difference (cfs)	Increase (%)
1	544	547	3	0.6
2	129	122	-6	-5.0
3	24	28	4	13.3 [a]
4	1,139	1,140	1	0.1
5	936	938	1	0.1
Overall	2,771	2,775	3	0.1

Notes: [a] The percent increase for these discharge points shows a relatively large percent increase as the drainages originate on the Project site. These drainages are smaller drainages and have lower velocity flows than drainages 4 and 5. Additionally, all the drainages converge further west of the site and thus the total change of 0.1 percent increase in volumes is most representative of the impacts and considered minor.

Source:(West Yost 2023)

Figure 3.9-8 Alternative 1: Maximum Flow Depths in 6-Hour 100-Year Storm Event

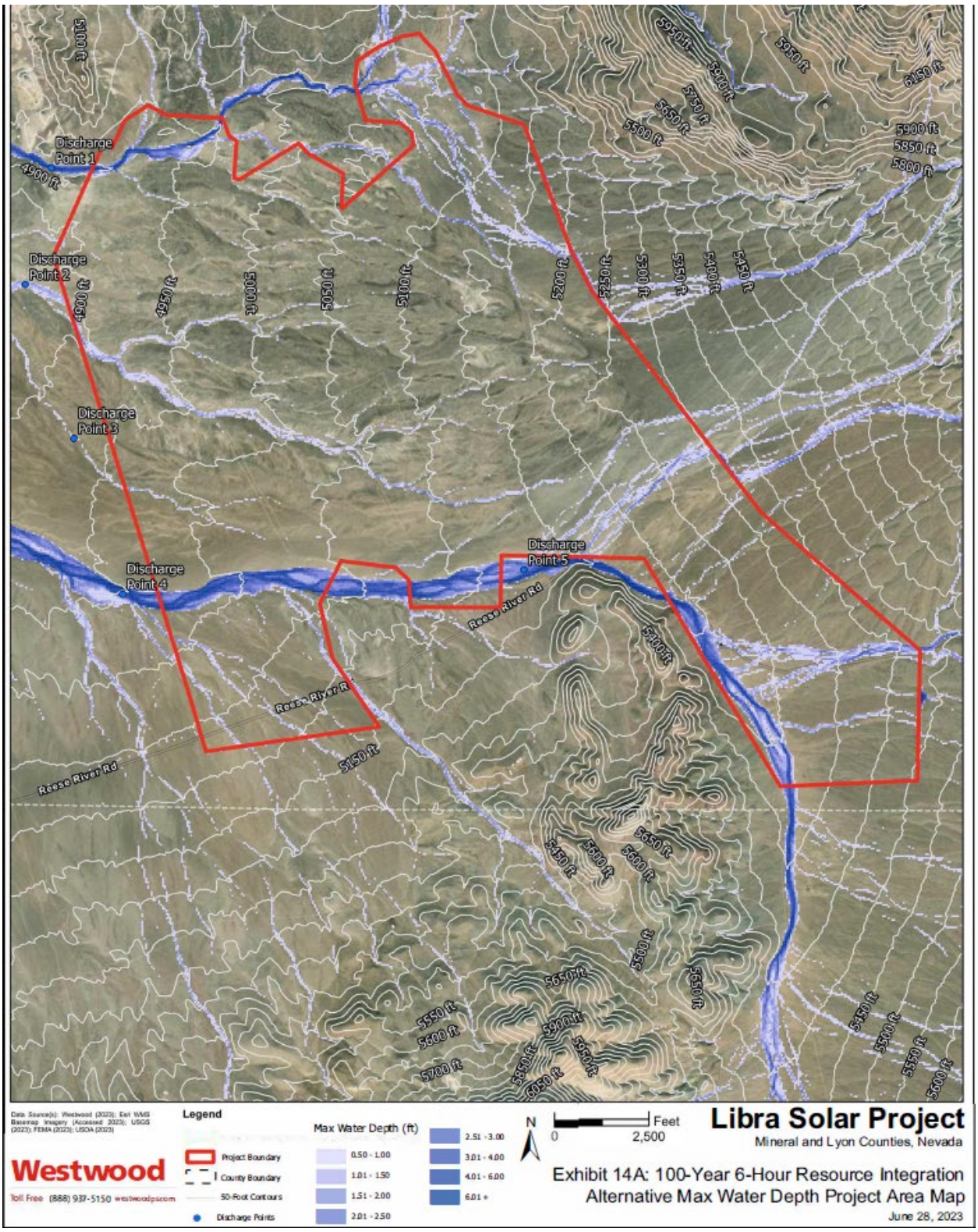


Figure 3.9-9 Alternative 1: Peak Velocities under the 6 Hour 100-Year Storm Event

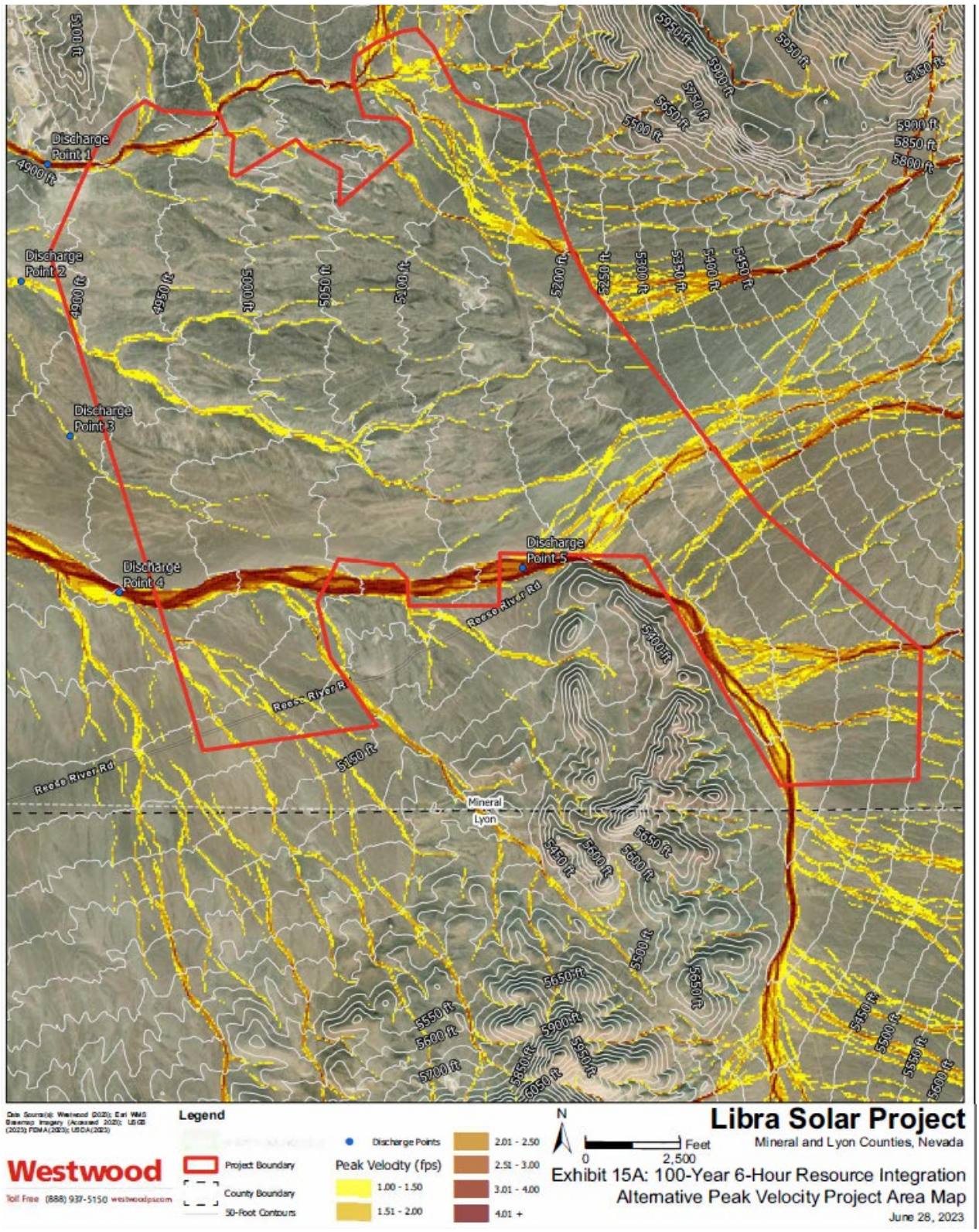


Table 3.9-7 Existing and Alternative 1 Maximum Flow Rates for the 6-Hour 100 Year Storm

Discharge point	Existing channel flow rate (cfs)	Initial channel flow rate (cfs)	Difference (cfs)	Increase (%)
1	751	750	−1	−0.1
2	634	604	−31	−5.1
3	107	158	51	32.2 [a]
4	1464	1,465	0	0.0
5	1276	1,276	0	0.0
Overall	4232	4,253	20	0.5

Notes: [a] The percent increase for this discharge point shows a relatively large percent increase as the drainages originate on the Project site. These drainages are smaller drainages and have lower velocity flows than drainages 4 and 5. Additionally, all the drainages converge further west of the site and thus the total change of 0.5 percent increase in velocities is most representative of the impacts and considered minor.

Source: (West Yost 2023)

Cumulative Impacts

Cumulative impacts under Alternative 1 would be reduced compared to the Proposed Action since there would be fewer drainage changes. Adverse cumulative impacts are not anticipated.

3.9.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Alternative 2 would result in fewer vehicle trips on East Walker Road compared to the Proposed Action, but increased traffic on other routes used for supplemental access during construction. However, no new ground disturbance affecting water quality or sedimentation would occur. Minor roadway improvements, such as grading and added road base would be within the existing roadway footprint and focus on areas of existing erosion. All impacts, including those during construction, O&M, and decommissioning, as well as cumulative impacts, would be consistent with the Proposed Action. Mitigation measures such as the SWPPP, BMPs, Western Solar Plan PDFs, and MMs would apply.

Groundwater usage may increase slightly under this alternative due to the need for additional dust control on the supplemental access routes. However, this increase is expected to be minor (<10-15%) and would not result in adverse impacts on groundwater use.

3.9.4.5 *Alternative 3 – Alternative Gen-tie Connecting to Greenlink West*

Under Alternative 3, impacts from the solar site and access road to water quality, flooding, or drainage changes during construction, O&M, and decommissioning would be the same as described for the Proposed Action. The same mitigation measures, including the SWPPP, BMPs, Western Solar Plan PDFs, and MMs, would be applicable to this alternative. However, this alternative would reduce potential impacts by replacing the 24.1-mile-long gen-tie with a 0.54-mile-long gen-tie east of the solar site to a switching station under the proposed Greenlink West line. This change would avoid impacts to the Mason Valley, including riparian areas around the Walker River and the WMA, as well as reduce impacts to jurisdictional waters associated with the Walker River.

While new areas of ground disturbance could impact drainage patterns, the gen-tie and switching station would only impact 11.8 acres on areas of low slope, mitigating adverse effects. Additionally, less groundwater for dust suppression would be needed under this alternative due to reduced ground disturbance compared to the Proposed Action.

Cumulative impacts under Alternative 3 would be similar to those described for the Proposed Action. By eliminating the gen-tie near other potential solar projects, this alternative would not contribute to drainage changes associated with those projects, thus avoiding adverse cumulative impacts.

3.9.4.6 *No Action Alternative*

Under the No Action alternative, the Project would not be constructed, and no impacts to surface water, groundwater, or jurisdictional waters would occur. Surface waters would continue to flow unobstructed, and no groundwater resources would be consumed. Water resources would not be affected.

3.9.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize impacts to water resources.

Table 3.9-8 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• WR 1-1, 1-3, 1-4 • SR 2-1
Carson City CRMP SOPs	• Soils, Watershed, and Air SOPs 4, 7 • Common to All SOPs 10, 18
Management Plans	• Groundwater Monitoring and Reporting Plan • Stormwater Pollution Prevention Plan • Spill Prevention, Control, and Countermeasures Plan • Stormwater Quality Management Plan • Site Drainage Plan • Site Restoration and Revegetation Plan (Available on the Project website) • Decommissioning and Site Reclamation Plan

Mitigation Measures

The Project would comply with the mitigation measures in Table 3.9-9 to minimize adverse impacts on water resources, as well as MM Soils-1 from Section 3.4 Soils.

Table 3.9-9 Water Resources Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM WR-1: Road Upgrades	The Applicant, in coordination with Lyon County, shall ensure adequate road drainage and a maintenance plan for construction and O&M for East Walker Road to address any erosion before it can cause sedimentation or off-road impacts to the surrounding land and water, commensurate with the Project's use of the road. The Applicant shall also design all road upgrades to Reese River Road to the BLM Road Standards identified in the BLM Handbook 9113-1- Road Design. Reese River Road upgrades shall be designed to ensure safe passage at all times during storm events and shall be adequately maintained over the life of the Project. Necessary permits shall be obtained based on the final design of the road improvements.

Mitigation Measure Identifier and Title	Description
MM WR-2: On-site Construction Water Ponds	On-site ponds used for construction water shall be designed with appropriate freeboard and/or spillways and flow dissipation to ensure that water is held or properly discharged during a storm event without causing excessive sedimentation.
MM WR-3: Bank Stabilization	During final Project design, the Applicant's engineer shall assess the need for erosion control and bank stabilization devices (including, if determined appropriate, riprap lining of wash banks to direct flows and protect banks) to be installed in and around Project area washes and shall include recommended stabilization in the final design to be submitted to the BLM prior to issuance of the Notice to Proceed (NTP). The Applicant shall obtain appropriate permits as needed. The facility operator shall perform routine site inspections to identify and repair areas of erosion, such as deep rills and gullies in the panel arrays and along the gen-tie access routes, and shall maintain, change, or add additional erosion control features if needed in accordance with required permits.
MM WR-4: Avoidance of Jurisdictional Waters	During final engineering design of the gen-tie and its construction, placement of fill into any jurisdictional drainages shall be avoided to the greatest extent feasible. If avoidance is not possible, impacts and fill shall be limited to less than 0.5 acres and NWPs obtained through USACOE as required under law.

3.9.4.8 *Irreversible or Irretrievable Impacts and Residual Effects*

No irreversible or irretrievable impacts to water resources would result from implementation of the Proposed Action or alternatives. Surface waters impacted by the construction of access roads associated with the Project could be restored to pre-construction conditions to the extent feasible following the 30-year lifespan of the Project. Residual impacts are also not anticipated with mitigation.

3.10 Land Use, Realty, and Special Designations

3.10.1 Introduction

This section is based on information provided in the Land Use and Corridor Report (Panorama 2023b).

3.10.2 Analysis Area

The area of analysis for land use and realty features is the extent of lands that could be directly or indirectly affected by the Project, such as lands subject to an existing ROW, permit, lease, or easement; a designated transmission corridor; or another land use authorization. Direct or indirect effects on land use and realty would be limited to areas where land use designations or authorizations would change, where permanent features would be installed, or where land disturbance or land use conflicts could or would occur during construction.

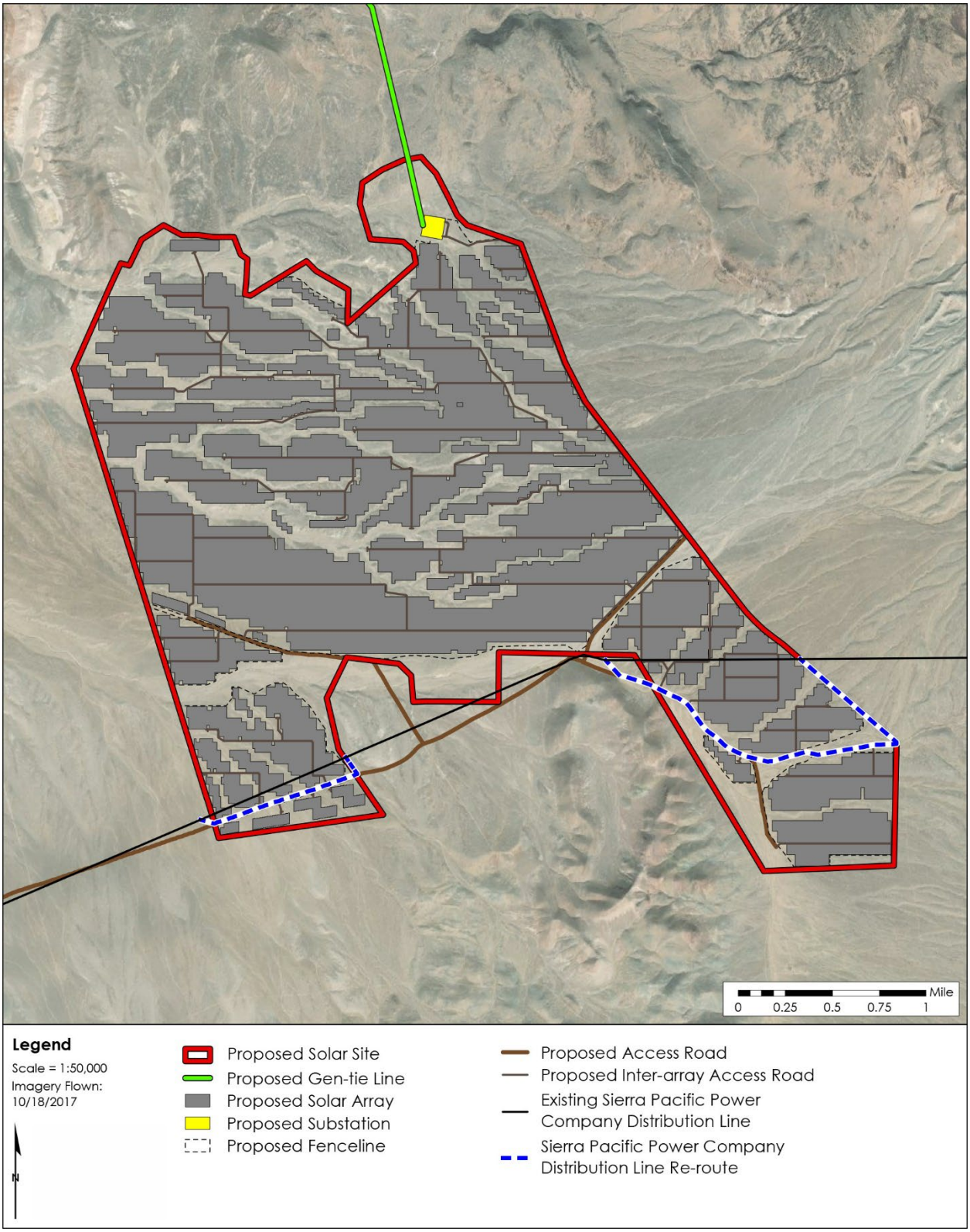
3.10.3 Affected Environment

3.10.3.1 *Land Use and Realty*

The Project solar site and proposed gen-tie are located almost entirely within BLM-administered land, with the exception being approximately 2 miles of the 24.1-mile-long proposed gen-tie alignment that is located on State-owned lands within the northeast corner of the Mason Valley WMA and adjacent to the Fort Churchill substation as well as and on private lands to the north of the Mason Valley WMA. The 13.8-mile-long access road is located within BLM-administered land except for a 2.1-mile segment that is located on non-BLM lands. Approximately 18 miles of the gen-tie alignment that is located on BLM lands is within an existing designated Section 368 energy corridor (DOE n.d.). The Fort Churchill substation is also the northern terminus of Greenlink West, originating from Clark County, Nevada (Harry Allen substation).

Existing, approved, and pending land use authorizations were identified in a title report for the Project, including lands affected as described in the public land survey system (PLSS) sections. The BLM provided additional pending land use authorization information. All land use authorizations in and adjacent to the Project area are detailed in the Land Use and Corridor Report (Panorama 2023b) and summarized in Table 3.10-1. Adjacent ROW holders were notified of the Project by the BLM. One ROW authorization, serial number NVNV105887193 (legacy NVN 093397), for a distribution power line crosses through the Project solar site. This distribution line is owned by NV Energy doing business as Sierra Pacific Power, and the ROW was renewed in 2021; however, it is not currently energized. The Project includes realignment of this distribution line through the solar site, as shown in Figure 3.10-1.

Figure 3.10-1 ROW Authorization NVNV105887193 through the Proposed Project Solar Site



Source: (Westwood 2022)

Table 3.10-1 Land Use Authorizations in the Project Area

Name	Type of ROW authorization	Status	Owner/applicant	BLM Case file number
Greenlink West	Power transmission infrastructure (525 kV transmission line)	Proposed	NV Energy	N-099863
Mason Valley East Solar	400 MW solar facility	Proposed	NextEra	N-100105
Pine Nut Solar	200 MW solar facility	Proposed	NextEra	N-100106
Sleepy Orange	500 MW solar facility	Proposed	Sleepy Orange Solar, LLC	N-101056
Honey Mesquite	500 MW solar facility	Proposed	Honey Mesquite Solar, LLC	N-101526
Nettleleaf	500 MW solar facility	Proposed	Nettleleaf Solar, LLC	N-101524
U.S. Route 95 Alternate (US 95A)	Transportation (Interstate highway)	Operating	Nevada Department of Transportation	N-091950
Old State Road 2C	Transportation (Roadway)	Decommissioned	N/A	N/A
Southern Pacific (Union Pacific) Railroad	Transportation (Railroad)	Operating	Union Pacific	NVNV106083279 (legacy N-60243)
Reese River Road	Transportation (Roadway)	Operating	Lyon County	N/A
Sierra Pacific Power Transmission Line	Transmission	Operating	Sierra Pacific Power Co	N-091646
Sierra Pacific Power Transmission Line	Transmission	Operating	Sierra Pacific Power Co	N-00725
Sierra Pacific Power Company/NV Energy	Distribution	Not operating	Sierra Pacific Power Co.	NVNV105887193 (legacy NVN-093397)
LADWP Pacific DC Transmission Line	Transmission	Operating	Los Angeles Department of Water and Power	NVN1060796522 (legacy N-1018)

Name	Type of ROW authorization	Status	Owner/applicant	BLM Case file number
Wassuk Microwave Station	Transmission	Relinquished	American Tower LP	N-73815
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-94367
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-91233
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-91655
Miller Dusty LLC Geothermal	Geothermal Lease	Closed	Miller Dusty LLC	N-79706
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-005253
John David Stanley	Road	Operating	John David Stanley	N-041273
NDOT Highway	Federal-aid highway	Operating	NDOT	N-61187
Lyon County Pete Hendrich's Road	Road	Operating	Lyon County	NVNV106143630 (legacy N-40975)
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-43296
Michael A Sturge Irrigation Well	Water facility: well	Operating	Michael and Michelle Sturge	N-78533
LA Department of Water and Power Communication Site	Communication site	Operating	LA Department of Water and Power	N-1117

Name	Type of ROW authorization	Status	Owner/applicant	BLM Case file number
Sierra Pacific Power Company Transmission Line	Transmission	Operating	Sierra Pacific Power Co.	N-7255
Sierra Pacific Power Company Transmission Line	Distribution infrastructure (12.5 kV)	Operating	Sierra Pacific Power Co.	N-91645

3.10.3.2 *Transportation Corridors*

Regional site access is provided by US 95A, which bisects the gen-tie alignment east–west and then runs north–south on the west side of the Mason Valley, opposite the gen-tie. Where the gen-tie and US 95A cross, the gen-tie alignment is within the existing Section 368 energy corridor (corridor 18-224). Union Pacific (UP) operates the Hawthorne Branch rail line, which connects to a UP mainline east of Fallon, Nevada. The UP mainline passes near the Fort Churchill substation.

3.10.3.3 *Utility Corridors*

Two utility corridors are present in the Project area: the BLM's utility corridors and the Section 368 energy corridor (as depicted in Figure 3.10-2). The BLM's utility corridors run alongside both the eastern and western boundaries of the Project solar site, merging and continuing north along the proposed gen-tie alignment, passing through the Fort Churchill substation. Within these utility corridors lies the Los Angeles Department of Water and Power's (LADWP's) Pacific DC Transmission Line (BLM Case file number NVN1060796522 [legacy N-1018]), which runs parallel to the gen-tie alignment for about 5 miles before intersecting near its northern terminus.

3.10.3.4 *Specially Designated Areas*

National Conservation Areas

The Pistone-Black Mountain NCA was designated by Congress and signed into law in December 2022. The area includes 3,415 acres to be managed by the BLM, as shown in Figure 3.10-3. The site has cultural and historical significance to the Walker River Paiute Tribe and is used for pine nut picking, ceremonies, and visiting sacred sites (Walker River Paiute Tribal Council 2019). The site includes significant archaeological resources as well as petroglyphs. It is located within 5 miles of the Project solar site; however, it is not easily accessible from the Project solar site due to rugged intervening terrain.

Figure 3.10-2 Utility Corridors

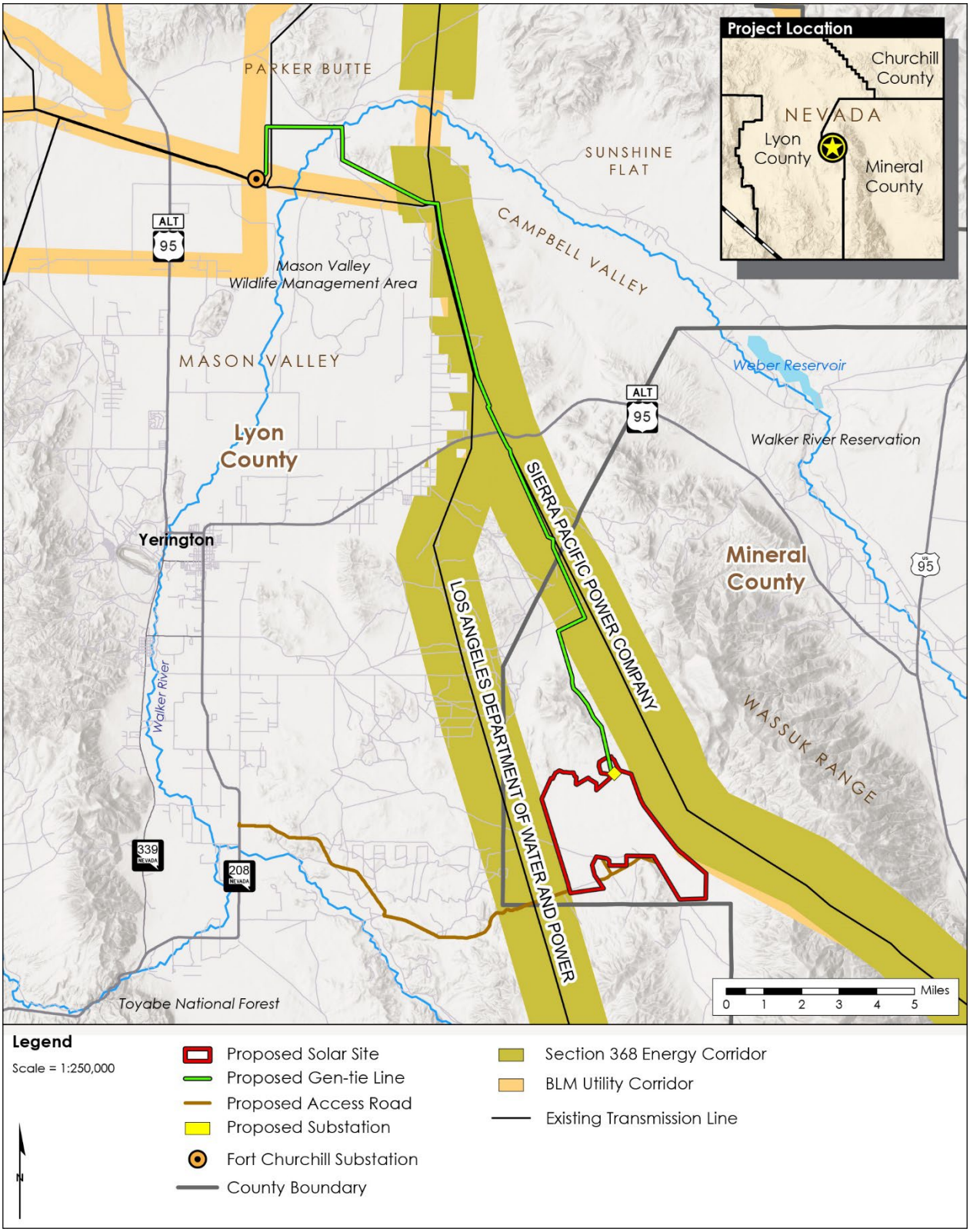
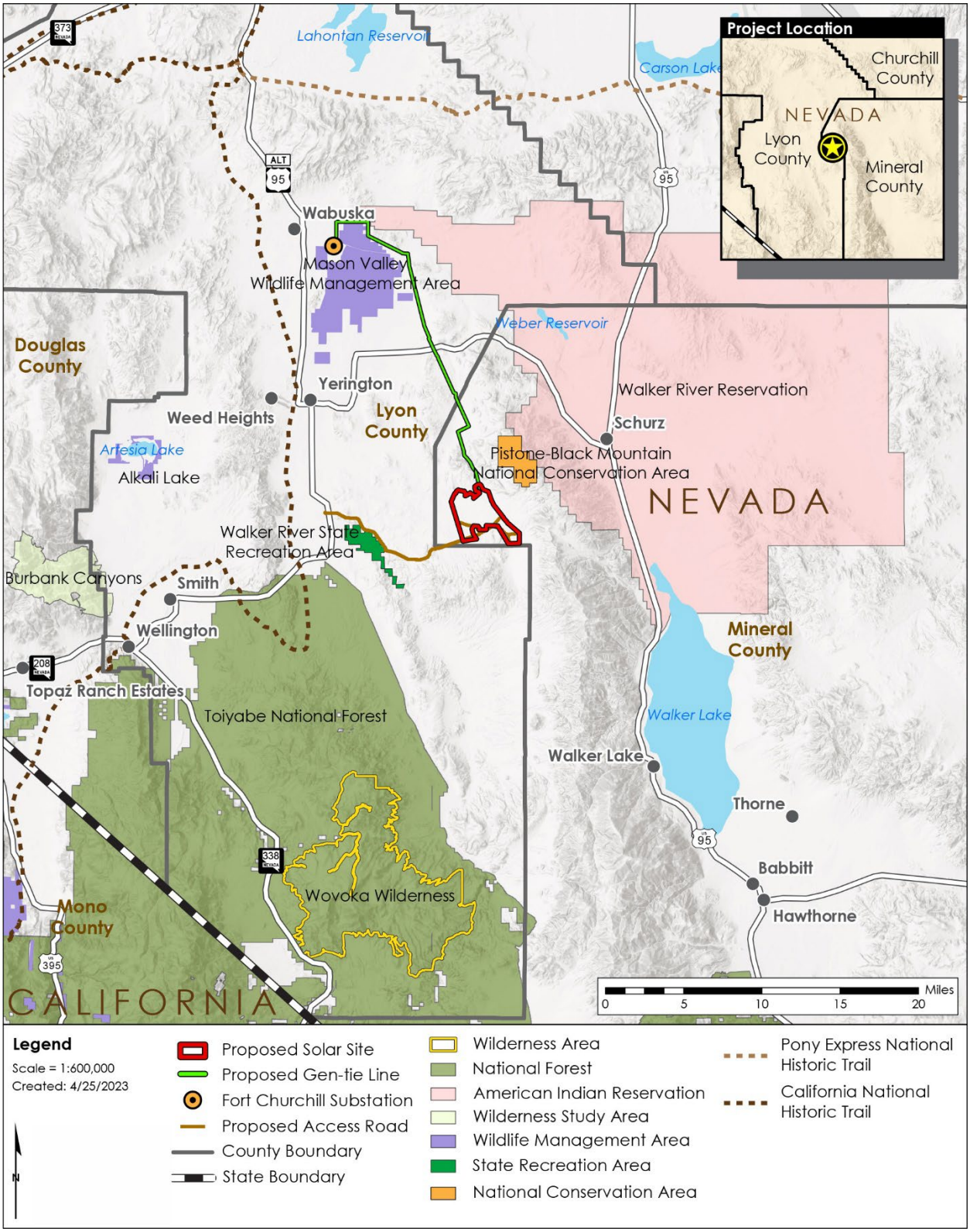


Figure 3.10-3 Special Management Areas



State Parks and Wildlife Management Areas

The State-managed Pitchfork Ranch within the Walker River State Recreation Area lies approximately 3.5 miles east of the Project area, accessible via East Walker Road (see Figure 3.10-3). The Project access road, partly running along Reese River Road, also provides access to the Walker River State Recreation Area.

The Mason Valley WMA, situated north of Yerington, nearly encircles the Fort Churchill substation. The proposed gen-tie alignment borders the WMA to the east and south, crossing a small northern section. No other WMAs are in proximity to the Project area, including the solar site, gen-tie, and access road.

Gas transmission lines run northwest from the Fort Churchill substation, following the BLM utility corridor on the northwest side of the Mason Valley (DOT 2023).

American Indian Reservations

The Walker River Reservation (Reservation), belonging to the Walker River Paiute Tribe, is located to the northeast of the Project area. The Project solar site is on the west side of the Wassuk Mountain Range, opposite the Reservation. The linear distance between the Reservation and Project solar site varies; however, it is bisected by the Wassuk Range until the northern end of the proposed gen-tie alignment (as shown in Figure 3.10-3). The Project solar site or other components are not proposed to be sited on any Reservation lands.

3.10.3.5 *Military and Civilian Aviation*

The Project is situated outside the Risk of Adverse Impact on Military Operations and Readiness Areas (RAIMORA), with the nearest RAIMORA site being the Restricted Airspace R2508 and Nevada Test and Training Range (NTTR) near the Hawthorne Army Depot (DOD 2016). The area is intersected by multiple military training routes, as illustrated in Figure 3.10-5, alongside FAA special use airspace and military installations. Within a 50-mile radius, there are 21 registered airports, including Yerington Municipal and Lantana Ranch (see Figure 3.10-4). Low-level flights are conducted in the vicinity for various purposes, including fire operations and wildlife surveys, with potential for aerial firefighting operations during wildland fires, assuming operations below 500 feet above ground level (BLM and DOE 2012).

3.10.3.6 *Mineral Resources*

The nearest active mine to the Project solar site is Pumpkin Hollow Copper Mine, owned by Nevada Copper, situated on private land withdrawn from public use in 2015 by Congress. The Project gen-tie alignment intersects unpatented mining claim areas, with the closest being approximately 0.3 miles northwest of the solar site (see Figure 3.10-6). The gen-tie alignment traverses seven sections containing active or filed claims related to Pumpkin Hollow, detailed in Table 3.10-2.

Figure 3.10-4 Airports

Figure 3.10-5 Military Routes

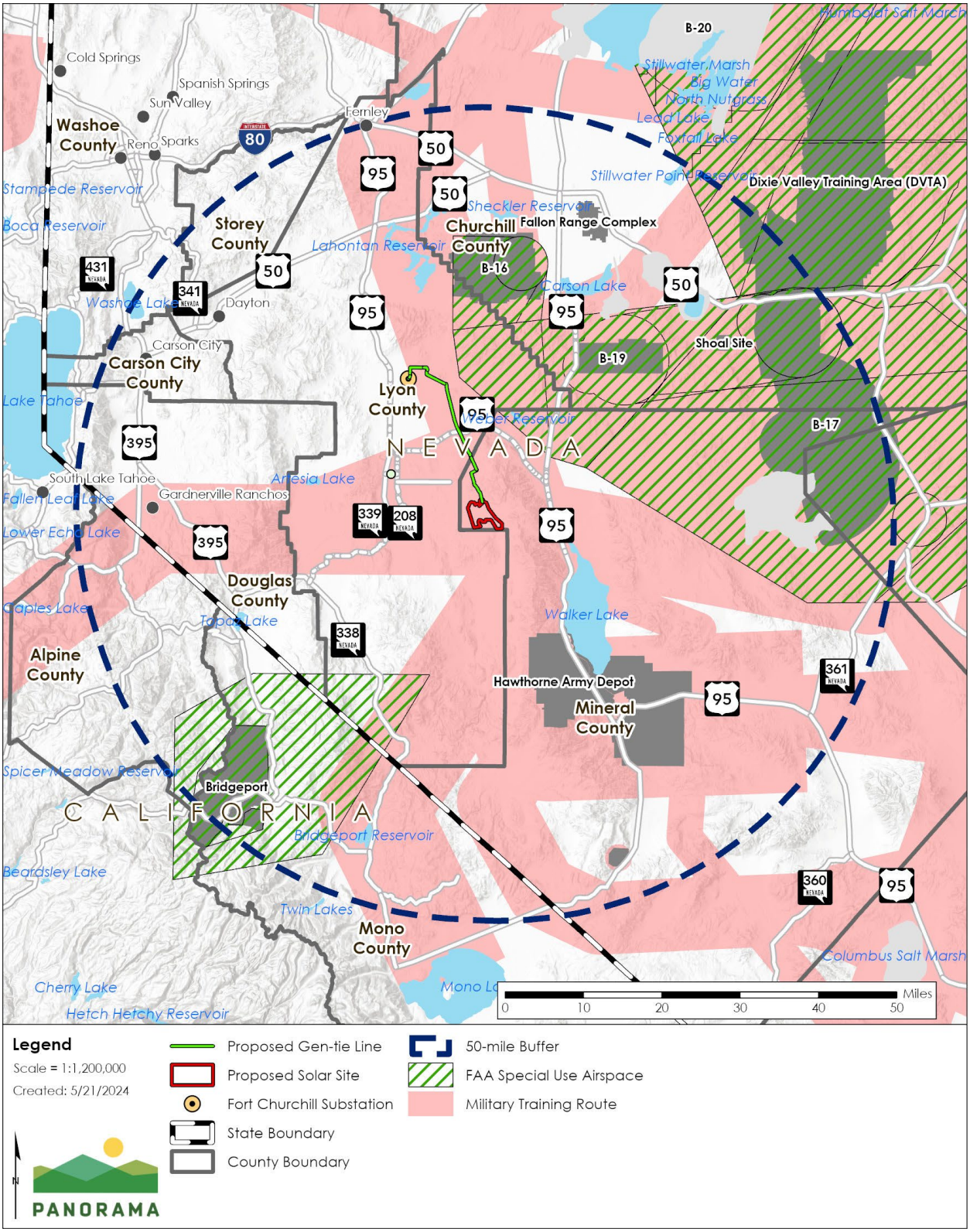


Figure 3.10-6 Mining Claims

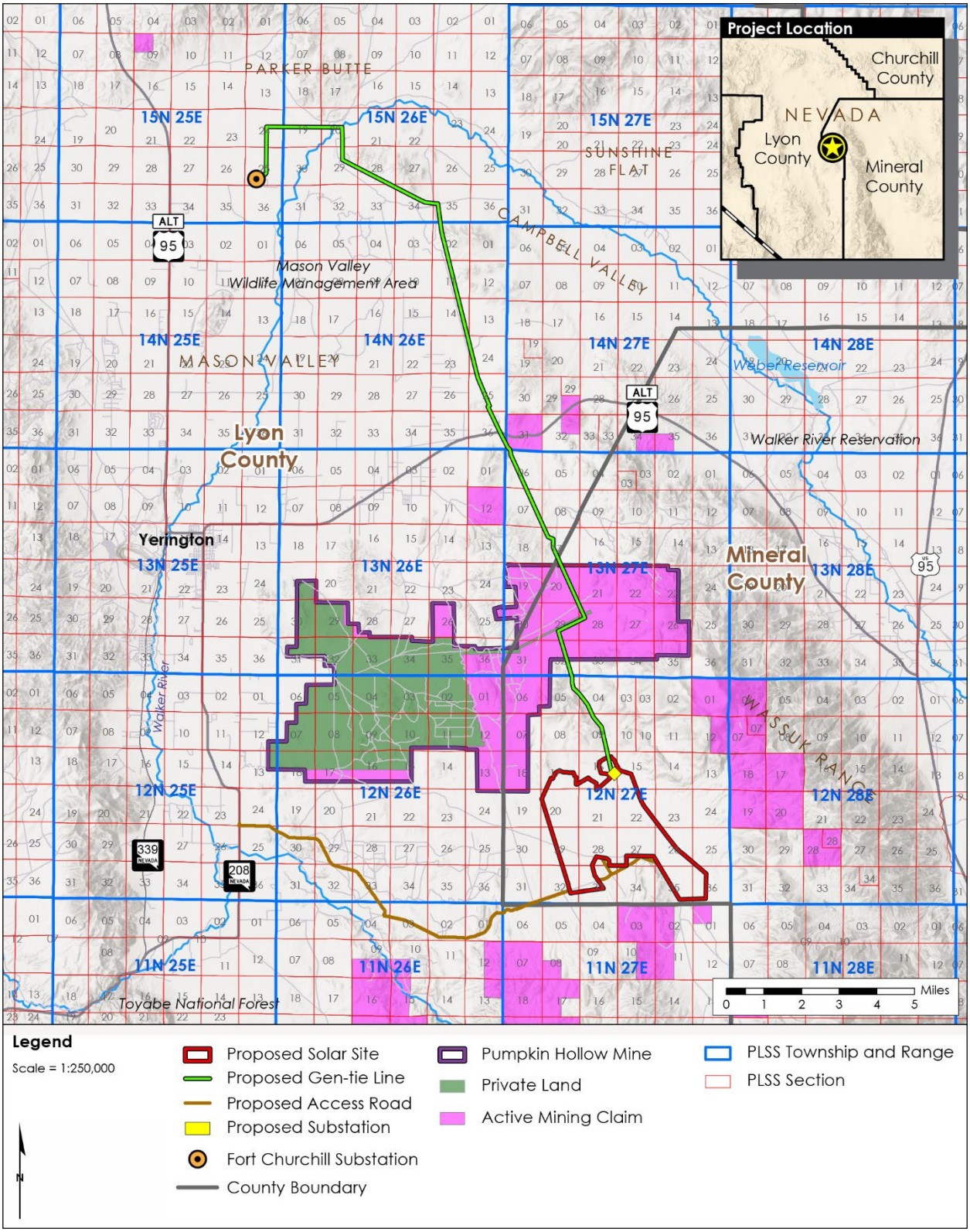


Table 3.10-2 Active Claims within Gen-Tie Alignment

Township	Range	Section	Number of claims
12 North	27 East	5	8
13 North	27 East	17	3
13 North	27 East	20	33
13 North	27 East	21	36
13 North	27 East	28	45
13 North	27 East	29	27
13 North	27 East	32	20

Source: (EnviroMine, Inc. 2022)

3.10.4 Environmental Consequences

3.10.4.1 *Methods*

Existing land use data were collected through analysis of aerial photography, field verification, review of existing studies and plans and BLM databases, and through coordination with local and county agencies. The Project was reviewed for conflicts with applicable land uses and realty, plans and policies, special management areas, and military and civilian aviation.

3.10.4.2 *Proposed Action*

Construction Impacts

Land Use and Realty.

Various land use authorizations, both existing and pending, are present in the Project area, detailed in Table 3.10-1. The Project's implementation may affect these authorizations, requiring the Applicant to coordinate with existing ROW holders. A distribution line ROW owned by Sierra Pacific Power Company (doing business as NV Energy) within the Project site would require rerouting, despite its current inactive status, due to its recent renewal (NVNV105887193). The Project gen-tie alignment would also intersect multiple existing and proposed transmission line ROWs, such as the LADWP Pacific DC Transmission Line, requiring potential license agreements with LADWP prior to construction. The gen-tie would also parallel the proposed Greenlink West ROW (N-099863) for approximately 20 miles. Coordination is essential to align the Project and the proposed Greenlink West ROWs during final design to avoid conflicts.

The Western Solar Plan PDF LR2-1 requires that solar facilities be designed and constructed to avoid, minimize, and/or mitigate impacts on the BLM land use planning designations. The Western Solar Plan requires solar facilities to design and construct with minimal impact on BLM land use planning designations. Solar PDF LR1-1 identifies land use conflicts and constraints in the WEAP, distributed to all personnel before site entry. MM LU-1 avoids ROW conflicts during construction, requiring coordination with transmission line holders (NV Energy, LADWP) to minimize disruption. Additional measures include relocating distribution lines and adjusting ROWs, all aimed at reducing ROW impacts. Potential impacts to ROW would be minimized through the implementation of MM LU-1.

Transportation Corridors. Improvements to East Walker Road, Reese River Road, and Old State Road 2C are needed for heavy truck traffic during construction, with preliminary estimates focusing on enhancing road bases and stabilization. The Project is expected to benefit these transportation corridors long-term, enhancing public access, and reducing dust. The Project would temporarily affect transportation corridors where gen-tie lines intersect local roads, US 95A, and the UP Railroad. Increased vehicle traffic would be expected during construction activities over a 16-month period (see Section *3.17:*

Transportation and Traffic). However, existing land use authorizations within or near the analysis area would not be blocked or affected. Support structures for the gen-tie lines would be positioned outside transportation corridors, ensuring unimpeded travel. Temporary closures of US 95A, local roads, and the railroad would be coordinated with NDOT, Lyon County, and UP Railroad. Encroachment permits and authorizations would be secured before any work within the ROWs. Highway traffic would adhere to NDOT permit requirements. The Applicant must obtain necessary permissions, approvals, and permits to cross transportation corridors, ensuring no adverse impacts on existing corridors.

Utility Corridors. The Project is designed to avoid conflicts with utilities crossed or aligned parallel to the gen-tie line. It would be built within the existing Section 368 energy corridor, an authorized use. The solar site was chosen to avoid energy corridors to the east, west, and north, preventing incompatible uses. The gen-tie would be placed outside energy corridors, including north of the solar site, to avoid designated Bi-State sage grouse habitat. It will also avoid the BLM utility corridor in the Mason Valley WMA, safeguarding sensitive resources and ensuring no adverse effects on energy corridors.

Specially Designated Areas. *Overview.* Specially designated areas identified within 25 miles of the Project area include both boundary-based features (e.g., parks and conservation areas) and linear features (i.e., national trails and byways). All specially designated areas are sufficiently removed from the Project area to avoid direct impacts or adverse land use effects.

National Conservation Areas. The Project solar site would be located approximately 2.5 miles from the 3,415-acre Pistone-Black Mountain NCA. A visual analysis determined that the surrounding topography would largely obscure the Project from view, and where visible, it would not dominate the viewshed (Panorama 2023b). Due to limited visibility and distance from key viewpoints, no impacts to the NCA are expected. Refer to *Section 3.13: Visual Resources* for details on the visual analysis.

The proposed gen-tie would be a high-voltage line and may generate corona noise of up to 50-60 decibels at 50 feet, particularly in wet conditions and high heat. At 2.5 miles, this noise is expected to be imperceptible within the NCA, where background noise levels are around 45 decibels. Given the distance, no adverse effects on the NCA are anticipated.

State Parks and Wildlife Management Areas. The Pitchfork Ranch section of the Walker River State Recreation Area borders East Walker Road, a key access route for the Project. During construction and decommissioning, heavy truck traffic would increase, with dust control measures implemented along East Walker Road to mitigate potential impacts on air quality and safety. Road closures are not proposed, ensuring continuous access throughout all Project phases. Temporary delays due to construction traffic may occur but would not be significant as roads would remain open throughout construction, O&M, and decommissioning phases. Long-term operational traffic would not be anticipated to be noticeable above current volumes exceed current volumes. The Applicant would collaborate with Lyon and Mineral counties to develop a Traffic and Transportation Plan addressing traffic-related issues.

Approximately 1,900 feet of the proposed gen-tie alignment would cross the Mason Valley WMA in two different locations. While the added overhead transmission infrastructure would be visible from within the WMA, it would be similar to existing infrastructure related to the Fort Churchill Generating Station. Construction of the gen-tie would disturb less than 1 acre of ground, with no new roads built within the WMA. Existing access roads would be utilized. The Applicant would collaborate with NDOW to obtain necessary rights for construction on NDOW property within the WMA.

Coordination with NDOW would aim to minimize adverse effects. The Project would not impact the intrinsic value or use of any state parks or lands. Implementation of a Traffic and Transportation Plan, developed collaboratively, would mitigate impacts during construction and decommissioning to State parks and lands, expected to be minor with no long-term effects.

American Indian Reservations. Although no Project components are proposed within Reservation boundaries, a section of the proposed gen-tie alignment, at its point farthest northeast, is in close proximity to the Reservation lands. MM LU-2 would be implemented to realign that section of the gen-tie to ensure it is compatible with Greenlink West and to ensure no portion of the ROW is on the Walker

River Reservation (unless otherwise agreed upon). Potential impacts to American Indian reservations would be avoided through implementation of MM LU-2.

Military and Civilian Aviation. *Air Space.* The tallest components within the Project solar site would be poles for the collector lines, which would not exceed 50 feet above ground level (AGL). The proposed gen-tie structure heights may range from 100 feet to just over 200 feet. FAA evaluation for safety hazards pursuant to Title 49 USC. Section 44718 would be required since gen-tie components could exceed 200 feet AGL. The expected outcome may include the need for lighting at the top of the facilities.

MM LU-3 requires the Applicant to coordinate with FAA for the airspace evaluation process and to implement the required measures to avoid hazards to airspace. Adverse impacts would be avoided through the appropriate coordination and planning requirements and implementation of the requirements identified by the FAA.

*Aviation Emergencies and Dangers from Glint and Glare***.** PV panels installed for the Project would reflect a greater amount of specular light than the existing desert landscape; however, the amount of reflected light would not reach levels that would create an aviation hazard. Adverse effects are not anticipated. Refer to Section: *3.13 Visual Resources* for more information on visual impacts.

Communication System Interference. Project components would not be installed near aviation communication antennas or block transmission signals. Adverse effects are not anticipated.

Mineral Resources. Continued operation of existing mines outside the Project area would not be affected by Project construction or O&M. The Project involves temporarily withdrawing 5,141 acres from mineral entry for a 2-year period from the NOI release in April 2023. If authorized, the solar site would be unavailable for new mineral entry during the solar ROW period. This withdrawal aligns with FLPMA multiple-use mandates but could limit access to mineral resources under the solar site. However, no adverse effects are expected as there are no active mineral claims within the solar site, and minerals are available in unaffected Project regions. Thus, no adverse direct effects on mineral resource availability or extraction are anticipated.

Operation and Maintenance Impacts

O&M impacts on land use and realty would be limited to potential conflicts with existing land use programs, plans, policies, or authorizations. The Project would prevent other land uses on the solar site but aligns with BLM's solar energy project policies (BLM and DOE 2012) and existing land uses in the area. Long-term operation would comply with federal, State, and local land use plans and policies, without conflicting with existing BLM authorizations. No new impacts on land use or realty are expected beyond those discussed under Construction Impacts.

Similarly, Project O&M would not impact airspace, aviation emergency, glint and glare, or communication systems, with no adverse effects anticipated.

Decommissioning Impacts

Land use and realty impacts during decommissioning and reclamation activities for the Project would resemble those during construction. Transportation routes may experience increased vehicle traffic during decommissioning, but impacts are expected to be less than during construction and would be addressed in a separate Traffic and Transportation Plan (refer to *Section 3.17 Traffic and Transportation*). Decommissioning activities would adhere to Project reclamation plans, reviewed by the BLM and incorporating any new land use policies. Thus, impacts on surrounding land use and realty are not anticipated.

Mineral resources would not be adversely affected by decommissioning, as surface extraction would become available again once decommissioning is complete and the ROW terminated. Following decommissioning and reclamation, lands associated with the Project would be restored to their pre-Project state where feasible, remaining under BLM management for multiple-use purposes. No long-term impacts on land use and realty from decommissioning are expected.

3.10.4.3 *Cumulative Impacts*

Potential cumulative impacts on land use and realty could arise during Project construction, its 30-year lifespan, and decommissioning. Other proposed solar developments in Mason Valley and Mineral County are still undergoing environmental review and permitting. Coordination with existing ROW holders and consideration of current land uses would reduce cumulative effects. While adverse land use effects would be minimized, the build-out of Mason Valley and Mineral County areas could moderately impact other potential land uses over project lifespans. This build-out, alongside solar and mining development along Highway 95, would alter existing conditions due to visual effects and changes in recreational settings.

3.10.4.4 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Under Alternative 1, Project construction, O&M, decommissioning, and cumulative impacts related to effects on existing land use and realty, effects on special management areas, and effects on aviation would remain the same as the Proposed Action because the Project components and total acres of disturbance would be only 9 acres less than for the Proposed Action. The same MMs, including MM LU-1, MM LU-2, and MM LU-3 would apply to this alternative to reduce any adverse effects.

3.10.4.5 *Alternative 2 – Alternative Supplemental Access During Construction*

Under Alternative 2, Project construction, O&M, decommissioning, and cumulative impacts related to effects on existing land use and realty, effects on special management areas, and effects on aviation would remain the same under Alternative 2 as the Proposed Action. The solar site, access road, and gen-tie would be constructed as described for the Proposed Action.

This alternative includes providing supplemental access to the solar site during construction. The access would need to be coordinated with existing land ownerships (e.g., Nevada Copper) and ROW holders (e.g., LADWP) and agreements established prior to authorizing supplemental access uses to ensure no conflicts. Minor roadway improvements would be within the existing ROW and roadway disturbance area.

3.10.4.6 *Alternative 3 – Alternative Gen-Tie Connecting to Greenlink West*

Construction, Operation and Maintenance, and Decommissioning

Impacts would be the same as for the Proposed Action for the solar site and access road since the construction, O&M, and decommissioning phases would be the same as for the Proposed Action. The 24.1mile-long gen-tie would be reduced to a 0.54-mile-long gen-tie and switching station under the Greenlink West line. The switching station would impact the proposed ROW for Greenlink West and would thus need to be approved by NV Energy in order to implement this alternative. Overall, this alternative would eliminate one of two 525 kV lines up to Fort Churchill substation and would thus not result in conflicts with any other ROWs in the vicinity of the Fort Churchill substation, nor along the gen-tie. The Project would not need to cross US 95A or the UP Railroad. MM LU-1 would still apply, except that the coordination with LADWP and other transmission line ROWs would not be needed. MM LU-2 would not apply since the gen-tie would no longer cross near Reservation lands. MM LU-3 would still apply for the limited number of gen-tie poles needed to connect the solar site to the new switching station.

Cumulative Impacts

The solar site acreage would be the same for Alternative 3 as the Proposed Action and would contribute to the overall increase in utility-scale solar development within the Mason Valley and Mineral County. Cumulative impacts related to Alternative 3 would be similar yet reduced as compared to the Proposed Action because there would be no impacts related to the 24.1-mile gen-tie line.

3.10.4.7 *No Action Alternative*

Under the No Action alternative, the BLM would not authorize a ROW grant, and the Proposed Action would not be implemented. The public lands in the Project area would continue to be managed by the BLM in accordance with existing land use designations, which may include the construction and

operation of a different solar project or other energy development. There would be no use of the land area or designated utility corridors and, therefore, no contribution to cumulative land use impacts.

3.10.4.8 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize impacts to land uses.

Table 3.10-3 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• LR1-1 and LR2-1
Carson City CRMP SOPs	• No SOPs from the CRMP are directly applicable to the impact analysis.
Management Plans	• Worker Environmental and Awareness Program • Traffic Management Plan

Mitigation Measures

The Project would comply with the mitigation measures in Table 3.10-4 to minimize adverse impacts on land use and realty.

Table 3.10-4 Land Use and Realty Mitigation Measures

Mitigation Measure Identifier and Title	Description
LU-1: ROW Coordination	The following measures would be undertaken to avoid ROW conflicts: • Coordination shall occur with transmission line ROW holders/applicants to identify potential conflicts between existing and proposed transmission lines and Project gen-tie lines. • Coordination with NV Energy shall occur to reach an agreement for realignment of the existing distribution line through the Project solar site and adjustments to the ROW for the distribution line. • Facility adjustments shall be incorporated into final design and engineering plans through cooperative engineering agreements with LADWP and NV Energy, as needed, to avoid any conflicts, such as adjusting the locations or heights of conductors and support structures, including towers, or by evaluating other means of the Project's gen-tie lines crossing existing transmission line ROWs. • Construction activities shall be scheduled with the appropriate ROW holder/applicant (e.g., NV Energy) in overlapping ROW areas to minimize disruption to construction activities. • Cooperative Engineering Agreements shall be provided to the BLM prior to issuance of an NTP for construction of the gen-tie.

Mitigation Measure Identifier and Title	Description
LU-2: Avoidance of Reservation Land	The final design of the Project gen-tie shall be subject to micro-adjustments to the alignment to ensure that the ROW of the gen-tie alignment does not cross onto Reservation Lands while ensuring avoidance or minimization of cultural or biological resources from realignment.
LU-3: FAA and DoD Compliance	The Applicant shall apply for the appropriate approvals and clearances under Title 49 USC section 44718 for the FAA and Part 211 of Title 32 CFR for the DoD and shall provide documentation of approvals and clearances to the BLM prior to construction.

3.10.4.9 *Irreversible and Irretrievable Impacts and Residual Effects*

No irreversible commitments of resources would occur because the Project site would be reclaimed after decommissioning of the Project, and these uses could then be reestablished. No residual effects on land authorizations or transportation corridors would occur as coordination, obtaining permissions and authorizations, and implementing design modifications would avoid conflicts. The Project would not result in residual effects to utility corridors or military and civilian aviation as all impacts would be minimized once mitigation is implemented.

3.11 Rangeland Resources

3.11.1 Introduction

This section summarizes information provided in the Land Use and Corridor Report, Chapter 4: Rangeland Resources (Panorama 2023). The BLM lands within the Project area are available to graze under the current land use plan and are within actively permitted grazing allotments. Grazing on public lands is authorized by the Taylor Grazing Act of 1934. Management of grazing lands is also governed by FLPMA and the Public Rangelands Improvement Act of 1978. The number of livestock authorized per grazing allotment on public land is measured using animal unit months (AUM), which is the amount of forage needed to sustain one cow and calf, one horse, or five sheep or goats for one month. The BLM manages grazing so that the land can attain and maintain the desired condition defined by rangeland health standards and guidelines.

3.11.2 Analysis Area

The area of analysis for rangeland resources is the extent of land that could be directly or indirectly affected by the Project. Direct effects would be limited to designated rangeland that could be disturbed or converted to incompatible uses. Potential indirect effects on rangeland resources would be limited to a few miles or less or to locations where existing grazing activities in the Project area could be diverted due to a loss in grazing land (i.e., other public lands in the vicinity where grazing is allowed).

3.11.3 Affected Environment

The Project (including the solar site, gen-tie, and access road) would intersect five grazing allotments managed by BLM: Gray Hills, Perry Springs-Deadman, Black Mountain, Parker Butte, and Cleaver Peak (as shown in Figure 3.11-1, and Table 3.11-1). More details on the grazing allotments are included in the Land Use and Corridor Report for the Project (Panorama 2023). The proposed gen-tie line alignment ROW would bisect the Black Mountain, Parker Butte, and Cleaver Peak allotments. The Gray Hills and

Perry Springs-Deadman allotments overlap with the proposed Project solar site (as shown in Figure 3.11-1).

The Gray Hills and Perry Springs-Deadman allotments overlap with the proposed Project solar site by approximately 1,722 and 3,419 acres, respectively (as shown in Figure 3.11-1). The Talbott Livestock Company LLC currently holds the grazing preferences for the Gray Hills and Perry Springs-Deadman allotments.

Associated grazing infrastructure, also commonly called *range improvements*, within or near the proposed Project solar site include fencing, a cattleguard, surface water spring water sources, well water sources, multiple water pipelines, water troughs, water storage tanks, and corrals (as shown in Figure 3.11-2 and Figure 3.11-3). Access to these allotments and the infrastructure for both allotments is primarily by Reese River Road.

Table 3.11-1 Open Grazing Allotments within the Project Area

Allotment name (BLM allotment number)	BLM field office	Management status	Use	Total active AUMs	Total acres	Proximity
Gray Hills (NV-03539)	Stillwater	Maintain	Active	4,751	100,583	Overlaps 1,722 acres of the Project solar site
Perry Springs-Deadman (NV-03573)	Stillwater	Maintain	Active	2,399	57,885	Overlaps 3,419 acres of the Project solar site and gen-tie alignment
Black Mountain (NV-03507)	Stillwater	Custodial	Active	900	14,320	Gen-tie alignment
Parker Butte (NV-03572)	Stillwater	Maintain	Active	1,669	30,781	Gen-tie alignment
Cleaver Peak (NV-03010)	Sierra Front	Maintain	Active	1,250	51,664	Gen-tie alignment

Source: (BLM 2022)

The grazing operator is currently authorized to allow 603 cattle on the Perry Springs-Deadman and 670 cattle on the Grey Hills allotment. On Perry Springs-Deadman, grazing is authorized between December 1 to March 31. On the Grey Hills allotment, grazing is authorized from October 16 to April 1 and again between June 5 to August 16. Within the Gray Hills Allotment, cattle are moved along the Reese River Road corridor towards the proposed solar site from the west to east, and to areas south of the proposed solar site in the vicinity of the Abraham Spring and Summit Spring.

Figure 3.11-1 Grazing Allotments

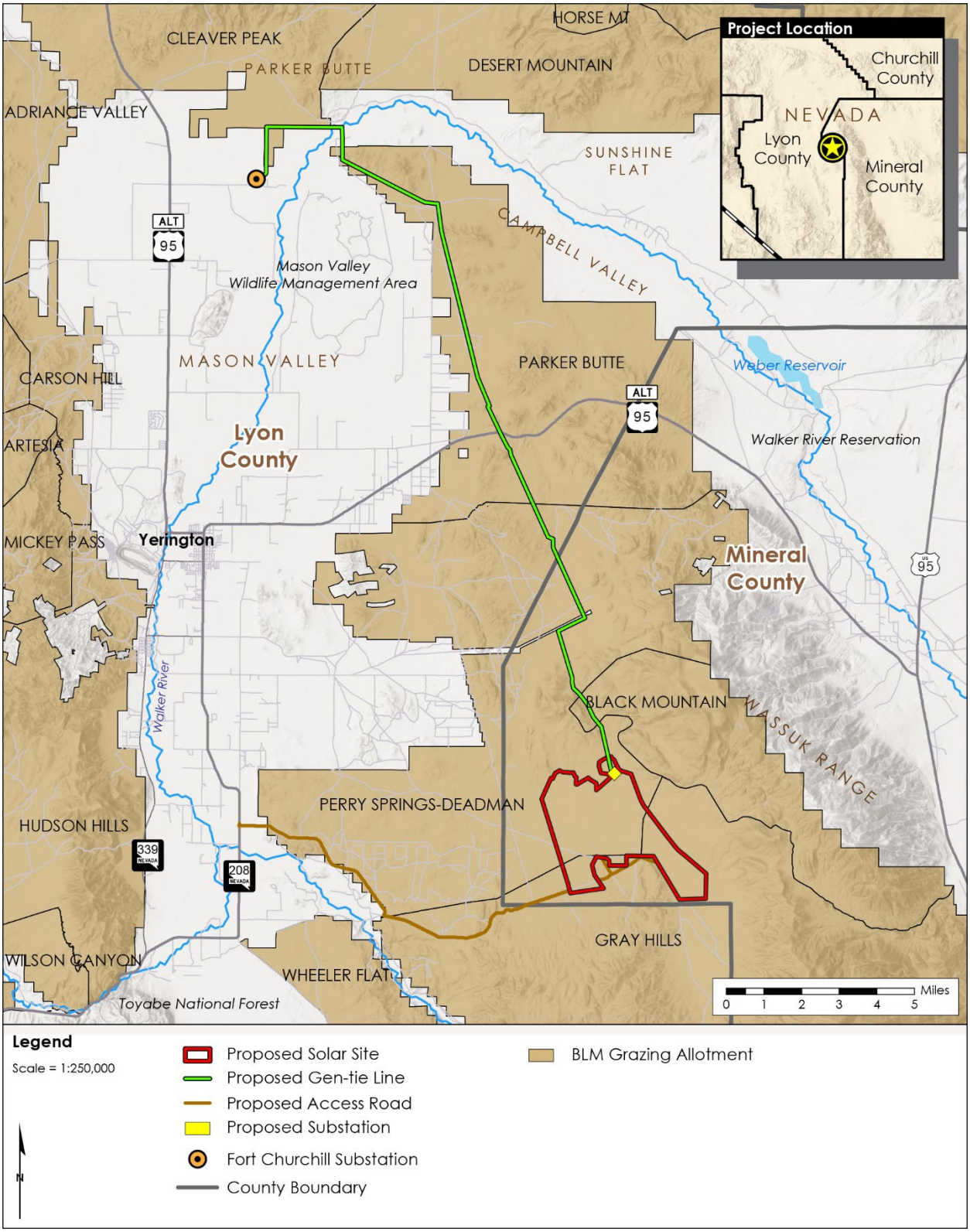


Figure 3.11-2. Rangeland Improvements around the Project Site

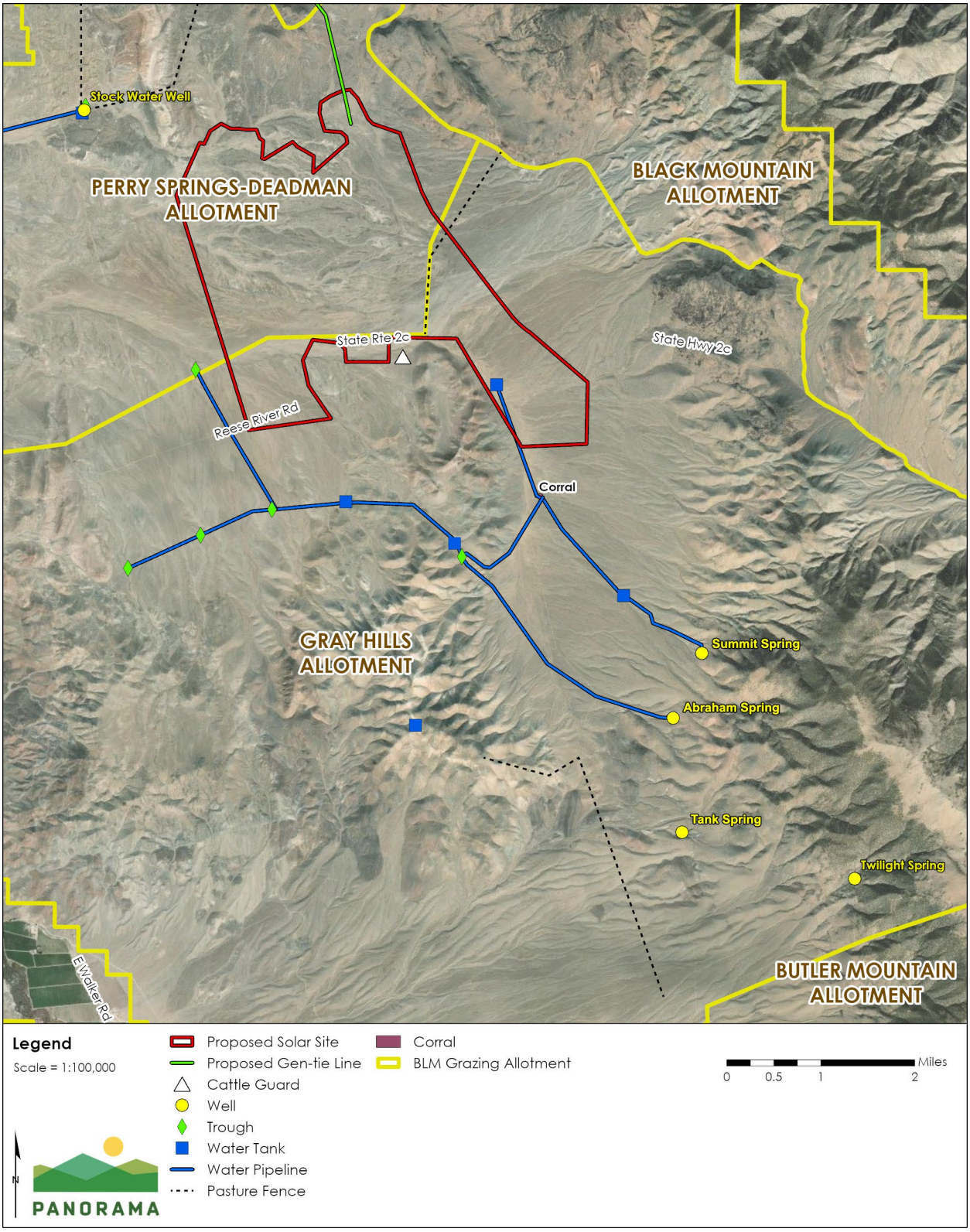
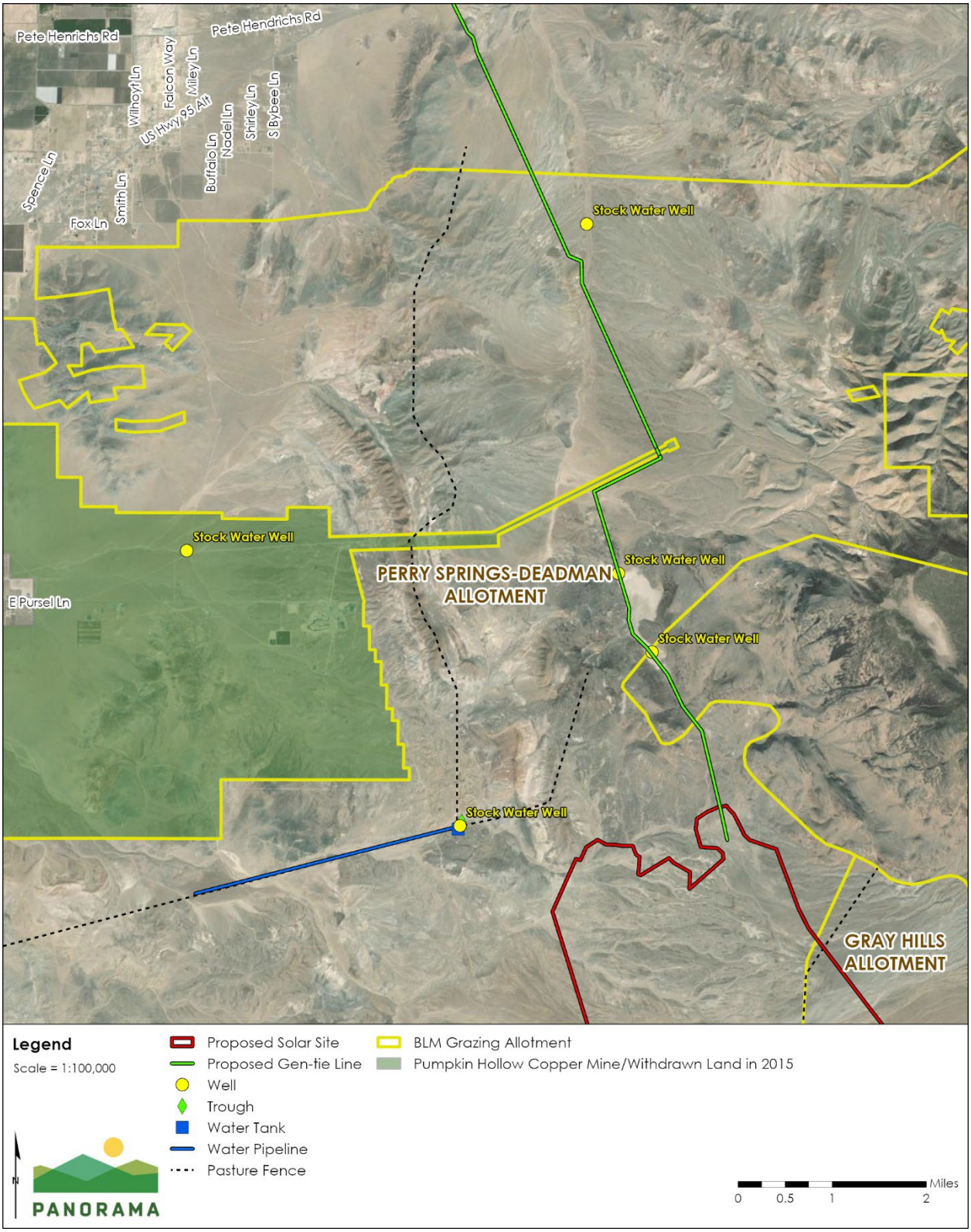


Figure 3.11-3 Rangeland Improvements around the Gen-Tie



Access to water influences where cattle can graze within the allotments. Currently, within the Gray Hills Allotment, a pipeline and water tank are located in the southwestern section of the Project solar site (Figure 3.11-2) where an approximately 20-acre section of solar panels is proposed. This water pipeline is sourced at Summit Spring, approximately 3 miles south of the proposed solar site. Another water line extends from the Abraham Spring (approximately 4 miles south of the solar site) to the west, over the adjacent hill, and then into the Mason Valley to the west of the southwestern portion of the solar site (also shown in Figure 3.11-2). Maintenance of this pipeline was initiated by the Walker Basin Conservancy. This pipeline flows to a tank, then branches and extends north to a trough and west to another tank at the base of the hills.

The Perry Springs-Deadman Allotment is sourced with water through existing water wells (Figure 3.11-3). Wells to the north of the Project solar site provide water for grazing within the allotment along the proposed gen-tie. The closest well to the solar site is to the west of the northwest corner, approximately 1.25 miles away. This well is serviced by a gas-powered pumpjack motor that is unreliable and thus limits the grazing operator's access to the source of water needed to graze the areas adjacent to and west of the northwest portion of the proposed solar site.

3.11.4 Environmental Consequences

3.11.4.1 *Methods*

The BLM provided data specific to the affected grazing permit areas, including historical range improvements such as fencing and water infrastructure. Additional field data and information was collected by Panorama on a site visit with the BLM, the Applicant, and the current grazing operator in April 2023 and October 2023. A due diligence report was also performed by EnviroMine that included a review of grazing permits (EnviroMine 2022). The report is included in Appendix B of the Land Use and Corridor Report for the Project (Panorama 2023). Desktop analysis of BLM planning documents and associated GIS data resources were also compiled.

3.11.4.2 *Proposed Action*

Construction Impacts

Access Road – Access Impacts. The grazing operator currently grazes the solar site area and surrounding areas within the Gray Hills Allotment and the Perry Springs-Deadman Allotment from December to April with a permitted level of 603 head of cattle on Perry Springs-Deadman and 670 on Gray Hills. In accordance with Solar PEIS PDF RG 2-1, access from Reese River Road to both allotments and the associated range infrastructure would remain open and maintained during construction (BLM and U.S. DOE 2012). An existing cattleguard on Reese River Road may need removal during construction to accommodate heavy truck traffic but would be replaced upon completion of the construction phase. Existing fencing alignments, shown in Figure 3.11-2, would be modified around the Project solar site. Construction would require a large number of vehicles, including heavy vehicles delivering construction equipment and solar facility components. The use of East Walker Road and Reese River Road for construction may create conflicts for livestock movement; however, conflict and safety hazards for the grazing operator would be minimized through coordination to ensure safe movement of livestock along these roads to grazing destinations, as defined in Solar PEIS PDF RG2-1.

The construction of the Project could present an impediment to grazing and water access to the south of the Project site. A pipeline and tank is located within a 20-acre area of panels at the junction of Reese River Road and Old State Road 2C (Figure 3.11-2). The grazing operator needs this area to gather cattle, water them, and move them south towards the corral and grazing areas south of the solar site. To reduce impacts to grazing operation access, MM RG-1 includes during final design, removing this 20 acres of panels and redistributing them throughout the other areas of the solar site, minimizing impacts to access.

Solar Site – Loss of Grazing Areas/AUMs. Construction and O&M of the Project solar site would require closure of approximately 1,722 acres from the Gray Hills allotment and approximately 3,419 acres from the Perry Springs-Deadman allotment, representing 1.7 percent and 5.9 percent of the total

allotments, respectively. This loss corresponds to 81 AUMs in the Gray Hills allotment and 141 AUMs in the Perry Springs-Deadman allotment, 222 AUMs out of a total of 7,150 AUMs in the two allotments, and the associated forage. The permit holder was provided a two year notification letter under 43 CFR 4110.4-2 of the Project's need to preclude grazing in accordance with the CRMP Grazing Livestock Management SOP 9 (BLM 2001b). Since the grazing operator currently utilizes the solar site and surrounding area to graze cattle, the loss would be considered an adverse effect.

MM RG-1 would be implemented to reduce the adverse effect of the loss of 1.7 percent and 5.9 percent of the AUMs in the Gray Hills and Perry Springs-Deadman allotments, respectively. The grazing operator has indicated that they could graze other areas of their allotments if existing water sources could be improved, and once the pipeline maintenance is completed by the Walker Basin Conservancy. With improvements, including completion of the pipeline maintenance, the areas to the southwest of the Project solar site could be grazed. The areas to the northwest of the solar site could also be grazed with improvements to existing wells. These improvements would allow for the grazing operator to maintain their grazing operations and would not displace or require them to scale down their operations even with the loss of the solar site area, and even at fully permitted grazing levels. MM RG-1 requires the Applicant to work with the grazing operator to fund these water conveyance improvements, thus minimizing impacts to the grazing operations. The Project's construction (and O&M) would still result in the loss of 222 AUMs and forage, but with mitigation, the loss would not make livestock production uneconomical for the grazing operator.

MM RG-1 would minimize effects to grazing operations but could result in other types of impacts. Key impacts from potential improvements to water infrastructure, as identified under MM RG-1, are summarized in the following table. These impacts assume activities such as upgrading the stockwater well with solar panels or additional power, completion of the stockwater pipeline from Abraham Springs and installation of replacement tanks or troughs, and habitat and fence replacements or improvements to Summit and Abraham springs. Other infrastructure improvements may be proposed and may require additional NEPA analysis prior to authorization of the work. The Applicant would assist with additional NEPA analyses for these improvements, if needed.

Table 3.11-2 Summary of Potential NEPA Impacts from Range Improvements

Topic	Summary of potential impacts and analysis
Air Quality and Soils	Air quality and soils impacts from potential water conveyance improvements are expected to be limited in extent, as construction for the types of improvements that may be installed would not require substantial ground and soil disturbance. The replacement of water lines is performed using small equipment, as the lines are typically 1 to 1.5 inches in diameter and installed one to two feet underground. Some soil would be displacement but would be replaced to rebury the lines. Solar panel installation at the stockwater well would not require substantial grading nor would fence improvements at the existing springs. The well is currently operated using a gas engine, and as such, emissions from the engine may be offset with either a higher efficiency engine or solar panels. Air quality impacts exceeding standards are not expected.
Biology and Water Resources	No federal or State-listed threatened and endangered species are found in the area. Special status plants and animals may experience minor disturbance from noise during construction, but it would be similar to that experienced during movement of cattle. Improvements to the springs would benefit big game species, vegetation, and water quality by preventing wild horses from creating sedimentation and ground disruption at the springs. Vegetation and wildlife measures identified in this EIS could be implemented as appropriate to minimize effects. Drainages would not be impacted by the range improvements, since they would largely be maintenance

Topic	Summary of potential impacts and analysis
	or replacement of existing infrastructure. No changes to landforms or drainages would occur, except to benefit the water quality and habitat around the springs.
Cultural Resources	Cultural resources inventories would be conducted prior to range improvements in locations not already disturbed. Historic properties would be avoided.
Land Use and Recreation	No impacts to land uses or recreation would occur from any proposed range improvements. Improvements would primarily be to existing infrastructure under maintenance.
Socioeconomics and Environmental Justice	No impacts to socioeconomics or environmental justice would occur as the range improvement work would only require a few workers to complete and would not result in other environmental consequences that could affect environmental justice communities.
Public Health and Safety	No impacts to public health and safety are anticipated from the range improvements, nor any increased risks of fire. The improvements will likely bring water sources to more areas, thus improving potential for extinguishing a fire, should one break out.
Transportation	A few workers would be needed to complete range improvements. These workers would not impact traffic or transportation routes.
Visual Resources	Visual impacts of improvements would likely be minor and would be in character with existing improvements, including tanks, fences, and troughs. Any improvements would likely be in the same area as existing features and thus would not alter the visual character of the area. Improvements to power the grazing operator's stock water well could include placement of solar panels, which would have some visual impacts, but the area of panels would be limited to a few dozen panels in the location of the existing disturbed corral. Visual impacts of panels in this area would not result in contrast given proximity to the solar site, and the general disturbance in the area of the panels.

Gen-tie – Access and AUM Impacts. Short-term construction related impacts would be expected during installation of the gen-tie line poles within the Black Mountain, Parker Butte, Perry Springs-Deadman, and Cleaver Peak allotments. Given heavy equipment travel on small roads, some potential for conflict with moving or grazing livestock is possible, which would be an adverse effect if livestock are injured or killed or if grazing operations are impeded. Prior to construction, the Applicant would communicate the construction schedule and access timing with the grazing permit holders and grazing operator to avoid potential interference with any active grazing in that area, per MM RG-1, minimizing effects. If the grazing operators' fencing is required to be removed or relocated, the Applicant would replace the range infrastructure in cooperation with the grazing operator to maintain existing operation levels. Construction of fencing would be in accordance with the CRMP SOP 3 (Livestock Grazing Management). Existing access roads would be utilized wherever possible. Installation of new access roads to pole locations would likely require minor grading and removal of vegetation within the affected allotments; however, disturbance would result in a small loss of vegetative cover and is not expected to impact forage resources. In the long term, a permanent 150- or 200-foot-wide ROW corridor for the gen-tie would remain; however, grazing could continue within it. Some loss of potential forage would occur around the base of gen-tie poles and new road spurs, totaling approximately 64 acres plus an additional 100 acres for temporary pull and tension sites during construction across the 24.1-mile-long gen-tie. The total acreage for the allotments within which the gen-tie poles and access roads would be located is 58.2 acres, a 0.0004 percent reduction in overall grazing acres. This reduction would not have economic effects on the

allotment holders and thus would not be adverse. Most of the gen-tie alignment is within an existing designated utility corridor.

Operation and Maintenance Impacts

Operation and maintenance activities would have the same impacts as those described for construction. Access from Reese River Road to both allotments and the associated range infrastructure would remain open post construction, and the road would be widened with the surface maintained, likely making access easier for the grazing operator. Modifications to fencing and water infrastructure would be implemented throughout the life of the Project. Under MM RG-1, the 20-acre area of panels near existing water infrastructure and juncture for cattle movement would be removed and redistributed in the main body of the solar site and support would be provided to Improve access to water. Grazing infrastructure (e.g., fences) affected by the Project would be replaced or compensation provided. As identified for the construction analysis, the amount of permanent loss of available rangeland that would make livestock production uneconomical would not occur with enhancement of water and infrastructure to allow for grazing of other areas within the allotment. The loss of 222 AUMs, corresponding to 1.7 percent and 5.9 percent of the Gray Hills and Perry Springs-Deadman existing allotments would still occur.

Decommissioning Impacts

Decommissioning would include removal of the Project fencing. The Applicant would coordinate with BLM and the grazing permit holder to reinstall fencing for grazing activities in accordance with the Allotment Management Plan applicable to the grazing permits at that time. The groundwater well and associated stock water rights may be transferred to the grazing permit holder and would likely remain in operation for future livestock use, a long-term beneficial impact. The solar site would be revegetated in accordance with the CRMP Livestock Grazing Management SOP 6 and the Decommissioning and Site Reclamation Plan, and roads would be rehabilitated in accordance with the CRMP Livestock Grazing Management SOP 2. The site would be eligible for future inclusion for BLM permitted grazing upon complete establishment of vegetation; however, regrowth of vegetation may take many decades to a century or more and thus would be considered a loss even after decommissioning. Due to the additional stock water source, grazing of the allotment would continue after decommissioning as it did during O&M. Decommissioning of the Project is not anticipated to have significant adverse impacts to rangeland resources and eventually the site may be productive again.

Cumulative Impacts

Approximately 18 percent of the Perry Springs-Deadman grazing allotment was closed due to recent expansion of the Pumpkin Hollow Copper mine located immediately north of the proposed solar site (BLM 2015). The closure of an additional 5.9 percent of the permit area due to the Project is recognized as an adverse cumulative impact to the Perry Springs-Deadman grazing allotment. Due to the regional increase in utility-scale solar projects proposed within BLM grazing allotments, the Project also cumulatively contributes an overall reduction in available grazing area. Multiple other proposed utility-scale solar projects are in the early planning stages within and near the Parker Butte and Cleaver Peak allotments. The Project's contribution would be reduced with the provision of additional water sources that would increase grazing opportunities to the area immediately west of the Project site, to offset those lost. The Project would still contribute incrementally to a cumulative loss of grazing lands.

3.11.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction, O&M, decommissioning, and cumulative impacts to rangeland resources under Alternative 1 would be similar as described for the Proposed Action because the same amount of grazing allotment acres would be removed, and the same Project components would be installed. The increase in retained and restored vegetation at decommissioning would reduce the amount of time the land is excluded from future rangeland activity, which would represent a reduced impact to rangeland resources over the long term. The same PDFs and MMs as identified for the Proposed Action would be implemented for Alternative 1 to minimize adverse effects. This alternative removes the 20 acres of panels within the critical area for grazing operations.

3.11.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Construction, O&M, decommissioning, and cumulative impacts to rangeland resources under Alternative 2 would be the same as described for the Proposed Action. This alternative would include utilizing supplemental access routes to the solar site during construction. This alternative would have the same impacts with regard to the solar site and gen-tie as the Proposed Action since these components of the Project are the same under this alternative. Providing some supplemental access during construction could reduce some traffic on East Walker Road and Reese River Road and thus could result in fewer conflicts with livestock and livestock transport. The same PDFs and MMs as identified for the Proposed Action would be implemented for Alternative 1 to minimize adverse effects.

3.11.4.5 *Alternative 3 – Alternative Gen-Tie Connecting to Greenlink West*

Construction and Operation and Maintenance Impacts

Alternative 3 would have reduced construction and O&M related impacts to rangeland resources overall due to the reduction in construction activity along the gen-tie alignment. There would be no impacts to the Black Mountain, Parker Butte, or Cleaver Peak allotments. Impacts to the Perry Springs-Deadman allotment, however, would increase by approximately 11.8 acres for the 0.54-mile-long gen-tie and switching station. The Proposed Action includes approximately 58 acres of disturbance for new road spurs and transmission poles that would be eliminated, such that the overall impact would be reduced under this alternative for the Perry-Springs-Deadman allotment.

Decommissioning Impacts

Decommissioning impacts to rangeland resources would be reduced overall as compared to the Proposed Action, due to the reduction in length of the gen-tie alignment. Decommissioning impacts at the solar site would be the same as described for the Proposed Action.

Cumulative Impacts

Alternative 3 would contribute the same adverse cumulative impacts to rangeland resources as described for the Proposed Action due to the removal of roughly the same amount of acres from grazing allotments.

3.11.4.6 *No Action Alternative*

The Project would not be implemented under the No Action alternative. No adverse effects to rangeland and grazing would occur.

3.11.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize rangeland impacts.

Table 3.11-3 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• RG2-1
Carson City CRMP SOPs	• Livestock and Grazing SOPs 2, 3, 6, 9, 10 • Land Use and Realty SOPs 5 and 6
Management Plans	• Decommissioning and Site Reclamation Plan

Mitigation Measures

The Project would comply with the mitigation measures in Table 3.11-4 to minimize adverse impacts on rangeland resources.

Table 3.11-4 Rangeland Resources Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM RG-1: Grazing Operator Coordination and Compensation	The existing pipelines, fences, and other water infrastructure shall remain in place and remain accessible to the grazing operator during construction and operation of the solar site and gen-tie. Solar panels located in an approximately 20-acre area at the junction of Reese River Road and Old State Road 2C shall be removed and redistributed throughout the main body of the site to maintain this 20-acre area as an important area for access by the grazing operator. Any pipelines, fences, or other grazing infrastructure shall be avoided during construction or otherwise replaced in the final design of the Project solar site, or compensation shall be provided to the grazing permit holder based on the replacement value of the infrastructure. At a minimum, the Applicant shall also coordinate with the grazing operator to improve livestock watering conveyance to underutilized pastures near the Project area. The support provided (e.g., environmental, financial/funding, and/or construction support scope and term) shall be documented through a written agreement with the grazing operator prior to construction. For infrastructure improvements supported by the Applicant that extend beyond the solar site boundary, (e.g., to the stock water well to the northwest of the Project solar site, to the pipeline and trough and tank infrastructure to the south of the Project solar site, or to the springs to the southeast of the Project solar site) the Applicant shall work with the grazing operator and BLM to ensure the appropriate permitting and documentation of the rangeland improvements is completed.
MM RG-2: Maintain Access to Grazing Allotments	During construction, the Applicant shall coordinate with the grazing permit holder to ensure that access along East Walker Road and Reese River Road to the allotments is open and safe for passage without delays to the permit holder. The Applicant shall include measures in their construction contracts to ensure that workers avoid livestock and follow speed limits on roads to avoid collisions and injury. Any livestock accidentally injured or killed by Project activities shall be compensated for to the permit holder at a market rate.

3.11.4.8 *Irreversible and Irretrievable Impacts and Residual Effects*

No irreversible or irretrievable impacts that would affect rangeland resources. The loss of 222 AUMs, even though grazing operations could be sustained with mitigation, would represent an adverse, residual impact. The impact would be reduced at decommissioning under Alternative 1.

3.12 Recreation

3.12.1 Introduction

This section addresses potential Project-related physical alterations or other impacts to established, designated, dispersed, or planned recreation areas, resources, experiences, activities, or outcomes. Impacts to public access are evaluated in accordance with Secretarial Order 3373: Evaluating Public Access and the BLM Public Land Disposals and Exchanges. NDOW manages hunting in Nevada through three regional offices, each overseeing hunting in a series of game management units (GMUs) and hunting units (hUs) within each GMU.

3.12.2 Analysis Area

The area of analysis for recreation is the extent of land that could be directly affected by the Project and where access, opportunity, or experience to recreational opportunities could be directly or indirectly affected. Project impacts resulting from construction, O&M, and decommissioning activities have the potential to affect recreational resources both in the Project area and, to some degree, in proximity to the Project area due to indirect impacts such as noise and dust.

3.12.3 Affected Environment

3.12.3.1 *Introduction*

This section outlines recreational opportunities within the analysis area, managed by the BLM under the CRMP (BLM 2001). It encompasses dispersed recreation, developed recreation, and SRP, with OHV use being a popular activity in the Carson City District Office planning area.

3.12.3.2 *Recreation Management Areas*

Recreation management areas are the BLM's primary means of managing recreational use of public lands. An area of public land may be designated as a special recreation management area (SRMA) or extensive recreation management area (ERMA). The Project area is not located within any SRMA or ERMA.

3.12.3.3 *State Designated Recreation Areas*

The State-managed Pitchfork Ranch section of the Walker River State Recreation Area lies approximately 5 miles east of the Project area along East Walker Road (see Figure 3.12-1). The Project's access road, also along East Walker Road, partially traverses the Walker River State Recreation Area.

North of Yerington, Nevada, is the Mason Valley WMA. The proposed gen-tie alignment borders the WMA to the east and south, almost encircling the Fort Churchill substation. Although the gen-tie crosses a small portion of the WMA's northern section, no other WMAs are located within or near the Project components, including the Project solar site, gen-tie, and access road.

3.12.3.4 *Recreational Uses*

Off-highway Vehicles

OHV travel in the Project area occurs on existing roads, trails, and dry washes (as shown in Figure 3.12-1). OHV use falls under *limited use* in the Project area, which means OHV use is limited to existing roads, trails, and dry washes.

Routes are cooperatively managed between the BLM and the State of Nevada. Four trail types used for recreation purposes are located within the Project boundary: BLM OHV SRP, OHV Route, Old State Road 2C, and Reese River Road (BLM 2023a; 2023b). Table 3.12-1 provides the distances of the trail types within the Project solar site. The BLM Nevada State Office is developing a programmatic Environmental Assessment that will cover a range of SRPs for OHV events in Nevada (BLM 2023c). One of the routes within the Stillwater Field Office crosses through the southeastern Project site along Old

State Road 2C. Routes within the Sierra Front Field Office cross the proposed gen-tie alignment, south of US 95A (BLM 2023a; 2023b).

Old State Road 2C provides access to the Walker Lake SRMA by OHV. The road is unmaintained and is unlikely to be used by passenger vehicles. Consultation with the Executive Director of the Nevada Offroad Association determined that Old State Road 2C provides important access through the western front of the Wassuk Range to the northern end of the Walker Lake area and may be part of future BLM SRP events. The Nevada Offroad Association also identified a racecourse north of the Project solar site that the proposed gen-tie would cross (as shown in Figure 3.12-1) (Nevada Offroad Association 2023).

Table 3.12-1 Recreational Trails within the Project Solar Site

Trail type	Total distance of trails (miles)
BLM OHV SRP	2.1
OHV route	14
Old State Road 2C	1.5
Reese River Road	0.8

Source: (BLM 2023a; 2023b; Nevada Offroad Association 2023)

Hiking

Hiking may occur in limited capacity along the unpaved trails commonly used by OHV users. However, hiking use is likely low due to the lack of sites of interest in the immediate vicinity. Hikers most likely frequent the nearby features such as Walker River SRA and Mason Valley WMA.

Camping

Dispersed camping is currently permitted within the Project analysis area and surrounding areas. However, camping use is likely low due to the lack of designated camping sites and lack of sites of interest in the immediate vicinity. Camping in the area predominately occurs at the Walker River State Recreation Area and Mason Valley WMA.

Hunting and Target Shooting

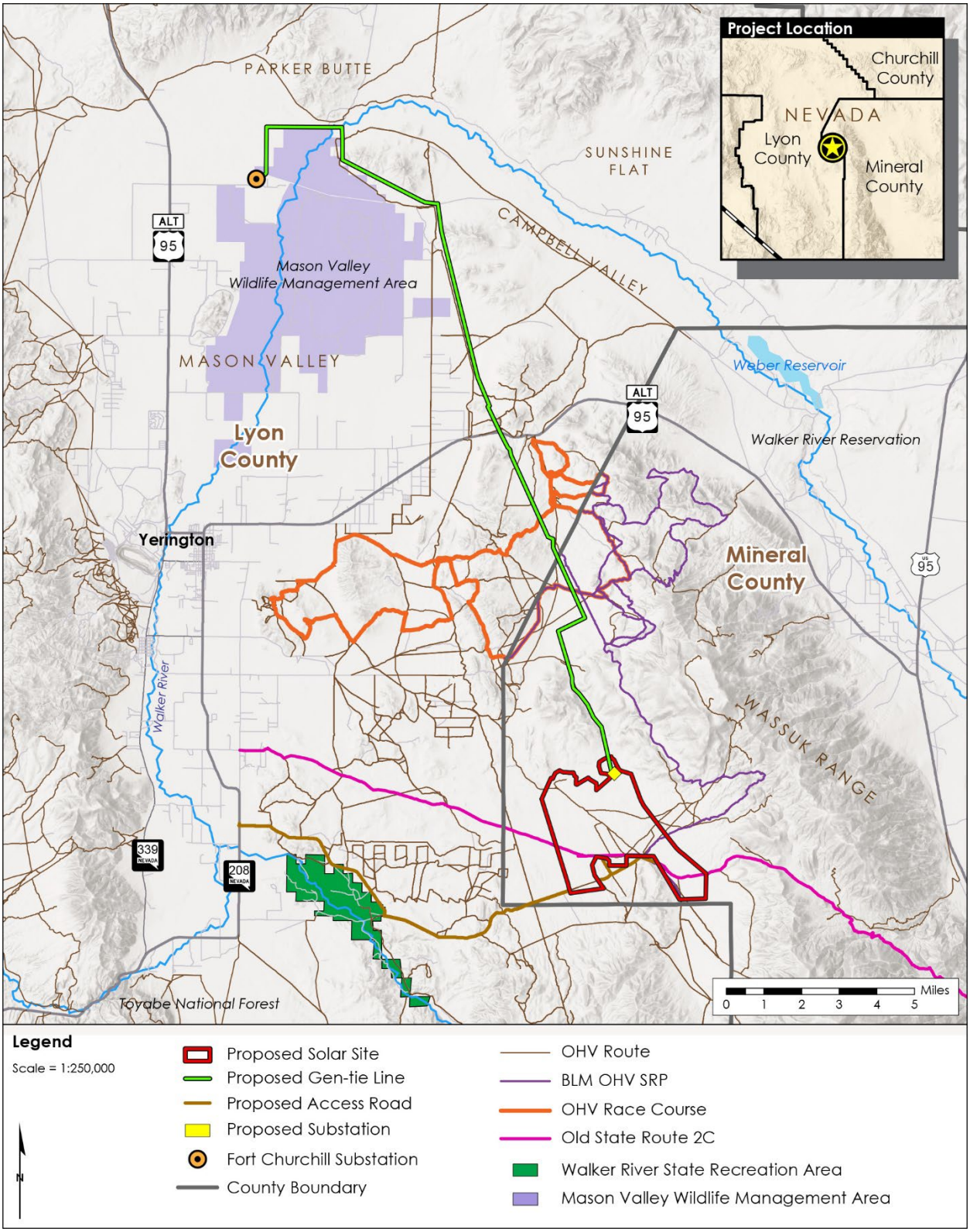
The solar site and gen-tie fall within GMU 20, which is comprised of eight hUs, two of which cross the Project area (202 and 203). The general hunting season for these game units are shown in Table 3.12-2.

Table 3.12-2 General Hunting Seasons for Affected Game Units

Game Type	Season Dates
Antelope	August 1 to October 30
Desert Bighorn Sheep	October 15 to January 1
Mule Deer	August 10 to September 9 and November 5 to January 1

The gen-tie would traverse the Mason Valley WMA, which is habitat for mule deer, antelope, and waterfowl. Bighorn sheep primarily inhabit the Wassuk Range, beyond the Project site (NDOW 2017). While no designated shooting areas exist within the Project area, informal target shooting may occur nearby.

Figure 3.12-1 Off Highway Vehicle Routes



Source: (Nevada Offroad Association 2023)

3.12.4 Environmental Consequences

3.12.4.1 *Methods*

Determination of potential impacts to recreation from the Proposed Action and alternatives is primarily based on existing recreation resource management data provided by the BLM CCDO. GIS information and recent aerial images were also used in this analysis to identify potential non-designated recreational opportunities and uses. Adverse impacts were determined based on whether the Project would diminish public or private recreational use of or access to developed recreation sites and undeveloped recreation areas in the Project vicinity.

3.12.4.2 *Proposed Action*

Construction Impacts

Solar Site. During construction, recreational activities would be prohibited on the 5,141-acre Project solar site. However, Reese River Road and Old State Road 2C would remain accessible for recreational use, including SRP events, in accordance with Western Solar Plan PDF R1-1. A perimeter fence, approximately 6 to 7 feet high with 1-foot-high barbed-wire security strands at the top, would enclose the site while allowing traffic along the roadways.

During construction, some existing OHV trails within the solar site would be closed, totaling approximately 14 miles. However, the 2.1-mile portion of the BLM's OHV SRP route within the Project area would remain open for races. Additionally, key OHV routes along Old State Road 2C and Reese River Road would also remain accessible for OHV use. Coordination with the OHV community during races would ensure safe access, considering the shared roads used for construction traffic, as per MM REC-1.

Hunting, hiking, and camping would be prohibited on the Project solar site during construction; however, the area does not see high use of any of these activities. HU 202, in which the Project solar site is located, is approximately 570,000 acres. The solar site comprises 0.1 percent of the total HU area and thus the loss of this area for hunting during construction would not be adverse.

Potential impacts to visual resources are discussed in detail in Section *3.13: Visual Resources.* The recreational experience in the area would be altered during Project construction, transitioning from natural desert views to a more industrial setting. Construction noise may be audible to recreational users over the 16-month period. However, as noise would be temporary and spread across a large area, impacts to recreation would be minor.

Access Road. Construction activities would temporarily increase truck traffic along East Walker Road, Reese River Road, and Old State Road 2C. Access to the Walker River State Recreation Area from East Walker Road would remain open, although with potential traffic and delays. Construction hours would be limited to weekdays between 7 a.m. and 7 p.m. Detailed traffic and transportation impacts are outlined in *Section 3.17: Transportation and Traffic*. Delays on these roads during construction would not be anticipated to cause unacceptable delays, especially considering construction would primarily occur on weekdays. A Traffic Management Plan would be developed, including coordination with State Lands for any necessary access limitations. Implementation of the Traffic Management Plan protocols required as part of any BLM ROW grant would reduce any potential traffic impacts during construction of the Project.

Gen-tie. Gen-tie construction would progress linearly, potentially causing minor and temporary disruptions to OHV use, hiking, birdwatching, and hunting activities. Some OHV routes, including designated racecourses, intersect with the proposed gen-tie alignment. Coordination with the OHV community would ensure safe access during construction, especially during races. As construction advances linearly, any impacts on specific OHV crossings would be short-term.

Hiking and birdwatching activities take place in the Mason Valley WMA, where the gen-tie would cross approximately 1,900 feet of the area near the Fort Churchill substation gen-tie terminus and the northeast corner of the WMA. Construction activities associated with the gen-tie within the WMA are not expected

to significantly impact recreational experiences due to their limited extent and proximity to existing transmission infrastructure.

The gen-tie construction would occur within hUs 202 and 203, areas known for active hunting of antelope and mule deer. Construction may generate noise and disturbances during hunting seasons, potentially temporarily displacing big game from the immediate construction area. However, these impacts would be temporary (a few weeks at any given point) and localized. Hunting would not be adversely affected.

Operation and Maintenance Impacts

Solar Site. Approximately 5,141 acres of land currently open to dispersed recreation would be closed for approximately 30 years during the Project's lifespan. However, this loss would not be adverse as other similar areas are available nearby. The Project would reduce total available OHV trail miles in the Mason Valley area, with impacts similar to those described for construction. Some OHV routes would close, but primary routes and roads like Old State Road 2C and Reese River Road would remain open, with improvements to the latter two for better stability. The solar site may be visible to dispersed recreational users nearby, potentially impacting the recreational appeal. Measures outlined in *Section 3.13: Visual Resources*, including PDFs VR2-1 and VR2-3, aim to mitigate these impacts through color treatment and anti-reflective coatings. Some indirect adverse impacts on recreation from visual changes would still occur. **Access Road.** The access road to the solar site would have some Project-generated usage during O&M phase. Up to 15 workers may be on site daily and occasional additional traffic may be generated for maintenance or panel washing. No conflicts with OHV use are anticipated. Access for hiking, camping, and hunting and to the Walker State Recreation Area would be unobstructed and unaffected. Access up to the site along Reese River Road would be improved, making travel for these activities easier.

Gen-tie. The gen-tie, once constructed, would not adversely affect OHV use, hiking, camping, or hunting. Adjacent access roads could offer additional opportunities for OHV users, and existing routes and racecourses would remain unobstructed. While studies on large game species' response to transmission lines are limited, there are anecdotal reports of pronghorn near existing lines. Given that gen-tie noise would decrease to ambient levels within a short distance and the gen-tie proximity to existing transmission lines, adverse impacts on hunting units are not expected. Gen-tie access roads could also improve access to hunting territories, benefiting hunters.

Decommissioning Impacts

The effects of Project decommissioning on recreation access and opportunities, including OHV use, hiking, camping, and hunting would be similar to those discussed for construction. Decommissioning typically requires less workforce, time, and resources than construction of a project. Project decommissioning would occur following the Site Restoration and Revegetation Plan and Site Decommissioning and Reclamation Plan required as part of the BLM ROW grant. The plans would outline decommissioning activities, safety and protection measures, reclamation procedures, and measurable performance standards as well as notification and abandonment scheduling. The plans would also include requirements for long-term monitoring and maintenance as needed to ensure that restoration goals are attainable and completed. Visual, noise, and traffic impacts for Project decommissioning experienced by recreational users are anticipated to be similar to those discussed above for construction. Once decommissioned, the previously restricted (for the 30-year Project lease period) solar site would once again become publicly accessible.

Cumulative Impacts

The effects on recreation from cumulative projects in the analysis area include existing transmission lines and corridors, future utility-scale solar projects, Greenlink West, and the Pumpkin Hollow Copper Mine expansion. The Project would contribute to the overall increase in utility development on BLM lands, displacing recreational opportunity for the public.

While the Project would result in the loss of 14 miles of designated OHV trails, this impact is minor because access to the BLM OHV SRP and Old State Road 2C would be maintained for the life of the Project. While proposed future solar projects could also impact access to recreation, no other projects

overlap with the designated OHV trails impacted by the Project, which are all located south of US 95A. There are approximately 12,357 total miles of OHV trails within the Carson City District. The Project's contribution to the loss of 14 miles of trails would not be a considerable contribution to overall recreation access.

Similarly, cumulative impacts to hunting could also occur. Proposed future solar projects are within HU 203 near the Project gen-tie. The Project would contribute to an increase in access roads and transmission infrastructure but would not displace or divert migrating game.

3.12.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction, O&M, decommissioning, and cumulative impacts from Alternative 1 on recreational resources would be similar to the Proposed Action. Avoided drainages as part of Alternative 1 may provide additional OHV access. Approximately 2.25 additional miles of drainages would be left unfenced for access under this alternative, as compared with the Proposed Action. Construction may also take a few months longer under this alternative, which could result in a slightly increased impact on recreation as compared with the Proposed Action. MM REC-1 would be implemented to reduce potential for adverse effects from construction activities on access roads used by recreationalists to and through the solar site.

Decommissioning impacts to recreational resources under Alternative 1 would be slightly reduced due to the increase in vegetative cover, improving the visual quality of the site. The decommissioning schedule may be slightly reduced, allowing for re-entry of recreationalists sooner than for the Proposed Action. Impacts from the gen-tie construction, O&M, and decommissioning would be the same as for the Proposed Action.

3.12.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Compared to the Proposed Action, Alternative 2 would slightly reduce impacts on recreational access, particularly to the Walker River State Recreation Area, by diverting some construction traffic away from East Walker Road. Identified OHV routes, SRP OHV routes, and race routes would cross the supplemental access route north of Pursel Lane (Figure 3.12-1). Minor improvements to the access route would not negatively impact any OHV routes, SRP OHV routes, and race routes. However, effects from construction, operation and maintenance, decommissioning, and cumulative impacts would remain unchanged. MM REC-1 would continue to apply to mitigate traffic conflicts and ensure recreational safety on shared roads used for Project construction.

3.12.4.5 *Alternative 3 – Alternative Gen-tie Connecting to Greenlink West*

Construction, Operation and Maintenance, and Decommissioning Impacts

Construction, O&M, and decommissioning impacts under this alternative would be the same as those described for the Proposed Action concerning the solar site and access road. MM REC-1 would remain applicable in mitigating traffic conflicts and ensuring recreational safety on shared roads used for Project construction.

The gen-tie would be shortened from a 24.1-mile line to a 0.54-mile line, extending from the solar site's eastern boundary to a new switching station under the proposed Greenlink West line. This adjustment would avoid intersections with OHV routes, SRP OHV routes, or race routes, thereby reducing impacts on these activities compared to the Proposed Action. Disturbances to hiking, camping, and hunting from construction, O&M, and decommissioning would be minimized due to the much smaller footprint and acreage of the gen-tie under this alternative.

Cumulative Impacts

Under Alternative 3, there would be no construction of the 24.1-mile gen-tie line, which would eliminate the Project's contribution to the increase in planned transmission infrastructure within the Mason Valley. The Project would have the same loss of 14 miles of designated OHV trails. As described for the Proposed Action, the loss of 14 out of 12,357 miles of designated OHV trails would not be a considerable

contribution to an overall potentially adverse effect. With the elimination of the 24.1-mile gen-tie line, Alternative 3 would not contribute to cumulative effects to hunting within HU 203.

3.12.4.6 *No Action Alternative*

Under the No Action alternative, the Project would not be constructed, operated, maintained, or decommissioned; therefore, existing recreational uses would continue on the Project site and adjacent public lands. The landscape and existing non-designated roads and trails would not be altered, and there would be no changes to the scenery, traffic, or levels of noise. Therefore, the existing recreation activities, settings, and experiences would remain the same, with no change from baseline conditions.

3.12.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize recreation impacts.

Table 3.12-3 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• R1-1 • VR 2-1; VR 2-3
Carson City CRMP SOPs	• Recreation SOP 6
Management Plans	• Traffic Management Plan • Site Restoration and Revegetation Plan (Available on the Project website) • Decommissioning and Site Reclamation Plan

Mitigation Measures

The Project would comply with the mitigation measures in Table 3.12-4 to minimize adverse impacts on recreation resources.

Table 3.12-4 Recreation Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM REC-1: OHV and Recreational Safety	The Applicant shall ensure that during construction, OHV users can safely pass through East Walker Road, Reese River Road, and Old State Road 2C. The Traffic Management Plan shall include measures to ensure safety, including flagging and escort, as needed. The Traffic Management Plan shall also address potential impacts to access to the Walker State Recreation Area from heavy traffic and may include limitations on delivers or other measures during times of expected higher use (e.g., special events) at the Walker State Recreation Area.

3.12.4.8 *Irreversible, Irretrievable, and Residual Impacts*

Recreation opportunities that occur during the lifespan of the Project would be reinstated after Project reclamation is complete, which means that the loss would not be irreversible or irretrievable. However, it could take years before the reclaimed site is open to recreational uses.

Some residual effects to recreational access would occur even after application of mitigation due to the increases in traffic and hazards from construction on East Walker Road, Reese River, and Old State Road 2C. These residual effects would be minor.

3.13 Visual Resources

3.13.1 Introduction

Visual resources encompass various elements of the landscape, including landforms, vegetation, bodies of water, and human-made structures. These elements are characterized by their form, line, color, and texture. This section draws from the Visual Resources Technical Report (VRTR) (Panorama 2023) to inventory and assess potential impacts on visual resources in accordance with the BLM VRM system.

The management and protection of scenic quality on public lands are governed by FLPMA. ROW grants on federal lands must adhere to FLPMA's stipulations to minimize damage to scenic quality and aesthetic values. The BLM manages land under its jurisdiction based on the goals and policies outlined in RMPs. The CRMP specifies the components of the VRM system applicable to the district, emphasizing the integration of visual design considerations into all surface-disturbing projects, irrespective of their size or potential impact.

3.13.2 Analysis Area

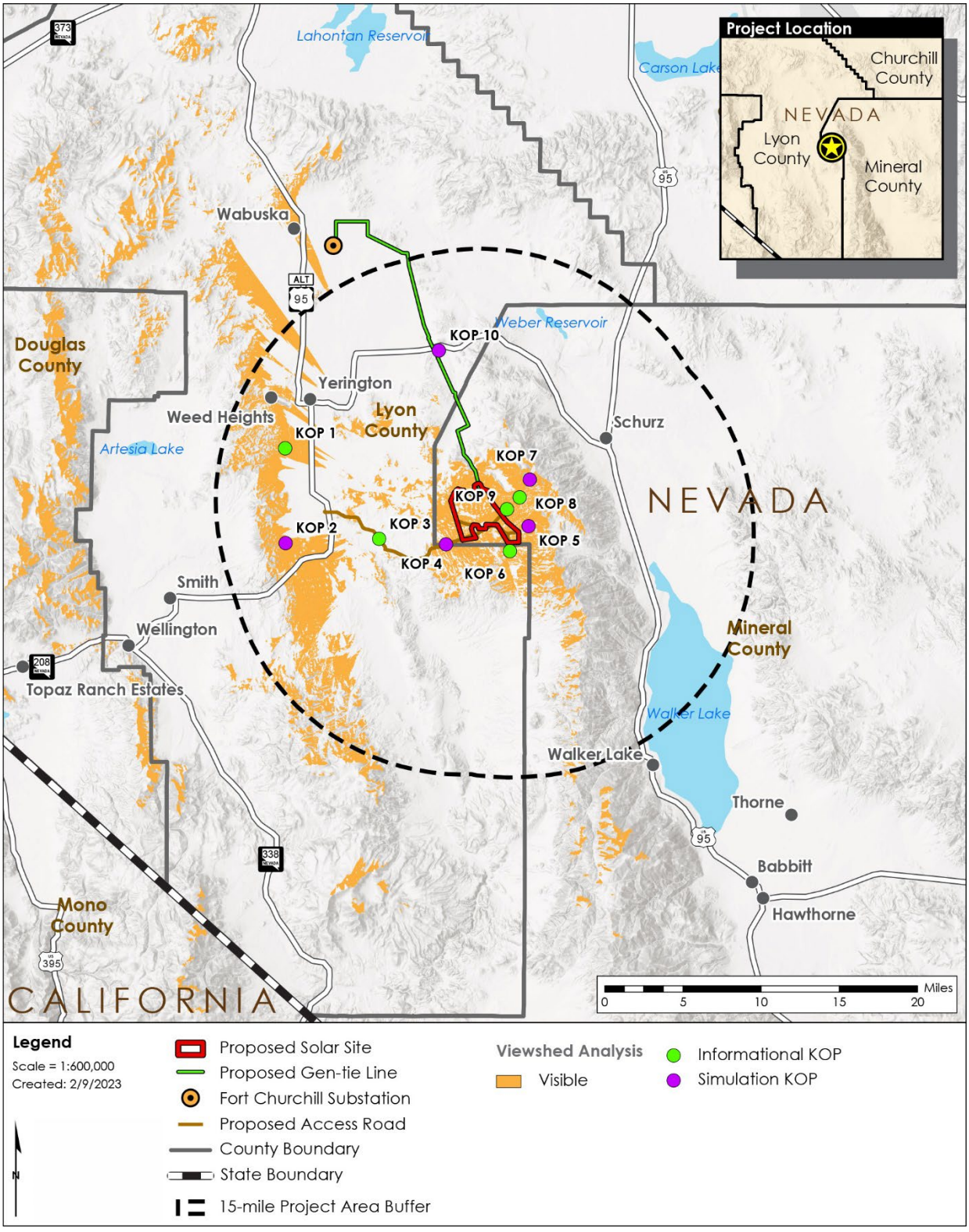
The area of analysis for visual resources is the Project's visual sphere of influence, which is the extent that the Project could visually degrade the visible landscape. The threshold for visual sphere of influence is the viewshed within approximately 15 miles of the Project area. A viewshed analysis was undertaken, as shown in Figure 3.13-1.

3.13.3 Affected Environment

3.13.3.1 *Visual Environment*

The Project site lies on a gently sloping *bajada*, extending into the Wassuk Range about 6 miles eastward. Braided washes flow westward from the site to the Walker River. Black Mountain stands to the east of the Project site. Beyond it, the Walker River Indian Reservation extends into the next valley to the east. The Project solar site fades from view as the canyon is crossed before reaching Black Mountain. Walker Lake, situated 10 miles southeast of the Project site on the other side of the Wassuk Range, is not visible from the Project site due to the range's separation.

Figure 3.13-1 Proposed Libra Solar Project Area Viewshed



Source: (ESRI® 2012; ESRI 2011; U.S. Geological Survey 2016; 2020)

The western part of the Project area lies within Pumpkin Hollow lowlands. Adjacent to the western side of the Project site is LADWP's 750 kV north-south transmission line. The East Walker River flows about 5 miles northward of the Project area. The Walker River State Recreation Area is situated along East Walker Road, roughly 5 miles west of the Project area. Yerington, with its agricultural and residential areas, is located across the valley to the west of the East Walker River and north of the Walker River State Recreation Area. Yerington is home to numerous agricultural operations utilizing water from the East Walker River, with a commercial and residential downtown area located off of SR 208. The historic Anaconda Copper Mine is situated to the west of downtown Yerington. Additionally, about 3 miles north and west of the Project solar site is the Pumpkin Hollow Copper Mine and its associated industrial facilities.

The Project area, encompassing the gen-tie, access road, and surrounding vicinity, is predominantly undeveloped. However, there are some unpaved access roads and limited rangeland features, which include fences, watering troughs, pipelines, and water storage structures, some of which are in disrepair. The vegetation in the Project area reflects local characteristics, consisting mainly of shrublands typical of arid valley floors and alluvial slopes.

3.13.3.2 *Visual Resources Inventory*

Visual conditions, viewer experience, and responses are assessed by identifying and selecting key observation points (KOPs), which represent critical viewpoints. Initial KOPs were chosen in collaboration with the BLM and further refined after field investigations. Ten KOPs were initially identified, with five selected for comprehensive analysis in coordination with the BLM. The remaining five KOPs were not analyzed in detail but are included for reference and to extrapolate potential visual impacts. These KOPs are depicted in Figure 3.13-1 and detailed in Table 3.13-1.

The BLM determines VRM classes and their associated management objectives through a VRI process outlined in BLM Manual Handbook H 8410-1 (BLM 1986). This involves assessing a landscape's visual values based on scenic quality, viewer sensitivity, and distance zones, with Class I having the highest visual value and Class IV the lowest. While VRI classes are purely informational, VRM classes guide the BLM's RMP decisions, balancing landscape preservation with potential modifications, even in areas of high visual value. Detailed evaluation criteria are outlined in Section 3.2 of the VRTR.

The BLM Carson City District Office conducted a visual resources inventory for the Project area, published in November 2022 and updated in September 2023 (BLM 2023). Scenic quality across all Project components is rated as C, representing the lowest-value designation. Viewer sensitivity for all Project locations is designated as low or medium. While the eastern portions of the Project solar site adjacent to mountain ranges are categorized as background, indicating some visibility from public observation points, the overall scenic quality of the Project solar site is low, with a rating of C, due to the common landscape features in the region. The BLM VRI classifications for the Project area are illustrated in Figure 3.13-2. The entire Project site falls within VRI Class IV, indicating the lowest overall visual value.

The Project area does not have an assigned VRM class. Therefore, the BLM Manual H-8410-1 guidance was followed to assign an interim VRM class to the Project area. Following the BLM Manual H-8410-1, the Project area was assessed using VRI ratings along with RMP objectives to assign an interim VRM class. The Project area falls within a scenic quality rating unit (SQRU) with a rating of C, the lowest rating. Viewer sensitivity across the entire Project area was determined to be low to medium. Forms for scenic quality and viewer sensitivity ratings are included in Appendix C of the VRTR. Distance zones, evaluated in Section 4.2.2 of the VRTR, contribute to the determination of the VRI Class.

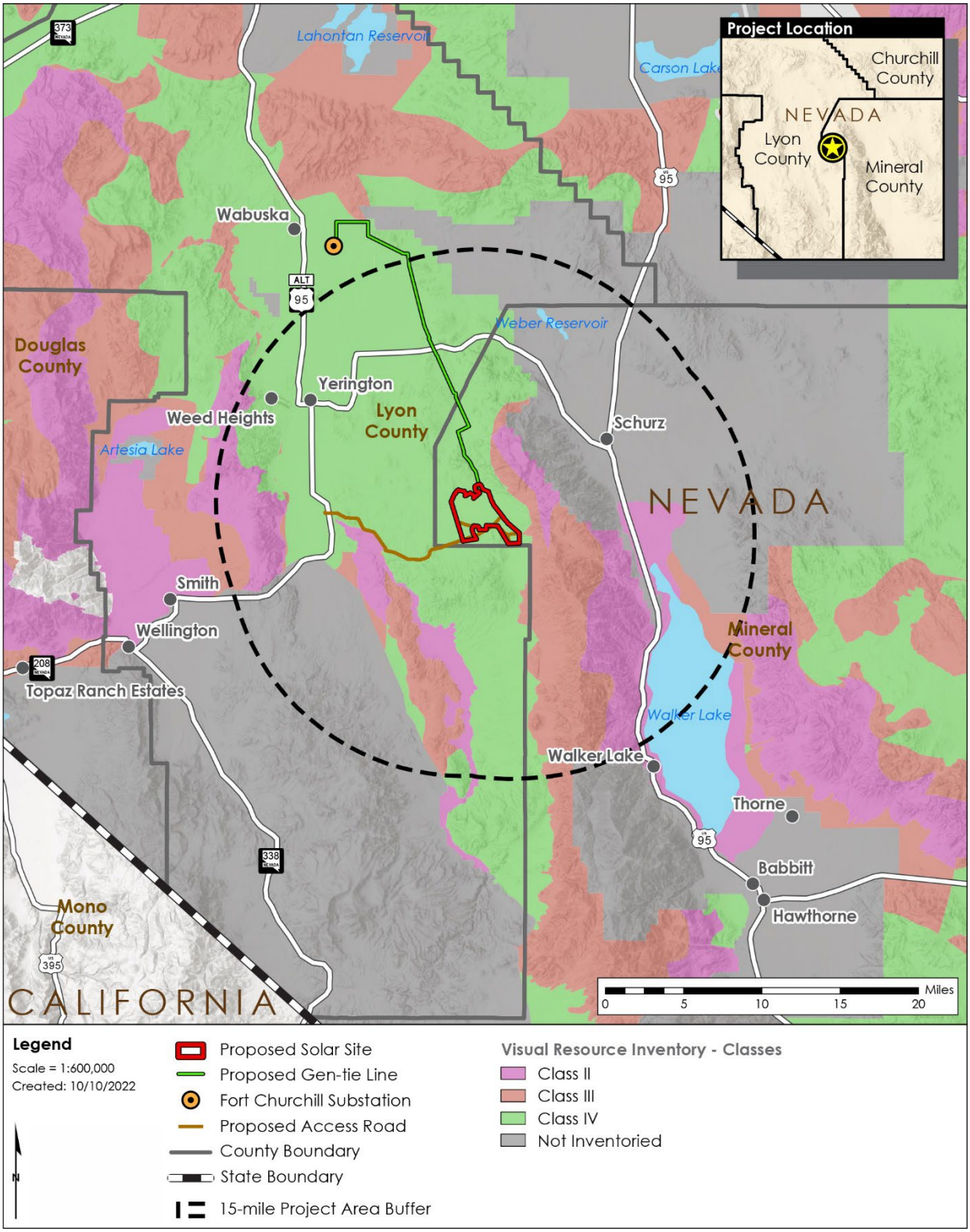
With consideration of the above listed factors, the Project area has been assigned to VRM Class IV, which allows for landscape alterations with a high level of changes to the landscape characteristics. Development may attract attention and even dominate the landscape so long as the changes repeat the basic elements found in the landscape character.

Table 3.13-1 KOP Descriptions

KOP ID	Simulated or informational	Location	Description	Viewers
2	Simulated	Hwy 339/CA-NHT	This viewpoint is along a major highway in the vicinity of farms and residential land uses as well as just west of the California National Historic Trail corridor. It is elevated above the valley floor and has eastern views of the mountains surrounding the Project solar site. Noticeable views of the Project components are not expected due to distance (approximately 11 miles).	Motorists, national trail, residential concerns
4	Simulated	Reese River Road	This viewpoint is along a well-established unpaved road approximately 1 mile west of the Project solar site, at the intersection of Reese River Road and an existing transmission line corridor. Reese River Road is the proposed Project access road.	Recreation/OHV
5	Simulated	Old State Road 2C	This viewpoint is along a well-established unpaved road approximately 1 mile east of the Project solar site and from an elevated position.	Recreation/OHV
7	Simulated	Pistone-Black Mountain NCA	This viewpoint is within the Pistone-Black Mountain NCA and in the vicinity of Black Mountain. The location also offers representative views from OHV roads in the area. The surrounding topography would likely screen the majority of the Project from view. The conditions of access to the location are unknown, and roads in the area are steep.	Recreation/OHV, cultural conservation, tribal concerns
10	Simulated	US 95A (gen-tie only)	This viewpoint provides a view of the gen-tie line route from approximately 600 feet east, where the line crosses US 95A. This viewpoint is not within the Project viewshed model. This viewpoint would also include views of the Greenlink West line.	Motorists

KOP ID	Simulated or informational	Location	Description	Viewers
1	Informational	SR 339/CA-NHT/Residential	This viewpoint is similar to KOP 2, SR 339/CA-NHT, but at a greater distance from the Project area.	Motorists, national trail, residential concerns
3	Informational	Walker River State Recreation Area	This viewpoint is from Reese River Road at the entrance to the Walker River State Recreation Area. The viewpoint is not within Project viewshed model, so views are not expected. Included to verify viewshed model.	Recreation/OHV
6	Informational	Ranch structure	This location is at a historic ranching structure approximately 3,000 feet south of the solar site. Similar to Old State Road 2C but expected to have less visibility.	Historic resources, visual character, recreation/OHV
8	Informational	Eastern OHV Road A	This viewpoint is from a representative OHV road approximately 0.5 mile east of the Project solar site. It is at an elevated position with clear views of the majority of the Project area, similar the viewpoint of Old State Road 2C and Reese River Road.	Recreation/OHV, tribal concerns
9	Informational	Eastern OHV Road B	Similar to KOP 9 – Eastern OHV Road A, but at a slightly greater distance from the Project solar site. Included as informational to determine whether greater elevation changes visibility and to include views from closer to the mountains and western edge of the Walker River Reservation. The viewpoint would also include views of the Greenlink West line.	Recreation/OHV

Figure 3.13-2 VRI Classification for the Proposed Project Area



Source: (USEPA and the USGS 2012; ESRI® 2011; 2012; BLM 2023)

3.13.3.3 *Night Sky Qualities*

The Project solar site is situated in an undeveloped area with minimal nighttime lighting, aside from potential lighting associated with the Pumpkin Hollow Copper Mine located north of the site. Night sky qualities pertain to conditions influencing nighttime visibility and stargazing opportunities, influenced by both natural atmospheric factors and human-generated lighting. Optimal night sky conditions are found in undeveloped areas, far from urban regions where lower levels of nighttime sky glow, or light pollution, are present. Yerington's night sky is influenced by its regional proximity to the Reno and Carson City metropolitan areas. The Bortle scale, a 9-level numeric scale, quantifies the brightness of a location's night sky, ranging from Class 1, representing the darkest skies, to Class 9, representing inner-city skies. Yerington registers a Bortle scale value of Class 4, whereas the solar site is classified as Class 2, indicating minimal light pollution and strong brightness (Danko 2023).

3.13.3.4 *Military Training Routes*

As stated in Section 3.10, Land Use, the Project and surrounding area is within multiple military training routes. Figure 3.10-5 shows military training routes, Federal Aviation Administration (FAA) special use airspace, and military airbases and training targets.

3.13.4 Environmental Consequences

3.13.4.1 *Methods*

Overview

The impacts on visual resources and existing landscape conditions are based on the evaluation of adverse visual change that would result from the Project for three primary factors: (1) scenic quality, (2) viewer sensitivity levels (expectations of viewer response to landscape changes), and (3) the extent of visual contrast and whether that contrast would conflict with the BLM's VRM class objectives. Table 3.13-2 summarizes the impact analysis considerations for visual resources.

Table 3.13-2 Impact Analysis Considerations for Visual Resources

Impact factor	Impact threshold
Scenic quality (scenic landscape features and rating criteria)	Visually obvious degradation of the foreground character or scenic quality of a visually important landscape
Viewer sensitivity levels (expected viewer response to landscape changes)	The degree to which visual change in the landscape would elicit an adverse response from most viewers, depending on visibility and distance
Consistency with the BLM's class-designation management objectives	The degree to which visual change in the landscape for one or more rating factors would create contrast that would conflict with the BLM's management objectives according to the VRM classes assigned at the Project component location. Specific thresholds for each VRM class are provided in Table 3.13-4

Scenic Quality

Scenic quality impacts are evaluated by comparing the Project's effect on the scenic quality rating of the affected area. This assessment considers factors such as existing scenic quality ratings, landscape character, and the presence of industrial development. It also assesses how the Project components, as new or additional cultural modifications, affect the landscape.

The scenic quality impact thresholds are as follows:

- Strong contrast: moderate impact

- Moderate contrast: low impact
- Weak contrast: low impact

Viewer Sensitivity and Distance Zones

Adverse effects on viewer sensitivity could occur, depending on the visual contrast and distance zone in which it is perceivable. Table 3.13-3 defines visual impacts to sensitive viewers based on contrast level.

Table 3.13-3 Impacts to Sensitive Viewers Based on Visual Contrast for Areas with Moderate to Low Viewer Sensitivity

Distance zone	Strong Visual Contrast	Moderate Visual Contrast	Weak Visual Contrast
Immediate Foreground (0–0.5 mile)	High visual impact	Low visual impact	Low visual impact
Foreground-Middleground (0.5–5.0 miles)	Moderate visual impact	Low visual impact	Low visual impact
Background (5– 15 miles)	Low visual impact	Low visual impact	Low visual impact
Seldom seen> 15 miles	Low visual impact	Low visual impact	Low visual impact

BLM Management Objectives

Impacts on adopted BLM management objectives are assessed by evaluating the contrast caused by the Project. This involves using the BLM's contrast rating process, which considers changes in form, line, color, and texture from pre-project to post-project conditions. Land and water features, vegetation, and structures are also taken into account.

The Project area has an interim VRM Class IV designation, allowing for management activities requiring major modifications to the landscape. Projects resulting in high contrast and major modifications can still align with management objectives under this classification. However, efforts should be made to minimize impacts through careful location, minimal disturbance, and repeating basic elements.

3.13.4.2 *Proposed Action*

Construction Impacts

Visual Impacts. Temporary adverse impacts on visual resources during construction are expected due to the use of construction equipment, staging, and ground disturbance. These impacts are foreseen to be short-term, lasting for the 16-month construction period. They are expected to be similar to those during the O&M phase of the Project, as discussed in the following section.

Construction activities in the immediate foreground and foreground-middleground of the observer's view would have higher contrasts and greater impacts on scenic quality and sensitive viewers compared to those farther away. The greatest impacts would be on users of OHV roads near the Project solar site and gen-tie alignment, where construction would occur nearby.

During construction, short-term direct impacts on viewer sensitivity and scenic quality are expected to be minor to moderate from all KOPs, similar to those during the long-term O&M phase. Visual contrast during construction would align with Class IV VRM management objectives. Implementation of Western Solar Plan documents, including VR 2-4, would further mitigate contrast during construction through coordination with BLM or designated visual/scenic resource specialists prior to construction.

Night Sky Impacts. Nighttime construction activities are not expected during the Project. However, if isolated nighttime construction becomes necessary, it would be illuminated to comply with State and federal worker safety regulations. Efforts would be made to direct the lighting downward or toward the area to be illuminated and shield it from public view as much as possible. Task-specific lighting would be prioritized while ensuring compliance with safety regulations. Given the limited duration and locations of potential nighttime work, adverse effects on the night sky are not anticipated.

Operation and Maintenance Impacts

Visual Impacts. The Project would entail major landscape modifications and the installation of permanent facilities in a largely undeveloped area. During the O&M phase following construction, the degree of visual contrast resulting from landscape changes and the visibility of these alterations to the casual observer would vary depending on the viewing location.

Table 3.13-4 provides an overview of the Project's impact on scenic quality and viewer sensitivity, primarily stemming from the presence of Project components in the landscape. Assessments indicate that impacts on scenic quality and viewer sensitivity would be minor across all KOPs. The specific impact level for each KOP, as outlined in Table 3.13-4, was determined based on impact thresholds corresponding to a scenic quality rating of C (as discussed in *Section 3.2 of the VRTR*) and impact levels considering visual contrast and distance zones, as detailed in Table 3.13-3.

The Project would result in weak to moderate contrast when viewed from the KOPs, due to the introduction of the solar arrays and associated structures into an undeveloped area. Simulations from the five KOPs are shown in Figure 3.13-3 through Figure 3.13-12. The Project would not attract or focus attention of the casual viewer from most of the KOPs that were evaluated, with the exception of views along portions of Reese River Road and Old State Road 2C (KOPs 4 and 5) where the Project solar site is in close proximity, and where the gen-tie line crosses US 95A (KOP 10). Moderate contrast at KOPs 4 and 5 is expected to draw the attention of casual viewers but would not dominate attention within the viewshed and would be consistent with VRM Class IV management objectives. The gen-tie, where it crosses US 95A, would present new head-on views but due to the existing poles and transmission lines that run concurrently, the varying topography and landscape beyond the gen-tie, and the relatively short viewing time, visual impacts would be minor. The gen-tie also crosses and is located within the vicinity of the Mason Valley WMA and would be visible in this area. The Project would be discernible by the casual viewer but would not attract attention in the middleground of the Mason Valley WMA because it would be partially screened by the dense vegetation associated with the Walker River riparian corridor and the various sloughs of the WMA.

Given the viewing distance and low to medium viewer sensitivity, moderate contrast at these locations is a minor impact. At the other evaluated KOPs, the Project components would be partially or completely screened from view by topography and vegetation, and/or views of the Project components (including the solar site and gen-tie) would not be prominent. The Project would not draw attention due to various factors such as separation distance, viewing angle, or proximate natural landscape features that tend to draw attention away from the Project. Implementation of the Western Solar Plan PDFs, including VR3-1 and VR4-1, would further reduce contrast. PDFs include surface and color treatment and the retention of native vegetation, as approved by the BLM, as well as continued consultation with the BLM throughout O&M. Colors and finishes should be selected using the BLM Standard Environmental Color Chart and selection instructions. Recommended colors in this the Project setting include covert green and Carlsbad Canyon. Site restoration activities would begin immediately following construction to reduce the likelihood of visual contrasts associated with erosion and invasive weed infestation.

Table 3.13-4 Summary of Contrast Rating Results and Conformance with VRM Objectives

KOP ID	KOP description	Degree of visual contrast	Viewing distance	Scenic quality rating	Scenic quality impact	Viewer sensitivity rating	Viewer sensitivity impact	Conforms with VRM Class IV?	Discussion
2	Hwy 339/CA-NHT	Weak	11 miles (BG)	C	Low	Medium	Low	Yes	KOP 2 is located approximately 11 miles from the solar site and 13 miles from the gen-tie alignment. Solar arrays are expected to be slightly visible at this location if clear atmospheric conditions are present but would not draw the attention of the casual viewer. The gen-tie line structures would be obscured by the natural topography and would not be visible from this location. Weak contrast would be expected, and no mitigation is proposed. Views of the Project from KOP 2 would conform with VRM Class IV objectives.
4	Reese River Road	Moderate	1 mile (FM)	C	Low	Low	Low	Yes	KOP 4 is located approximately 1 mile from the solar site and 4 miles from the gen-tie alignment. The solar arrays would be visible due to the proximity to the solar site. The solar arrays are expected to appear as horizontal lines on the landscape. Small, enclosed electrical housing structures are also expected to be noticeable. Western Solar Plan PDF VR 2-3 would be implemented, specifically to include design of the solar arrays to follow the natural contour of the land and painting of electrical housing units to reduce color contrast. Moderate contrast would be expected due to the visibility of the solar arrays in a previously undeveloped area although the Project would not dominate views of the natural landscape within the viewshed. No mitigation is proposed. Views of the Project from KOP 4 would conform with VRM Class IV objectives.
5	Old State Road 2C	Moderate	1.7 miles (FM)	C	Low	Low	Low	Yes	KOP 5 is located approximately 0.7 mile from the solar site and 4 miles from the gen-tie alignment. The dark solar panels would be noticeable due to the elevated position of KOP 5 being approximately 150 feet higher than the nearest array and nearly 600 feet higher than the furthest likely visible array. Views of the Project from KOP 5 are expected to draw attention from the casual viewer, and moderate contrast would be expected due to the viewing position and visibility of the solar arrays in a previously undeveloped area, although they would not dominate the natural characteristics of the landscape within the viewshed. Western Solar Plan PDF VR 2-3 would be implemented, specifically to include design of the solar arrays to follow the natural contour of the land and painting of electrical housing units to reduce color contrast. No mitigation is proposed. Views of the Project from KOP 5 would conform with VRM Class IV objectives.
7	Pistone-Black Mountain NCA	Weak	2.75 miles (FM)	C	Low	Medium	Low	Yes	KOP 7 is located approximately 2.75 miles from the solar site and 3.25 miles from the gen-tie alignment. The solar arrays would be visible through a minor gap in the mountain range due to the elevated viewing position, which is approximately 1,223 feet greater in elevation than the average Project elevation (5,234 feet). The gen-tie line would not be visible due to the natural topography. Weak contrast would be expected due to the elevated viewing position and visibility of the solar arrays in a previously undeveloped area, although the solar arrays would not dominate the natural characteristics of the landscape within the viewshed. Views of the Project from KOP 7 would conform with VRM Class IV objectives.
10	Alternate US Hwy 95 (gen-tie Only)	Moderate	0.25 miles (IF)	C	Low	Low	Low	Yes	KOP 10 is located approximately 9 miles from the solar site and 0.25 mile from the gen-tie alignment. The solar arrays would not be visible from this location as the solar site would be completely obstructed by topography. Gen-tie poles and transmission lines would be visible on the skyline and head-on views. Moderate contrast would be expected due to proximity of viewers, but the gen-tie line is not anticipated to draw attention at KOP 10 due to the multiple other existing poles and transmission lines that would run concurrently and the varying topography and landscape beyond the gen-tie. Views of the Project from KOP 10 would conform with VRM Class IV objectives.

Figure 3.13-3 KOP 2 Existing Conditions

Figure 3.13-4 KOP 2 – Visual Simulation of the Proposed Action

Figure 3.13-5 KOP 4 Existing Conditions

Figure 3.13-6 KOP 4 – Visual Simulation of the Proposed Action

Figure 3.13-7 KOP 5- Existing Conditions

Figure 3.13-8 KOP 5 – Visual Simulation of the Proposed Action

Figure 3.13-9 KOP 7 – Existing Conditions

Figure 3.13-10 KOP 7 – Visual Simulations of Proposed Action

Figure 3.13-11 KOP 10 – Existing Conditions

Figure 3.13-12 KOP 10 – Visual Simulation of the Proposed Action

Night Sky Impacts. Task-specific lighting would be used to the greatest extent practicable in compliance with worker safety regulations. Implementation of PDFs, including VR2-2 and VR3-1, would further minimize effects on night sky qualities and would not be adverse.

Military Training Routes. A Focused Glint and Glare Study for Military Aviation Training Operations Along Military Training Route VR-1255 was completed to address potential glint and glare concerns. The findings summarize that "under all circumstances, glare predicted from the conceptual PV array areas would result in a lower potential for glare hazards than viewing unfiltered sun and sunlight reflected off of smooth water" Glare from the Project is not anticipated to result in an adverse effect to pilots or military aviation operations. A memorandum of the study was completed by Panorama Environmental is available for download on BLM's National NEPA Register website (Panorama 2024).

Decommissioning Impacts

During the decommissioning phase, visual impacts from the Project would decrease as contrasts associated with Project components lessen, although some bare ground contrast may persist for decades or longer. Reclamation efforts would be implemented to reduce impacts, yet complete elimination would not be achieved. While desert recovery is slow, native plant re-seeding would aid in accelerating revegetation in relevant areas. Monitoring of revegetation progress, outlined in the Decommissioning and Site Reclamation Plan, would be conducted, with remediation measures considered if success criteria are not met. The solar site may appear disturbed for several years post-decommissioning, with visible soils against the vegetated backdrop. However, impacts would be similar to those during the O&M phase, considered low due to viewer sensitivity and visual quality, aligning with VRM Class IV. Over time, visual effects would diminish as the landscape gradually returns to its natural state. Adverse visual effects would be minimized through reclamation efforts guided by BLM-approved specialists, as outlined in PDFs including VR4-1.

Cumulative Impacts

Several ongoing projects in the Mason Valley area, including the proposed Greenlink West Transmission Line project, situated adjacent to the Project solar site and gen-tie line, contribute to cumulative impacts. The expansion of the Pumpkin Hollow Copper Mine and the existing LADWP transmission line further compound these effects. Transitioning from a natural landscape to one featuring industrial facilities, including solar panels, constitutes adverse cumulative impact. The Project, alongside Greenlink West, particularly near the proposed gen-tie alignment, intensifies visual effects, especially at the US 95A crossing (KOP 10). Despite these cumulative effects, the area falls within an existing utility corridor and aligns with VRM Class IV, allowing for major visual changes without considering impacts cumulatively adverse.

3.13.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction and Operations and Maintenance Impacts

Alternative 1 would yield comparable impacts to the Proposed Action, as solar arrays would occupy a similar acreage. However, scenic quality and viewer sensitivity impacts would marginally decrease due to vegetation preservation and restoration beneath the solar arrays. While this may slightly diminish contrast, its noticeable effect would be limited to immediate foreground views. Visual contrast would remain unchanged. The application of Western Solar Plan PDFs, encompassing color treatments, vegetation maintenance, and a Lighting Management Plan, would reduce adverse impacts.

Decommissioning Impacts

Impacts from decommissioning in Alternative 1 would be similar to those of the Proposed Action's decommissioning phase, although with a reduction due to an estimated 65 percent of the application area being vegetated by decommissioning (in contrast to 36 percent under the Proposed Action). While revegetation would still be necessary for Alternative 1, it would be at a lesser scale compared to the Proposed Action. Implementation of a Site Decommissioning and Reclamation Plan, along with

revegetation monitoring, would be consistent with the Proposed Action. Measures to reduce adverse visual effects during decommissioning would be the same as with those of the Proposed Action.

Cumulative Impacts

Future solar projects on BLM lands in the vicinity of the Project would likely incorporate similar vegetation maintenance measures as prescribed under Alternative 1. The cumulative visual impacts, however, would remain similar to those described for the Proposed Action.

3.13.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Alternative 2 involves using supplemental access routes during the construction and, potentially, decommissioning phase. No new roads or major road improvements would occur. Minor road improvements would include grading and additional road base to be added within the existing roadway footprint. Construction of the solar site, gen-tie, and primary access roads would be the same as for the Proposed Action. Use of supplemental access routes for a portion of the construction vehicle trips would not have visual impacts. Impacts and applicable PDFs would be the same as described for the Proposed Action.

3.13.4.5 *Alternative 3 – Alternative Gen-tie Connecting to Greenlink West*

Alternative 3 eliminates the visual impacts of the 24.1-mile-long gen-tie that crosses the Mason Valley to the Fort Churchill substation. In its place, a shorter 0.54-mile gen-tie and access road to a new switching station east of the Project would be constructed, reducing overall visual impact.

The proposed switching station for Alternative 3 would feature a fenced area to house transmission equipment, potentially reaching heights of up to 30 feet. Additionally, new transmission structures would be installed between the solar site and the Greenlink West line within the designated utility corridor. Situated on relatively level ground on the *bajada*, although at the base of a steep topographic rise, the switching station would be located approximately 1.5 miles north of the nearest recreational access route through the solar site and 2.5 miles north of Old State Road 2C. While this alternative would introduce new visual impacts and signify a major change in the landscape, the visibility would align with the developed nature of the solar facility and proposed Greenlink West line. As the area falls under VRM Class IV, the Project's adherence to VRM Class IV management objectives would remain consistent. The application of Western Solar Plan visual resources PDFs to Alternative 3 for both the solar site and the gen-tie would help reduce visual impacts, which would not be considered adverse.

Impacts from decommissioning Alternative 3 would be reduced as compared to the Proposed Action although similar due to the majority of disturbance being at the solar site. Reclamation would proceed at the solar site as described for the Proposed Action, with visual contrast diminishing over time.

Alternative 3 would have reduced adverse cumulative impacts by not contributing to the existing and planned transmission line facilities within the area. The adverse cumulative impact due to the increase in solar and industrial facilities within the Mason Valley would remain, as described for the Proposed Action.

3.13.4.6 *No Action Alternative*

Under the No Action alternative, no changes would be implemented on the site and the existing environmental setting would be maintained. The Project solar site would not be expected to change noticeably from existing conditions and would not result in the visual impacts described for the Proposed Action or alternatives. No new disturbance to the characteristic landscape would occur, and no new elements or patterns would be introduced to the area. Therefore, there would be no new visual impacts.

3.13.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize visual impacts.

Table 3.13-5 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• VR1-1; 2-2; 2-3; 2-4; 3-1; 4-1
Carson City CRMP SOPs	• Visual Resource Management SOP 2, and 3
Management Plans	• Lighting Management Plan (Draft is available on the Project website)

Mitigation Measures

No additional mitigation measures are prescribed for the Project under the Proposed Action or the alternatives since no adverse effects to visual resources are expected.

3.13.4.8 *Irreversible or Irretrievable Impacts and Residual Effects*

Over the 30-year lifespan of the Project, changes to the landscape would occur, representing an irretrievable impact but not irreversible. Upon Project completion, visible structures and materials would be removed, yet it may take decades to a century or more for the Project footprint to disappear entirely and vegetation to fully recover. Reclamation efforts would establish vegetation over several growing seasons, resulting in a visibly different composition from the original landscape. This difference would prolong the visibility of the Project footprint beyond its lifespan, constituting an irreversible impact. Alternative 1 mitigates this effect. As no mitigation is proposed, no residual effects would remain.

3.14 Socioeconomics

3.14.1 Introduction

This section analyzes the impacts of the Project and alternatives on socioeconomic issues, which include Project-related economic expenditures and job creation, population and housing impacts, effects on tourism and recreation economies, and effects to property values. This section relies on the technical report entitled Economic and Fiscal Impacts, Socioeconomic Assessment, Libra Solar Project (Triple Point 2022).

3.14.2 Analysis Area

Workers needed for the Project would be sourced from a seven-county area in Nevada, including Mineral County, Lyon County, Washoe County, Carson City,[5] Douglas County, Churchill County, and Storey County, with a small percentage potentially relocating closer to the Project area (mostly in Lyon County). The analysis area for the socioeconomic analysis, therefore, encompasses this seven-county area. The analysis is more heavily focused on direct impacts to Lyon and Mineral counties since the Project components fall within these counties, including for employment, income, housing, and public services.

[5] Carson City is an independent city that Is not incorporated into any county.

3.14.3 Affected Environment

3.14.3.1 *Demographics*

Population

The Project site is located in Mineral County adjacent to the Mineral County and Lyon County border in Nevada. The proposed gen-tie alignment for the Project is located in both Mineral and Lyon counties. The city of Yerington is the closest city to the Project area, with a population of 3,190 in 2020, and is located approximately 11 miles northwest of the Project solar site in Lyon County (U.S. Census Bureau 2021a). Lyon County has a population of 55,667 and is twelve times Mineral County's population of 4,487 (U.S. Census Bureau 2021a). When combined, the population of Lyon County and Mineral County is approximately 60,000[6], which is approximately 1.9 percent of the overall population in Nevada in 2020 (America Counts Staff 2021). The population of the two-county region increased at an average annual growth rate of 0.1 percent from 2010 through 2017, with a more rapid average annual growth rate increase of 1.9 percent after 2017. Overall, the two-county region's population has grown at an annual rate of 0.7 percent over the past decade to reach a total of 60,154 in 2020 based on migration into Lyon County. Figure 3.14-1 presents the population growth data for Lyon County and Mineral County from 2010 to 2020.

The Washoe County boundary is located approximately 57 miles northwest from the Project site and contains the largest population of the seven-county region, with almost half of the population located in the City of Reno. Washoe County had a population increase of 12.4 percent from 2010 to 2020. Douglas County and Storey County are located 21 miles west and 45 miles northwest, respectively, from the Project site. Douglas County and Storey County had a population increase of 3.1 percent and 1.7 percent, respectively, from 2010 to 2020. Carson City is located south of Reno and approximately 45 miles northwest from the Project site. The Churchill County boundary is approximately 17 miles northeast from the Project site. Carson City and Churchill County had a population decrease of 0.2 and 1.4 percent, respectively, from 2010 to 2020.

Table **3.14-1** lists the seven-county region population changes from 2010 to 2021.

Employment and Income

The median household income in Lyon County grew at an annual average growth rate of 2 percent through the last decade, reaching $58,814 in 2020. In contrast, Mineral County's median household income declined at an annual average rate of 0.8 percent to $31,500 in 2020. In both cases, mean income is greater than median income, which is an indication of income disparity; however, that disparity does not appear to be increasing except over the past 2 years in Mineral County. Figure 3.14-2, below, shows the mean and median household incomes within Lyon County and Mineral County. The combined output (the value of all products and services produced) for Lyon and Mineral counties was $3.7 billion in 2020, including $1.9 billion of gross domestic product.

Table 3.14-2 lists the top 15 industries as measured by total economic output.

Housing

The total number of housing units across Lyon and Mineral counties increased from 24,770 in 2010 to 26,394 units in 2020, for an annual average growth rate of 0.6 percent. Almost three-quarters of the 26,394 housing units are single-family detached, and the balance largely comprises mobile homes. The number and share of vacant units declined over the past decade, from 4,673 in 2010 (or 19 percent) to 2,730 (or 10.3 percent) by 2020. The majority of the vacant housing units (2,108 units or 77 percent of the

[6] The Decennial Census redistricting data found the total population to be 63,789; however, American Community Survey (ACS) data is relied upon to analyze trends over time.

total housing units) are rental units and are either single-family detached or mobile homes; however, mobile homes comprised the greatest share of vacant housing units at 29 percent. Since 2010, the rental

Figure 3.14-1 Population Growth of Lyon and Mineral Counties

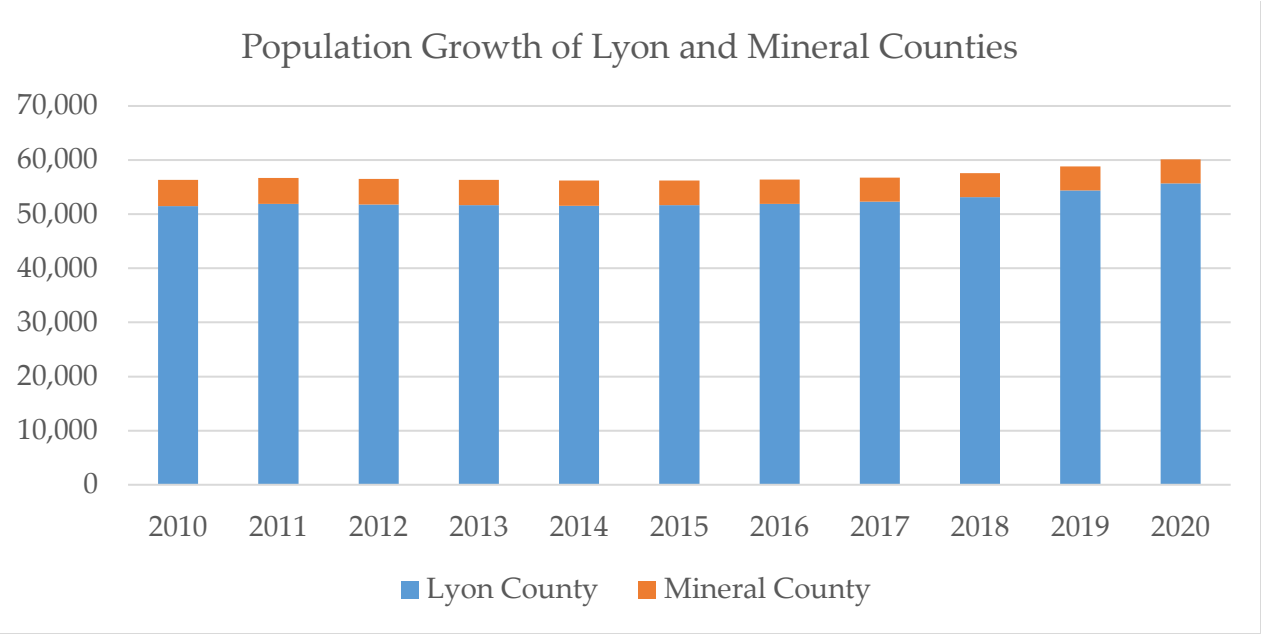


Table 3.14-1 Analysis Area Population (2010 to 2020)

Analysis area	Population 2010	Population 2020	Percent change 2010 to 2020
Mineral County	4,812	4,487	-6.8
Lyon County	51,515	55,667	+8.1
Washoe County	412,844	464,182	+12.4
Carson City	55,375	55,244	-0.2
Douglas County	47,042	48,486	+3.1
Churchill County	24,946	24,606	-1.4
Storey County	4,016	4,086	+1.7
Nevada	2,633,331	3,030,261	+15.1

Source: (U.S. Census Bureau 2020; 2010)

Figure 3.14-2 Household Income

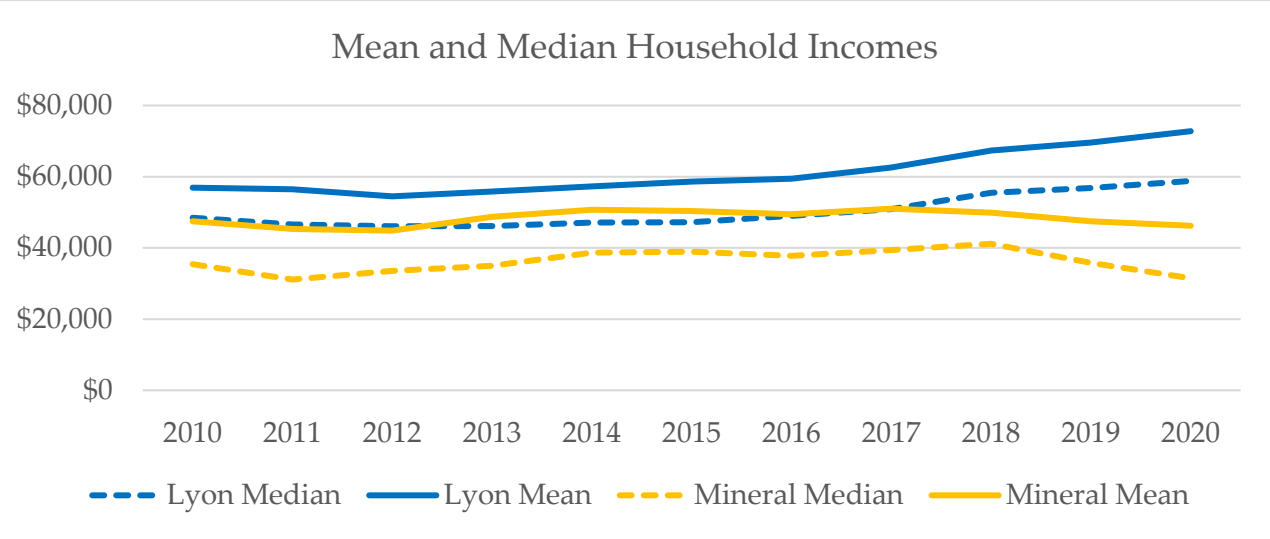


Table 3.14-2 Top 15 Lyon County and Mineral County Industries by Total Economic Output, 2020 (dollars)

Industry description	Total output
Owner-occupied dwellings	$287,799,352
Secondary processing of other nonferrous metals	$168,217,384
Other real estate	$110,534,606
Employment and payroll of local government (education)	$102,011,829
Asphalt shingle and coating materials manufacturing	$90,116,192
Gold ore mining	$81,998,006
Fabricated structural metal manufacturing	$79,008,159
Metal mining services	$78,666,645
Employment and payroll of local government (other services)	$75,256,370
Paint and coating manufacturing	$70,189,979
Copper, nickel, lead, and zinc mining	$66,726,778
Warehousing and storage	$63,358,269
Gambling industries (except casino hotels)	$61,849,024
Limited-service restaurants	$57,722,001
Cement manufacturing	$55,545,878

share of vacant units has remained relatively consistent; however, the quantity has decreased from 3,753 units in 2010. Figure 3.14-3 presents the housing units and vacancy rates within Lyon and Mineral counties.

Figure 3.14-4 presents the distribution of total housing units and vacant housing units by type within Lyon and Mineral counties. Table 3.14-3 lists the transient lodging inventory within roughly a 1-hour drive from the Project site.

Figure 3.14-3 Vacant and Occupied Housing Units in Lyon and Mineral Counties

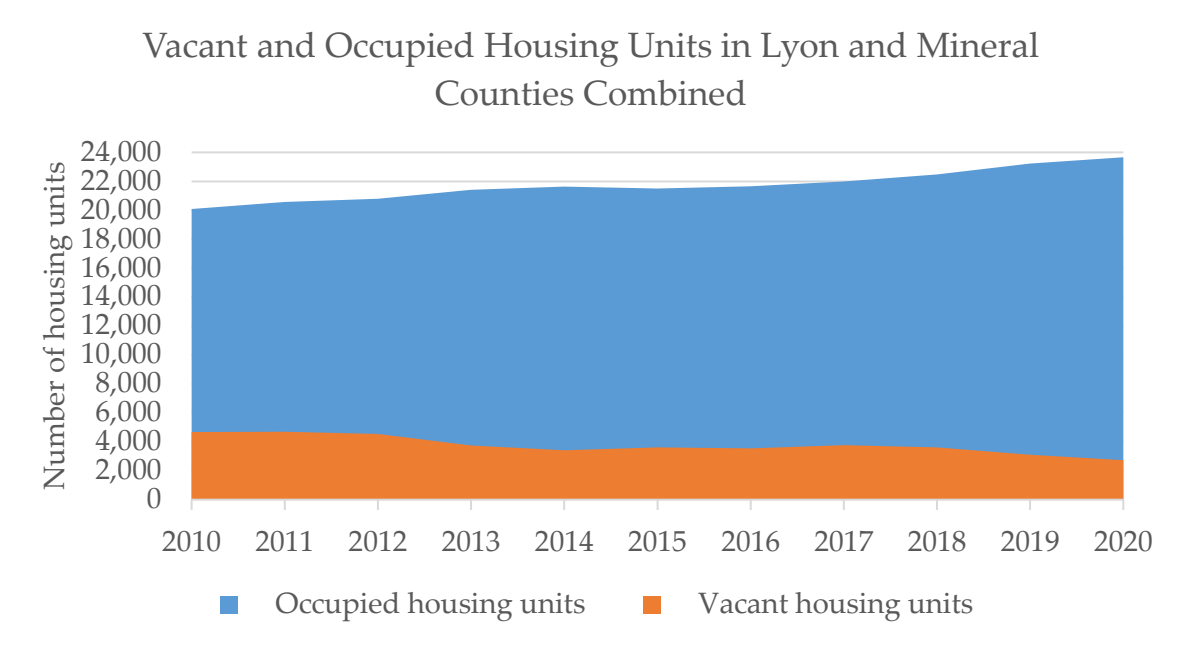


Figure 3.14-4 Distribution of Housing Units by Type in Lyon and Mineral Counties (2020)

Housing description	Total count	Vacant housing count	Total share [1]	Vacant housing share
1-unit, detached	19,382	950	73%	49%
1-unit, attached	408	48	2%	2%
2 units	372	100	1%	5%
3 or 4 units	531	75	2%	4%
5 to 9 units	385	66	1%	3%
10 to 19 units	91	55	0%	3%
20 or more units	415	12	2%	1%
Mobile home	4,772	566	18%	29%
Boat, RV, van, etc.2	38	691	0%	4%
Total	26,394	1,941	100%	100%

Notes:

1. Vacant higher than total count for unknown reasons but could be due to different methods of counting the inventory.
2. Table percentages may not total due to rounding.

Table 3.14-3 Transient Lodging Inventory in Proximity to the Project Site

Location	Rooms
Fernley	243
Hawthorne	223
Topaz Lake	125
Virginia City	252
Yerington	109
Total	952

3.14.3.2 *Tourism and Recreation Economy*

In 2021, tourism generated an economic impact of approximately 62.5 billion dollars and employed over 350,000 workers (Tourism Economics 2022). The majority of Nevada's tourism and recreation industry is concentrated in Clark County within the Las Vegas metropolitan area, which provided 258,390 jobs in 2021. In comparison, Lyon and Mineral counties provided 1,608 jobs in tourism or approximately 0.41 percent of Nevada tourism jobs in 2021 (Nevada Governor's Office of Economic Development 2023). In Mineral and Lyon counties, gambling industries (except casino hotels) and limited-service restaurants were both within the top 15 industries for economic output, together generating over 119 million in annual sales in 2021 (see Table 3.14-2).

OHV use is a common recreational activity occurring within Mason Valley, including the Project site; however, OHV recreation was not identified as one of the top 15 industries for economic output. For additional discussion on OHV use in the area, refer to Section *3.12, Recreation*.

3.14.3.3 *Access to Local Emergency Services*

Police

The Project solar site is located within BLM-administered land in Mineral County and would likely be serviced by the Mineral County Sheriff. The Mineral County Sheriff's office is located at 205 A Street, in Hawthorne, Nevada, approximately 28 miles southeast of the Project solar site. The BLM's Law Enforcement and Security Region 3 provides services related to natural resource crimes on BLM land. Yerington police provides the closest police service.

Fire Protection

The BLM handles wildfires on BLM-managed public land, while local jurisdictions address other types of fires like structural or hazardous materials fires. For the proposed Project, the Mineral County Fire Department would cover the solar site, and the Mason Valley Fire Protection District would handle the gen-tie line, serving Yerington and Mason Valley. The nearest Mineral County Fire Department station is in Schurz, about 8.1 miles east of the solar site, while the closest Mason Valley Fire Protection District station is in Yerington, roughly 11.1 miles northwest on SR 208.

Hospitals

The closest hospital to the Project solar site is the South Lyon Medical Center located in Yerington, approximately 11.2 miles northwest. The South Lyon Medical Center serves as a public hospital district for Lyon County and is the sole provider of health care in the area (South Lyon Medical Center, n.d.).

3.14.3.4 *Social*

The Northern Paiute occupied the Mason Valley since around 1,000 after death (A.D.) (Nevada Expeditions, n.d.). In 1881, N.H.A. "Hock" Mason drove cattle through the valley and returned in 1859 to settle along the Walker River north of the city of Yerington. Agricultural crops were produced, including barley, potatoes, and grain. Through the twentieth century and into the twenty-first, the city of Yerington has remained a modest but important agricultural center (Nevada Expeditions, n.d.). In the 1900s, mining

became a major industry in Mason Valley with the establishment of the Mason Valley Mine producing copper, gold, silver, gypsum-anhydrite, and iron (Mining Town Archive, n.d.). Mining has continued to be an important economic driver in the region as well as government, some manufacturing, and gambling. Mineral County is also home to a large army ammunition depot (Hawthorne Army Depot). The primary industries in the Lyon and Mineral counites are shown in Table 3.14-2.

3.14.4 Environmental Consequences

3.14.4.1 *Methods*

The economic impact of the Project, spanning construction, O&M, and decommissioning phases over its 30-year lifespan, was assessed using Economic Impact Analysis for Planning (IMPLAN) modeling. This involved estimating direct, indirect, and induced effects on the regional economy. Direct effects capture initial changes in the industry, while indirect effects reflect adjustments in inter-industry transactions. Induced effects arise from local spending changes due to income shifts in affected sectors. Temporary impacts occur during the 16-month construction period, while long-term impacts extend throughout the 30-year operation period.

The analysis utilized the latest IMPLAN version incorporating 546 industry sectors defined by the U.S. Bureau of Economic Analysis (BEA). Although the 2020 IMPLAN datasets were available, anomalies due to the global pandemic led to the use of 2019 data for a more representative modeling of economic impacts. Further details and methodology are outlined in the Economic and Fiscal Impacts, Socioeconomic Assessment, Libra Solar Project (Triple Point 2022).

Because Project construction would require more power-generation construction workers than were available in Lyon and Mineral counties in 2019, the model assumes construction would draw labor from the seven-county region, with the majority of workers sourced from Washoe County. The assumptions are based on the amount of energy construction employment available in each county.

3.14.4.2 *Proposed Action*

Construction Impacts

Employment and Income. The workforce at the Project site during the 16-month construction period would vary; however, a peak of up to 700 workers would occur during the most intensive construction activity. As of March 2022, there were 54 unemployed people in Mineral County and 825 in Lyon County. By August, these figures climbed to 89 and 1,174, respectively (BLS 2023a; 2023b). Given these unemployment numbers and the number of technically qualified employees needed, Project construction would be expected to require workers to be drawn from outside the two-county region. Construction of the Proposed Action would temporarily decrease the level of unemployment in Mineral and Lyon counties. Most construction staff and workers would be expected to come from the labor pool present within Washoe County, but would also be sourced from Lyon County, Douglas County, Carson City, Churchill County, Storey County, and Mineral County.

Table 3.14-4 presents the employment sourcing for the Project during construction and the estimated share of the Project employment.

Table 3.14-5 summarizes the direct, indirect, and induced economic impacts during construction of the Project. The Project would employ approximately 1,155 workers, with the majority (786) sourced from Washoe County. Note that this value is total jobs whereas the average number of workers on site at any one time is assumed to be 400 workers, with a peak of 700 workers. The total economic output from Project construction is approximately $656,100,000 in the seven-county region.

Table 3.14-4 Assumed Distribution of Employment by County

County	Project employment	Share of Project employment
Mineral	13	1.1%

County	Project employment	Share of Project employment
Lyon	102	8.7%
Washoe	786	67.2%
Carson City	100	8.5%
Douglas	101	8.6%
Churchill	34	2.9%
Storey	34	2.9%

Table 3.14-5 Total Construction Impacts by Type and Category, 2022 Dollars (thousands)

Type impact	Labor incomes	Average annual jobs	Intermediate expenditures	Other property income	Taxes on production	Total output
Direct	$196,800	1,155	$135,900	$85,000	$9,500	$427,200
Indirect	$26,900	224	$36,700	$12,700	$8,700	$85,100
Induced	$41,700	416	$57,600	$33,700	$10,900	$143,900
Total	$265,400	1,795	$230,200	$131,400	$29,100	$656,100

Source: (Triple Point 2022)

The indirect and induced labor income spending impacts would be major, accounting for 10.1 percent and 15.7 percent of total labor income spending impacts, respectively. The total output for indirect and induced impacts would be even larger, accounting for 13.0 percent and 21.9 percent of total output, respectively. The effects on the seven-county economy as a result of the Project would be beneficial.

Tourism and Recreation-related Economic Impacts. The Project site is occasionally used for recreation. The Mason Valley and surrounding areas are used for recreation and tourism. Nearby recreational activities, such as OHV recreation or hiking, may be impacted by the Project due to the visual change from undeveloped land to a renewable development facility. Impacts to recreation are analyzed in Section 3.12.

Two major recreational trails, Reese River Road and Old State Road 2C, cross the Project site and will remain open for recreational use. Views of the Project along these roads within the Project solar site will change. However, ample recreational opportunities and trails are available nearby and regionally. Traffic increases during Project construction may temporarily affect recreation by causing delays. A Traffic Management Plan will be in place to reduce potential traffic impacts during construction. Other OHV trails in Mason Valley are in more desirable locations due to topography, so the Project is not expected to cause a meaningful loss of recreation, tourism, or associated economic activity. The Project is subject to the Western Solar Plan PDF S1-1, which includes measures to minimize socioeconomic effects, such as community monitoring programs and vocational training initiatives. Adverse effects on tourism and recreation-related economic inputs are not expected.

Housing. The construction of the Project would be anticipated to create 1,155 jobs from the seven-county region. Most workers would be expected to commute from nearby communities, while some may relocate closer to the Project site. Relocation is likely to occur within a 45-minute drive, including communities around Yerington, Stagecoach, and Silver Springs. Lyon County is expected to accommodate most relocations, with potential relocation also in Mineral County. Various housing options, such as transient lodging and long-term rentals, would need to be considered to support the workforce. Currently, only about 10 percent of construction workers reside in Lyon and Mineral counties, with the majority

commuting from Washoe County (Table 3.14-4). The exact number of workers that would relocate is uncertain but would be unlikely to exceed 10 percent of the workforce.

Project construction would be expected to reduce the availability of vacant housing units, potentially increasing home values and rental rates temporarily. However, housing availability would be likely to return to pre-construction levels once construction is complete. If 10 percent of the workforce relocated to Lyon or Mineral counties, vacancy rates may decrease by about 6 percent, which is considered minor. A 20 percent relocation could reduce vacancies by 11 percent. The impact on transient lodging could be similar or greater. Localized impacts would likely be higher in Yerington compared to other areas in Lyon and Mineral counties. To reduce housing pressures, a Workforce Housing and Transportation Plan would be developed, exploring options like recreational vehicles (RVs) or other temporary housing units. While such measures would reduce impacts, adverse effects on housing could still occur.

Access to Local Emergency Services. The BLM and local emergency services would have emergency access to the Project site via a locked gate to facilitate rapid response to various incidents, including wildfires, worker accidents, hazardous material spills, or other emergencies. Major evacuation routes like US 95, US 95A, SR 339, and SR 208 would be utilized by Project employees and emergency service providers, as discussed in *Section 3.17 Public Health and Safety*. An Emergency Action Plan, as required by Western Solar Plan PDF HMW1-1, would outline evacuation routes, communication protocols, and notifications. Per MM SOC-1, the Applicant would work with Nevada Copper to develop an emergency access cooperative agreement to address access to the north of the solar site through the mine's private property during construction (and O&M) in the event of an emergency and evacuation through Reese River Road is not possible. This option has been discussed with Nevada Copper and determined feasible (Nevada Copper 2023). Evacuation options may include airlift if necessary. Coordination with Mineral and Lyon counties, including fire departments, would determine increased demands for fire protection and establish cooperative service agreements if needed.

A Fire Prevention and Safety Plan/Management Plan would be enforced throughout the Project's lifespan to reduce fire risks. During construction, on-site aboveground water trucks would be available in case of small human-caused fires, and the BLM may impose fire restrictions during periods of high fire danger. However, fire risks are generally low in the area due to limited vegetation fuel. All wildland fires would be reported to the BLM or local emergency services.

The estimated 1,155 construction jobs needed represent 1.9 percent of Lyon and Mineral county's combined populations. This increase in demand for emergency services would be addressed through a Cooperative Service Agreement with the counties, as required by MM SOC-2. Coordination would determine increased needs for fire protection, law enforcement, and emergency medical services, potentially leading to added fees based on service points and estimated increases in demand.

Property Values. The solar site's distance from residential areas means it would not be expected to impact property values. Studies on transmission line's impact on property values yield inconclusive results, with perceptions often being temporary, particularly during project announcement phases. The Project's construction duration would be temporary, lasting about 16 months. Few homes are near the gen-tie, with only a few within approximately 0.5 mile of US 95A and one at the gen-tie's northern extent before it crosses the Walker River.

Social Impacts. Construction of the Project would have short-term beneficial contributions to the local and regional economy. Workers would support local businesses in the city of Yerington and other communities during construction along worker commute routes. While only 8.7 percent of the construction workers would be sourced from Lyon County, including the city of Yerington, the increased local employment would improve residents' standard of living. Construction would generate traffic that could be perceived as an inconvenience. The city of Yerington, however, has developed around heavy industrial mining and agriculture, which has involved industrial traffic. Adverse social impacts are not anticipated.

Operation and Maintenance Impacts

Employment and Income. Project O&M would require an average of 15 permanent highly compensated employees on an annual basis for 30 years. The increase in permanent jobs would reduce unemployment in Mineral and Lyon counties. The Project would require recurring maintenance, security, and other investments during O&M. The ongoing activities at the Project site would generate annually recurring economic effects. The total annual economic output from the Project operations would be approximately $19.3 million in the seven-county area. The effects on the seven-county regional economy as a result of the construction of the Project would be beneficial. Table 3.14-6 presents the Project's total annual operational impacts in the seven-county area.

Table 3.14-6 Total Annual Operational Impacts, 2022 Dollars (thousands)

Type impact	Labor incomes	Intermediate expenditures	Other property income	Taxes on production	Total output
Direct	$1,911	$7,663	$3,717	$1,885	$15,176
Indirect	$717	$1,722	$766	$280	$3,485
Induced	$125	$259	$191	$69	$644
Total	**$2,753**	**$9,644**	**$4,674**	**$2,234**	**$19,305**

Tourism and Recreation-Related Economic Impacts. Similar to Project construction, effects to tourism and recreation-related economic inputs during O&M would be driven by the change in visual setting from an undeveloped area to a solar facility. The Project would not be expected to induce a substantial loss of recreation and tourism and associated economic loss, given the focus and availability of recreation in the Mason Valley. No adverse effects to tourism and recreation-related economic inputs from Project O&M would occur.

Housing and Property Values. Project O&M would require an average of 15 permanent employees on an annual basis for 30 years, which would not have adverse impacts on housing. Given no homes are near the solar site, no impacts to property values are expected, as discussed under Construction.

Access to Local Emergency Services. The Project site would be accessible to BLM and emergency responders through a locked gate. During Project O&M, there would be a low risk of fires as most materials in the solar arrays are non-combustible. The Project's BESS would consist of individual batteries housed in climate-controlled enclosures, meeting thermal propagation tests and adhering to current codes and standards for accident conditions and fire safety. A Fire Prevention and Safety Plan/Management Plan would be implemented for Project O&M. MM SOC-1 would involve an agreement with Nevada Copper for emergency access during this phase. Vegetation maintenance around buildings and equipment, along with fire protection systems for the administration/O&M building, would be ensured. Firefighting services for non-wildfire emergencies at the Project site would be provided by the Mineral County Fire Department and the Mason Valley Fire Protection District. Fencing and controlled access gates would enhance site security, reducing the need for police services.

Social Impacts. Project O&M would require on average 15 permanent employees. The influx of approximately 15 workers would not adversely contribute to local or regional economies. Workers would likely commute daily from nearby communities or relocate to the Project area. If workers were to relocate into the analysis area, there would be a minor increase in support for local businesses. Employees living in the analysis area may require social services; however, approximately 15 permanent employees would be accommodated by existing social services, and new or additional social services would not be required. The solar site is remote and thus not expected to have much impact on social values and characteristics of Yerington, as previously discussed under Construction.

Decommissioning Impacts

At the end of the Project's 30-year lifespan, decommissioning would necessitate an expenditure with economic impacts, similar to those seen during construction and operation. Decommissioning activities would be anticipated to require a smaller workforce and less time compared to construction. While it is challenging to predict employment conditions decades ahead, growth projections suggest a larger labor pool compared to current conditions. Decommissioning would be expected to temporarily reduce unemployment in the Project area, similar to construction. The regional employment effects of Project decommissioning would be positive, with beneficial economic output during this phase. However, post-decommissioning, the jobs associated with O&M would cease. No new impacts on housing or public services would occur.

Cumulative Impacts

Cumulative impacts related to socioeconomics could arise in the region due to construction or O&M schedule overlaps, necessitating a large construction workforce and temporary housing. These impacts are primarily driven by potential increased mining activity and additional solar and transmission projects in various planning stages. The Pumpkin Hollow Copper Mine Expansion is not expected to commence pit mining operations until after mid-2026, following the completion of the Project construction. Other solar generation and transmission projects proposed in the region are under review and consideration, with no anticipated overlapping construction schedules as they have not yet entered NEPA review. The exception is the 60 MW Luning Solar 2 project, about 50 miles from the Libra Solar site, which may be developed before the construction of Libra would begin. Depending on the development timing of these solar facilities, cumulative impacts would be either sequential or additive. Operationally, like the Project, these projects would generate incremental tax revenue, potentially mitigating additive impacts through cooperative agreements in each respective county and the region as a whole.

Cumulative impacts could affect various community services due to increased mining operations or other projects alongside the construction of the Project. Additional law enforcement personnel could be necessary to address the needs of a temporary expansion of the workforce. Fire and emergency medical services departments would likely experience a rise in calls, resulting in heightened activity levels and associated costs. Cumulative projects bringing more transient and permanent workers to the area could further strain resources, particularly in Lyon County. Local and regional roads may experience increased traffic to accommodate the transient workforce, impacting transportation infrastructure. Housing demand in the area would also likely rise, leading to cumulative impacts on housing availability. While a Workforce Housing and Transportation Plan could help reduce these impacts, adverse effects may still occur. Additionally, cumulative impacts on transportation could arise, especially given the concentration of projects in Lyon County. Implementing the Project's Workforce Transportation and Housing Plan would alleviate some of these impacts, but adverse effects could persist.

The combined economic activity would correspondingly increase tax revenues during operation of the projects. Personal property tax on Project equipment alone would roughly double Mineral County's budget on average over the Project's lifespan. General funds revenues support law enforcement and other services. Sales tax revenues would accrue to both counties (Lyon and Mineral) based not only on direct spending but on indirect and induced spending from Project construction and O&M as well as mining and other sectors of the economy that may expand. Cumulative projects would likewise create tax revenue increases for Lyon and Mineral counties. Cumulative impacts would include an increased number of jobs and demand for workers in the region, which may result in a combined positive impact. Worker shortages may also result in increased wages due to increased labor demand but also slower construction timelines for projects, or workers commuting from further away.

3.14.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction under Alternative 1 is expected to extend by two months compared to the Proposed Action, leading to a temporary increase in the need for housing and services. Similar to the Proposed Action, Alternative 1 would implement the same PDFs, CRMP SOPs, MMs, and management plans to mitigate

adverse effects. These include a Workforce Housing and Transportation Plan to identify housing options and cooperative service agreements with Mineral and Lyon counties. The extended construction timeframe of Alternative 1 would provide additional employment opportunities and boost indirect and induced labor spending. O&M and decommissioning impacts would remain unchanged from the Proposed Action. Cumulative impacts could intensify due to longer construction schedules overlapping with other projects, potentially affecting temporary housing and services. While mitigation measures would reduce effects, adverse cumulative impacts could still occur.

3.14.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Under Alternative 2, utilizing supplemental access routes to the Project solar site would result in socio-economic impacts similar to the Proposed Action. Construction activities, the workforce, and schedules would remain unchanged. The additional access route might alleviate traffic along East Walker Road leading to a tourism and recreational area (Walker River State Recreation Area). No new or increased impacts would arise from diverting traffic to other routes. Mitigation measures outlined in the PDFs, MMs, and required plans for the Proposed Action would also apply to reduce adverse effects. Cumulative impacts on various aspects such as employment, income, tourism, housing, emergency services, property values, and social factors would mirror those of the Proposed Action.

3.14.4.5 *Alternative 3 – Alternative Gen-tie Connecting to Greenlink West*

Alternative 3 would eliminate construction of the proposed 24.1-mile gen-tie line and replace it with a 0.54-mile-long gen-tie and switching station located under the Greenlink West line. No new or greater socioeconomic impacts would occur from Alternative 3. The same PDFs, MMs and required plans would apply to reduce adverse effects as identified for the Proposed Action. Cumulative impacts to employment, income, tourism and recreation, housing, access to local emergency services, property values, and social impacts would be the same as under the Proposed Action.

3.14.4.6 *No Action Alternative*

The Project would not be constructed under the No Action alternative. No socioeconomic impacts would occur; however, the economic benefits the Project could bring to the seven-county region also would not occur.

3.14.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize socioeconomic impacts.

Table 3.14-7 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• S1-1 • HMW 1-1
Carson City CRMP SOPs	• Recreation SOP 2
Management Plans	• Emergency Action Plan • Fire Prevention and Safety Plan/ Management Plan • Traffic Management Plan

Mitigation Measures

The Project would comply with the mitigation measures in Table 3.14-8 to minimize adverse impacts on socioeconomics.

Table 3.14-8 Socioeconomics Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM SOC-1: Nevada Copper Cooperative Agreement	The Applicant shall develop a cooperative agreement with Nevada Copper regarding construction and O&M emergency only access in the event of an emergency that requires ingress or egress of the Project solar site, and Reese River Road cannot be used.
MM SOC-2: Workforce Housing and Transportation Plan	The Applicant shall prepare a Workforce Housing and Transportation Plan, which shall identify the housing options for workers and include new options such as recreational vehicles that could add transient housing to relieve housing pressures. Alternative transportation options including carpooling, park-and-ride, bus, shuttle, and other forms shall be included.
MM SOC-3: Cooperative Services Agreement	Prior to the NTP, the Applicant shall coordinate with both Mineral and Lyon counties, including the Mineral County Fire Department and the Mason Valley Fire Protection District or other responsible fire authority, to determine increased demands for fire protection, law enforcement, and emergency medical services during construction and shall establish a Cooperative Services Agreements with both counties, if determined necessary by both counties. The responsible fire authority shall be determined. An added fee to each entity based on the likely point of service and estimated increases in service needs for the construction of the Project shall be determined, if needed. The increase in service would likely be due to increased workers travel in Lyon County, increased emergency medical services from worker injury either on the job or traveling to the job, and increased fire risks at the Project site.

3.14.4.8 *Irreversible and Irretrievable Impacts and Residual Effects*

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. There are no irreversible or irretrievable impacts that would affect socioeconomic conditions. Residual effects are those effects that remain after mitigation has been applied. Residual economic effects in relation to housing and services during the construction phase and decommissioning phase could remain under the Proposed Action, even after application of mitigation. Until the Workforce Housing and Transportation Plan is developed, it is assumed that impacts would still occur to housing and transportation given the large number of workers needed for construction of the Project.

3.15 Environmental Justice

3.15.1 Introduction

This section analyzes the impacts of the Project on environmental justice (EJ) communities in the vicinity of the Project Area. Consistent with Executive Order (EO) 12898 Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations (EOP 1994) and EO 14096 Revitalizing Our Nation's Commitment to Environmental Justice for All EOP 2023), this section

identifies and analyzes the potential for adverse health or environmental effects, including those related to climate change and cumulative impacts, on EJ communities as they are defined by the BLM (BLM 2022).

3.15.2 Analysis Area

The analysis area for impacts on EJ communities encompasses a 6-mile radius around the Project area, along with cities and census designated places (CDPs) within a 55-mile radius, which includes the Walker River Indian Reservation and the city of Yerington (shown in Figure 3.15-1). Demographic data for census tracts within the 6-mile radius and Yerington have been utilized due to data availability. The broader 55-mile radius represents densely populated communities susceptible to construction impacts from worker commute trips and equipment hauling, as well as permanent impacts from operational commute trips. The analysis employs the state of Nevada as the reference area due to the diverse range of communities within the 55-mile radius, including urban, suburban, and rural areas. Additionally, the 6-mile proximity analysis area aims to consider low-density and rural settings near the Project site that may experience similar impacts. Non-metropolitan Nevada serves as the reference area for this analysis. EJ communities within Mineral, Lyon, Washoe, Storey, Churchill, and Douglas counties, as well as Carson City, are included in the analysis. Approximately 37 cities and CDPs are within 55 miles of the Project area, including Yerington, Schurz, Fallon, Carson City, Wadsworth, the Reno Metropolitan area, and the Walker River Indian Reservation. Specifically within Yerington and the 6-mile radius of the Project area, seven census tracts have been identified for analysis: 9602.03, 9602.06, 9608.01, 9608.02, 9609.01, 9609.02, and 9708.

3.15.3 Affected Environment

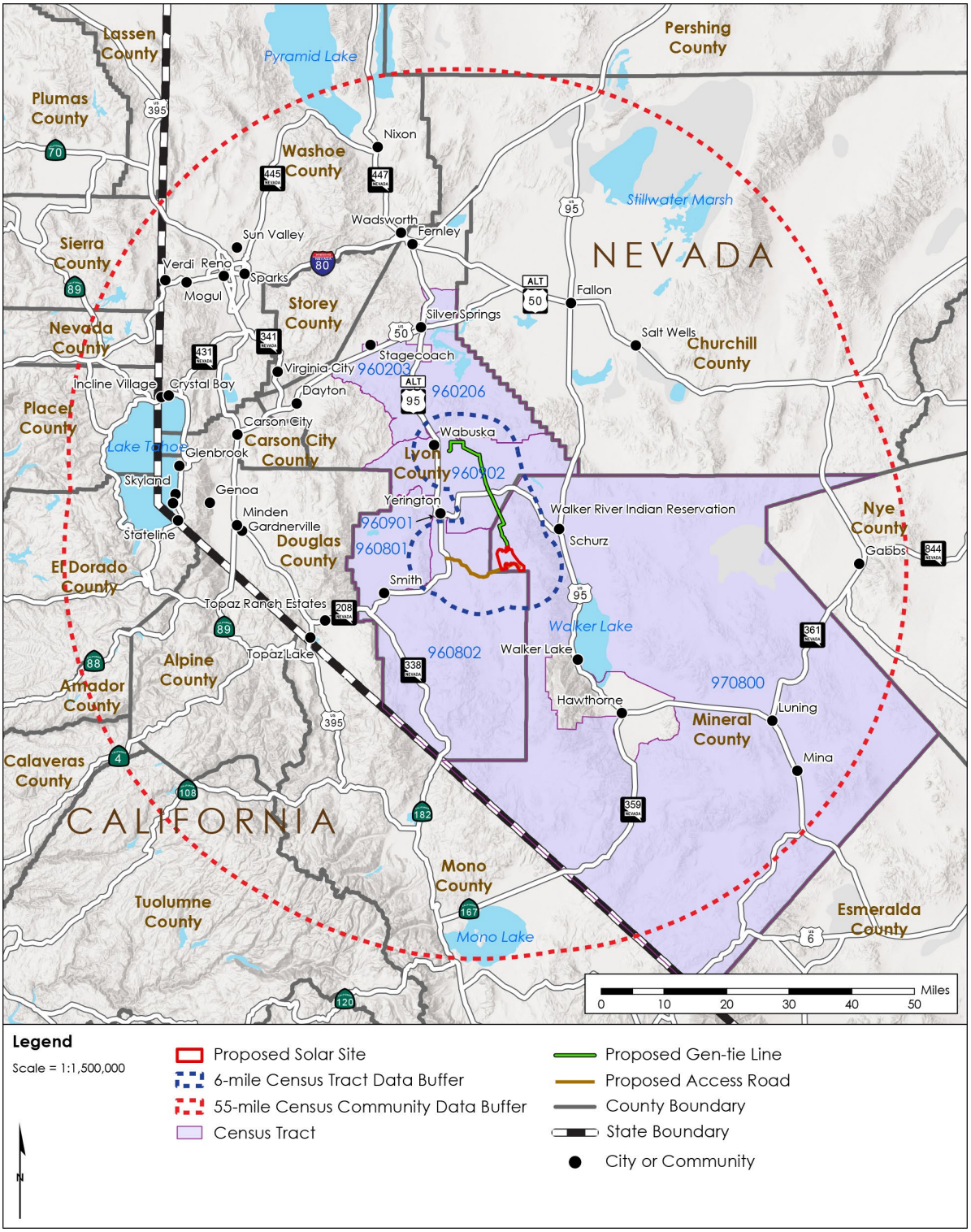
The purpose of the EJ analysis is to identify communities within the analysis area that may be disproportionately impacted by adverse effects of Project activities. An EJ community is defined as an area with a concentration of low-income individuals (EJ low-income) or racial minorities (EJ minority). EJ minority communities have a minority population percentage 50 percent greater than the reference area or exceed 110 percent of the reference area's minority percentage. EJ low-income communities have a population with income at or below 200 percent of the poverty line, exceeding 50 percent of the reference area's population or equal to or greater than the reference area's low-income threshold (BLM 2022). EJ tribal/indigenous communities are identified based on the percentage of the population belonging to state or federally recognized tribes or identifying as indigenous.

In the 55-mile-radius area, EJ low-income communities of concern include Fallon, Hawthorne, Mina, Nixon, Schurz, Silver Springs, Stagecoach, Stateline, Sun Valley, Topaz Ranch Estates, Wadsworth, Walker Lake, Walker River Indian Reservation, Zephyr Cove, Wabuska, and Luning. Within the 6-mile-proximity area, EJ low-income communities of concern include Census Tracts 9602.03, 9602.06, 9608.01, 9609.01, 9609.02, and 9708.00, with Census Tract 9609.01 covering the center of Yerington, and Tracts 9608.01 and 9609.02 located west and north of Yerington, respectively.

EJ communities in the analysis area are identified in Table 3.15-1 and Table 3.15-2. EJ minority communities of concern within the 55-mile-radius area include Nixon, Schurz, Stateline, Sun Valley, Wadsworth, Wabuska, and Luning. Within the 6-mile-proximity area and Yerington, Census Tracts 9609.01, 9609.02, and 9708.00 are identified as EJ minority communities of concern. Figure 3.15-2 and Figure 3.15-3 display the identified EJ low-income and minority communities of concern within the analysis area, respectively.

The following communities within the 55-mile-radius analysis area were identified as EJ tribal/indigenous communities of concern: Carson City, Dayton, Fallon, Fernley, Hawthorne, Mina, Nixon, Schurz, Skyland, Sparks, Stagecoach, Sun Valley, Topaz Lake, Topaz Ranch Estates, Virginia City, Wadsworth, Walker River Indian Reservation, Yerington, Zephyr Cove, Salt Wells, and Luning. Census tracts 9609.01, 9609.02 and 9708 within the 6-mile-proximity analysis area and Yerington were identified as EJ tribal communities of concern. Figure 3.15-4 shows the EJ tribal/indigenous communities of concern within the analysis area. The distances of all EJ communities from the Project site and proposed gen-tie alignment are provided in Table 3.15-3.

Figure 3.15-1 Environmental Justice Analysis Area



Source: (U.S. Census Bureau 2022; ESRI® 2012)

Table 3.15-1 Cities and CDPs within the 55-mile-radius Area

Study area	Low-income	EJ low-income community of concern?	Minority	EJ minority community of concern?	Tribal/indigenous	EJ tribal/indigenous community of concern?
Carson City	30.06%	no	35.07%	no	3.54%	yes
Crystal Bay	25.58%	no	0.00%	no	0.00%	no
Dayton	12.73%	no	29.58%	no	3.54%	yes
Fallon	28.91%	yes	26.47%	no	2.98%	yes
Fernley	22.01%	no	30.23%	no	5.01%	yes
Gabbs	19.82%	no	0.00%	no	0.00%	no
Gardnerville	26.94%	no	23.36%	no	0.51%	no
Genoa	5.43%	no	12.84%	no	2.19%	no
Glenbrook	0.00%	no	28.46%	no	0.00%	no
Hawthorne	41.35%	yes	24.01%	no	3.48%	yes
Incline Village	14.02%	no	28.56%	no	0.67%	no
Lakeridge	14.90%	no	10.20%	no	0.00%	no
Mina	34.81%	yes	6.96%	no	6.96%	yes
Minden	15.17%	no	16.64%	no	0.51%	no
Mogul	10.70%	no	10.20%	no	1.34%	no
Nixon	52.30%	yes	95.39%	yes	86.18%	yes
Reno	30.79%	no	39.87%	no	2.32%	no
Schurz	62.08%	yes	91.15%	yes	83.85%	yes
Silver Springs	52.05%	yes	11.02%	no	1.73%	no
Skyland	11.85%	no	32.83%	no	3.65%	yes
Smith Valley	19.94%	no	13.07%	no	1.31%	no
Sparks	26.09%	no	45.99%	no	3.38%	yes

Study area	Low-income	EJ low-income community of concern?	Minority	EJ minority community of concern?	Tribal/indigenous	EJ tribal/indigenous community of concern?
Stagecoach	34.54%	yes	9.34%	no	3.03%	yes
Stateline	54.57%	yes	61.35%	yes	0.00%	no
Sun Valley	41.53%	yes	57.38%	yes	3.65%	yes
Topaz Lake	27.51%	no	26.64%	no	5.68%	yes
Topaz Ranch Estates	37.22%	yes	22.37%	no	3.93%	yes
Verdi	15.17%	no	9.51%	no	1.28%	no
Virginia City	11.81%	no	2.99%	no	2.73%	yes
Topaz Ranch Estates	37.22%	yes	22.37%	no	3.93%	yes
Verdi	15.17%	no	9.51%	no	1.28%	no
Virginia City	11.81%	no	2.99%	no	2.73%	yes
Wadsworth	35.92%	yes	65.88%	yes	52.84%	yes
Walker Lake	61.66%	yes	29.39%	no	0.00%	no
Walker River Indian Reservation	56.68%	yes	36.40%	no	83.19%	yes
Yerington	18.58%	no	26.89%	no	5.72%	yes
Zephyr Cove	58.76%	yes	89.84%	yes	0.00%	no
Salt Wells (Block Group 1, Tract 9501, Churchill, NV)	26.17%	no	20.81%	no	4.36%	yes
Wabuska (Block Group 2, Tract 9609.02, Lyon, NV)	50.50%	yes	66.00%	yes	53.75%	yes
Luning (Block Group 2, Tract 9708, Mineral, NV)	50.36%	yes	50.18%	yes	32.30%	yes

Note: Data for U.S. Census block groups was used for the CDPs of Salt Wells, Wabuska, and Luning due to the unavailability of 2021 5-year ACS data for those CDPs.

Source: (U.S. Census Bureau 2021f; 2021e; 2021c; 2021b)

Table 3.15-2 Census Tracts within the 6-mile-proximity Analysis Area

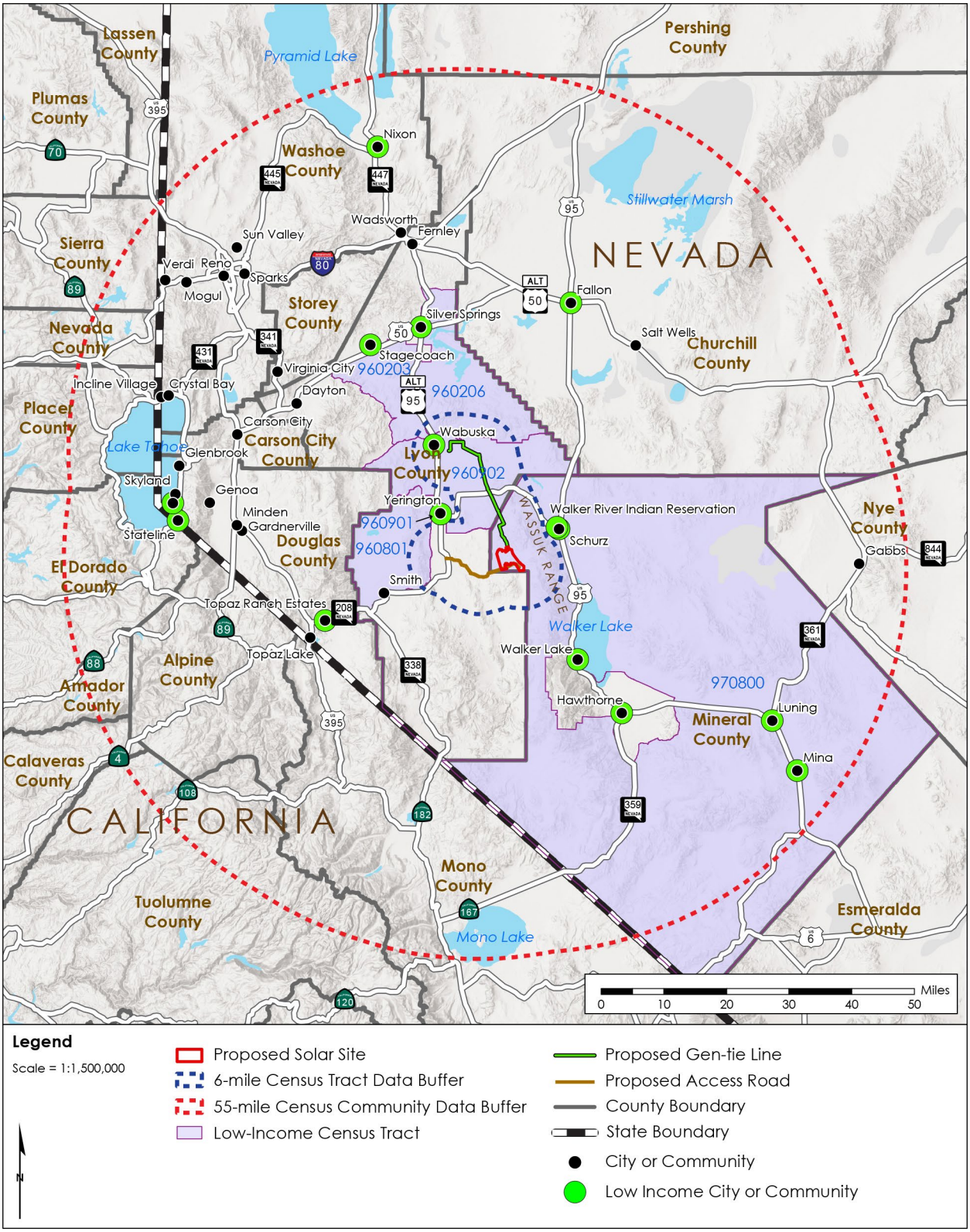
Study area	Low-income	EJ low-income community of concern?	Minority	EJ minority community of concern?	Tribal/indigenous	EJ tribal/indigenous community of concern?
Census Tract 9602.03, Lyon County, Nevada	37.19%	yes	12.58%	no	2.89%	no
Census Tract 9602.06, Lyon County, Nevada	43.90%	yes	14.76%	no	0.00%	no
Census Tract 9608.01, Lyon County, Nevada	36.14%	yes	23.22%	no	1.55%	no
Census Tract 9608.02, Lyon County, Nevada *	22.57%	no	17.47%	no	2.84%	no
Census Tract 9609.01, Lyon County, Nevada *	64.75%	yes	32.73%	Yes	10.07%	yes
Census Tract 9609.02, Lyon County, Nevada *	54.92%	yes	32.67%	yes	17.45%	yes
Census Tract 9708, Mineral County, Nevada	52.80%	yes	70.02%	yes	55.69%	yes

Note:

* City of Yerington and immediate vicinity

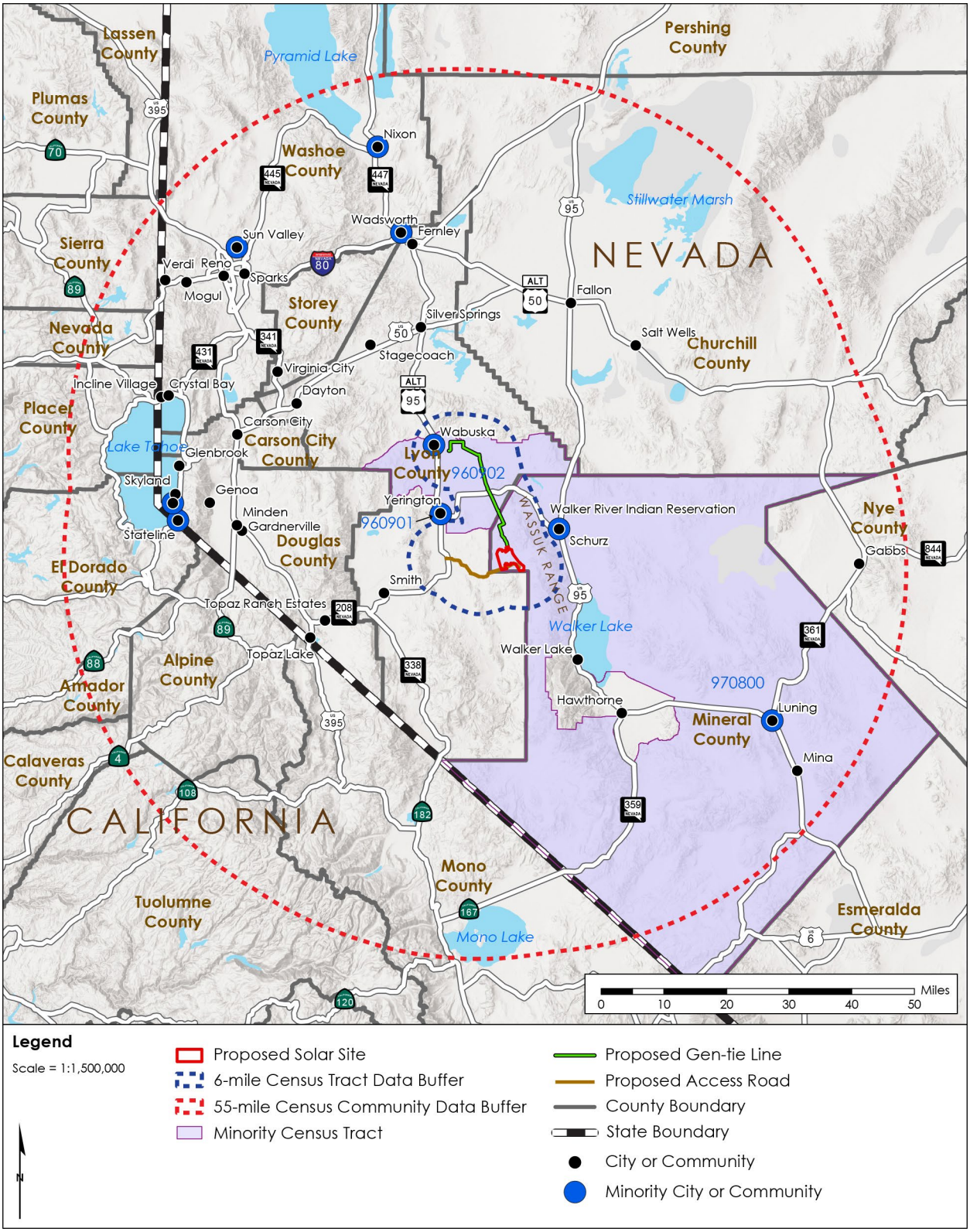
Source: (U.S. Census Bureau 2021f; 2021d; 2021c; 2021b)

Figure 3.15-2 EJ Low-income Communities of Concern within the Analysis Area



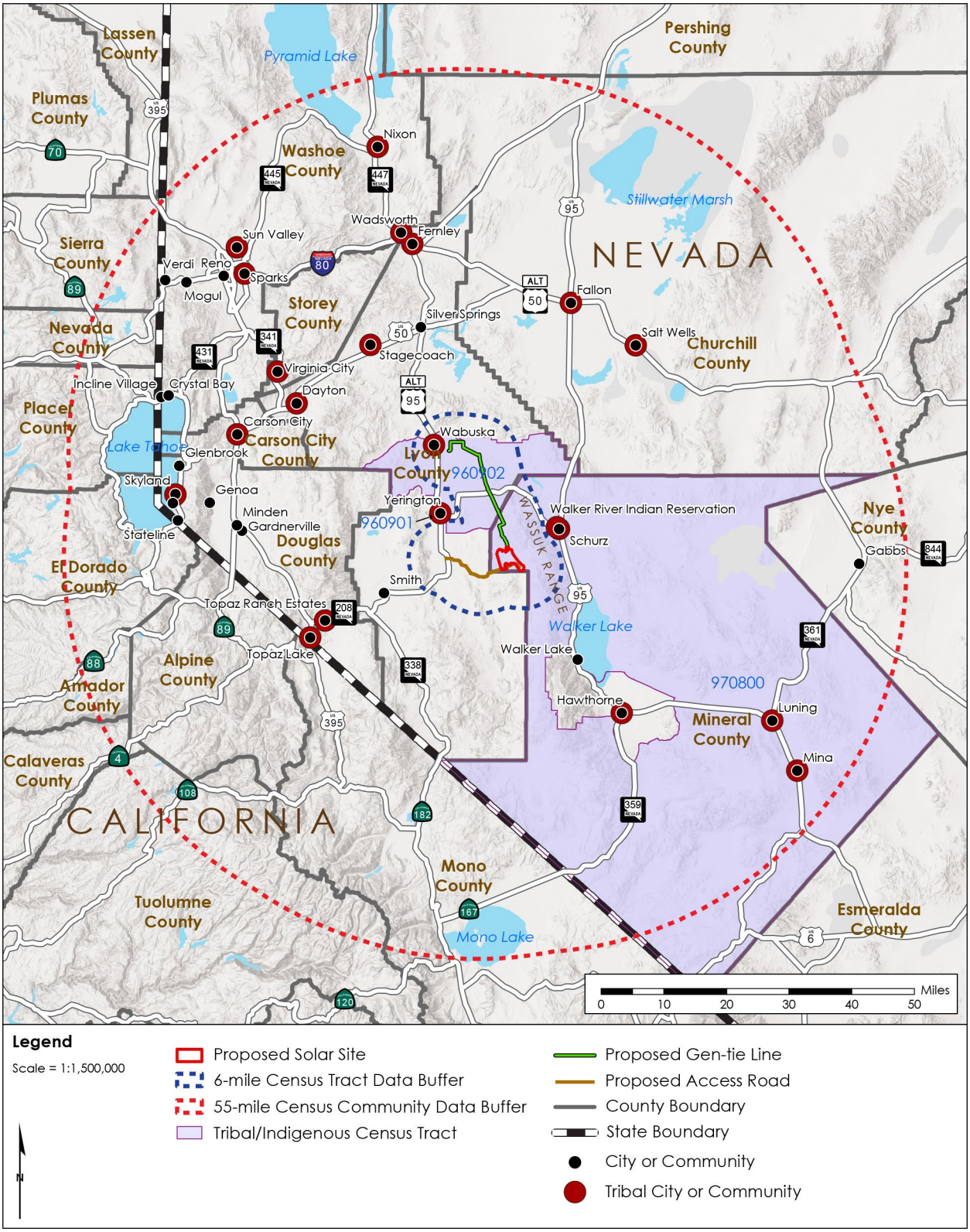
Source: (U.S. Environmental Protection Agency (USEPA) and the U.S. Geological Survey (USGS) 2012; Tele Atlas North America, Inc. 2018; U.S. Census Bureau 2022)

Figure 3.15-3 EJ Minority Communities of Concern within the Analysis Area



Source: (USEPA and USGS 2012; Tele Atlas North America, Inc. 2018; ESRI® 2014b; U.S. Census Bureau 2022)

Figure 3.15-4 EJ Tribal/Indigenous Community of Concern within the Analysis Area



Source: (USEPA and USGS 2012; Tele Atlas North America, Inc. 2018; ESRI® 2014b; U.S. Census Bureau 2022)

Table 3.15-3 EJ Communities of Concern within the 55-mile Radius Area

EJ community of concern*	EJ designation(s)*	Distance from solar site	Distance from gen-tie
Carson City	tribal/indigenous	45.5 miles north	33.4 miles west
Dayton	tribal/indigenous	39.5 miles north	25.2 miles west
Fallon	low-income, tribal/indigenous	40.1 miles north	28.0 miles north
Fernley	tribal	50.0 miles north	31.6 miles north
Hawthorne	low-income, tribal/indigenous	27.6 miles south	32.0 miles south
Mina	low-income, tribal/indigenous	54.8 miles south	59.0 miles south
Nixon	low-income, minority, tribal/indigenous	66.5 miles north	48.0 miles north
Schurz	low-income, minority, tribal/indigenous	8.1 miles east	8.1 miles east
Silver Springs	low-income	37.5 miles north	18.7 miles north
Skyland	tribal/indigenous	52.1 miles west	43.4 miles west
Sparks	tribal/indigenous	60.0 miles north	42.2 miles north
Stagecoach	low-income, tribal/indigenous	38.7 miles north	19.8 miles north
Stateline	low-income, minority	51.0 miles west	51.0 miles west
Sun Valley	low-income, minority, tribal/indigenous	63.1 miles north	45.6 miles north
Topaz Lake	tribal	32.65 miles west	34.4 miles west
Topaz Ranch Estates	low-income, tribal	29.3 miles west	31.2 miles west
Virginia City	tribal/indigenous	44.7 miles north	29.4 miles north
Wadsworth	low-income, minority, tribal/indigenous	52.0 miles north	34.3 miles north
Walker Lake	low-income	16.8 miles south	20.7 miles south
Walker River Indian Reservation	low-income, minority, tribal/indigenous	3.1 miles east	3.1 miles east
Yerington	tribal/indigenous	11.0 miles north	8.0 miles west

EJ community of concern*	EJ designation(s)*	Distance from solar site	Distance from gen-tie
Zephyr Cove	low-income, tribal/indigenous	51.8 miles west	44.3 miles west
Salt Wells (Block Group 1, Tract 9501, Churchill, NV)	tribal/indigenous	36.2 miles north	32.3 miles north
Wabuska (Block Group 2, Tract 9609.02, Lyon, NV)	low-income, minority, tribal/indigenous	13.5 miles north	0.25 mile west
Luning (Block Group Tract 9708, Mineral, NV)	low-income, minority, tribal/indigenous	46.5 miles south	50.4 miles south

Note:

*EJ community of concern and designations were identified through U.S. Census Bureau CDPs and ACS 5-year estimates.

Source: (Google Earth, n.d.; U.S. Census Bureau 2021b; 2021c; 2021d; 2021e)

Table 3.15-4 Rural and Low-density EJ Communities of Concern Proximate to the Project Area

EJ community of concern	EJ designation(s)	Distance from solar site	Distance from gen-tie
Census Tract 9602.03, Lyon County, Nevada	low-income	32.7 miles north	13.9 miles west
Census Tract 9602.06, Lyon County, Nevada	low-income	30.0 miles north	11 miles north
Census Tract 9608.01, Lyon County, Nevada	low-income	10.6 miles west	12.3 miles west
Census Tract 9609.01, Lyon County, Nevada	low-income, minority, tribal/indigenous	11.0 miles north	8.0 miles west
Census Tract 9609.02, Lyon County, Nevada 2	low-income, minority, tribal/indigenous	8.4 miles north	0.25 mile west
Census Tract 9708, Mineral County, Nevada	low-income, minority, tribal/indigenous	7.0 miles east	7.0 miles east

Notes

* EJ community of concerns and designations were identified through U.S. Census Bureau CDPs and ACS 5-year estimates.

Source: (U.S. Census Bureau 2021f; 2021d; 2021c; 2021b)

1. The distances to the census tracts are measured to the locations in which the closest residence is located and not to the geographic boundary of the census tract.
2. City of Yerington and immediate vicinity.

3.15.4 Environmental Consequences

3.15.4.1 *Methods*

The EJ analysis identifies affected communities and assesses potential disproportionate adverse effects. According to CEQ's Environmental Justice Guidance, agencies consider the composition of the affected area to determine if minority or low-income populations are present and if adverse effects may be disproportionately high (CEQ 1997). Additional details on analysis methods and effects are in the Libra Solar Environmental Justice Report (Panorama 2023).

The BLM facilitated community involvement during scoping. Flyers in English and Spanish were posted at four locations in the Yerington area, including the BLM Carson City District Office, Lyon County Library, Mineral County Public Library, and Schurz Tribal Community Center. Paper copies of the NOI and Project information were available, along with directions for commenting and information on translation services. The BLM also held a virtual public scoping meeting to gather feedback.

Proposed Action

Overview

Any Project-related impacts could disproportionately affect vulnerable low-income, minority, and tribal/indigenous EJ communities of concern identified in the analysis area. Western Solar Plan PDFs, CRMP SOPs for these resource areas are presented in Appendix B and Project-specific MMs are presented in Appendix C of this EIS. The relevant required management plans are listed in the POD and resource topic sections.

Construction Impacts

Summary. EJ communities near the Project site, especially along commuter and delivery routes, and where construction workers may temporarily reside, could experience disproportionately higher adverse effects on the physical environment and human quality of life. These communities may be more sensitive and vulnerable to impacts due to economic and health factors, including housing availability and healthcare access. Death rates for heart disease, cancer, chronic lower respiratory disease, accidents, stroke, diabetes, and other causes are all statistically much higher in Lyon County and Mineral County than the State rate. Mineral County also ranks lowest for county health in Nevada (South Lyon Medical Center, n.d.). Impacts to housing, transportation, and health may occur to these populations, as described in the following analysis.

Housing. During construction, the Project would employ approximately 1,155 workers, with an estimated 10 percent, or approximately 115 individuals, likely migrating within Mineral and Lyon counties. This would result in a roughly 6 percent reduction in vacancies across the regional housing inventory of 26,394 units, predominantly in Lyon and Mineral counties. However, localized impacts, especially in Yerington and nearby EJ communities, could intensify due to limited housing stocks and lower incomes. Areas like Fallon, Silver Springs, and Stagecoach within the 55-mile radius may also experience increased pressure on short-term housing supplies, potentially driving up rental rates. Similarly, EJ tribal/indigenous communities in Silver Springs, Fallon, Wabuska, and Yerington, along with specific census tracts, may face heightened housing pressures. To address these concerns, the Project would develop a Workforce Housing and Transportation Plan as part of MM SOC-2, to reduce adverse impacts on housing availability and affordability for transient workers. Despite mitigation efforts, adverse effects on EJ communities could still occur.

Economic Conditions.

The temporary construction workforce would heighten demand for services along the Project area and commuter routes, impacting law enforcement, fire protection, emergency medical, and healthcare services. This increased demand could strain these services, potentially affecting service ratios in EJ communities of concern such as Luning, Wabuska, Hawthorne, Mina, Fallon, Yerington, and Census Tracts 9609.01 and 9609.02. To reduce these impacts, the Applicant would develop a cooperative service

agreement, as required by MM SOC-3, with Lyon and Mineral counties. This agreement would include an additional fee to address anticipated service needs and reduce adverse effects.

Ecological and Cultural Conditions. The Project would alter an area of natural habitat that contains two vegetation types associated with Bailey's greasewood, the dominant vegetation cover within the Project area. Bailey's greasewood is less common than other on-site vegetation types, and little information regarding the distribution and extent of Bailey's greasewood is available. However, unlike the more common greasewood (*Sarcobatus vermiculatus*), whose flowers are edible and which plant has been used in weaving objects and fashioning scrapers, arrow points, and digging sticks, limited evidence exists to support the use of Bailey's greasewood by Native American tribal groups (NPS 2022). Therefore, the vegetation loss from construction would not constitute a disproportionate adverse effect to tribal communities of concern. During Class III surveys, few prehistoric (pre-contact) Native American and Paleoindian archaeological sites were found. Solar array blocks and other components were removed from the design in the area of these resources to avoid impacts (see Section *3.5 Cultural Resources*).

Public Health and Social Conditions – Solar Site. The closest EJ community of concern to the solar site is the Walker River Indian Reservation, located approximately 3.1 miles east and 0.1 mile north of the gen-tie line. Within the Reservation, EJ communities of concern were identified in Schurz CDP, roughly 8.1 miles east of the solar site. The Project construction would not be visible from Schurz and communities along US 95 due to the intervening Wassuk Mountain Range. Fugitive dust from construction would not be not expected to impact the Schurz CDP community, which could otherwise be more vulnerable due to prevalent health conditions. However, the extensive distance and topography between Schurz and the Project area, located in different air basins, would prevent disproportionate effects.

EJ communities of concern were also identified within Census Tract 9609.02, in the Wabuska CDP just north of Yerington, roughly 8.4 miles north of the solar site, and within Census Tract 9608.01. Although potentially more vulnerable to air impacts, these communities would not be disproportionately affected by fugitive dust due to distance, intervening topography, and the implementation of dust control measures. While views from Yerington and Census Tract 9609.01 are possible, the distance of 10 miles or more minimizes visual contrast and, thus, visual impacts.

Public Health and Social Conditions – Gen-tie. The nearest EJ community, Census Tract 9609.02, is located 0.5 miles west of the gen-tie alignment and access road. Potential adverse effects on local air quality from emissions and fugitive dust are possible. However, the Project would reduce these through a Dust Control and Air Quality Plan during construction, ensuring compliance with federal and State air quality standards. Adverse impacts related to views and dust emissions would be temporary and localized, addressed by implementing Western Solar Plan PDFs and MMs.

Public Health and Social Conditions – Transportation Routes. EJ communities near Yerington, Schurz, Wabuska, Fallon, Silver Springs, and Stagecoach could face disproportionate adverse impacts from temporary construction-generated traffic on US 95, US 95A, and US 50. Additionally, rural, low-density EJ communities in Census Tracts 9708, 9608.01, and 9609.02, including Yerington in Census Tract 9609.01, may also experience disproportionate impacts from construction-generated traffic, noise, and dust due to their proximity to the solar site. These communities could be particularly vulnerable due to their proximity to roadways. Most workers are expected to commute from Carson City, Fallon, Mina, and Luning to the Project area. While measurable dust impacts would not be expected along paved roadways, construction could lead to increased vehicle trips on highways and local roads near these EJ communities, potentially resulting in increased commute times, road wear, and heightened demand for community resources.

Operation and Maintenance Impacts

Housing. The Project would create up to 15 long-term, full-time-equivalent high-paying O&M jobs, mostly for workers located in the Lyon and Mineral County region. Some of the permanent positions could be filled by migrating workers; however, due to the small number of permanent workers needed during O&M, no disproportionate housing affects are expected to EJ communities of concern in the

Project area. Due to the Project site's remote location, the solar facility is not expected to impact neighboring property values of EJ communities of concern; however, residences are in proximity to the proposed gen-tie alignment. The Western Solar Plan confirms there is very little research into and no evidence of solar facilities impacting local property values (BLM and U.S. DOE 2012).

Economics. The Project is not anticipated to result in a negative economic impact during Project O&M. Project O&M would require an average of 15 locally employed workers. In the event that all 15 workers relocate to the Project area, the population increase would not be substantial enough to affect service ratios.

Ecological and Cultural. Potential ecological and cultural impacts from O&M of the Project would remain the same as or be reduced compared with the construction phase. No new disturbance footprint would be required, and therefore, O&M is not expected to result in impacts to previously undiscovered archaeological resources. The Project would maintain access along Old State Road 2C through the solar site, which could be utilized to access the Pistone-Black Mountain NCA, a site of cultural importance to Tribes in the region, including the Walker Paiute Tribe; however, the terrain is too rough to access via vehicle.

Public Health and Social Conditions. Project O&M would not result in new ground disturbance, and the number of workers on site would not surpass approximately 15 daily. Similar to construction, adverse impacts related to air quality or visual resources would be minor. Disproportionate adverse impacts related to human health and social conditions affecting EJ communities of concern are not anticipated.

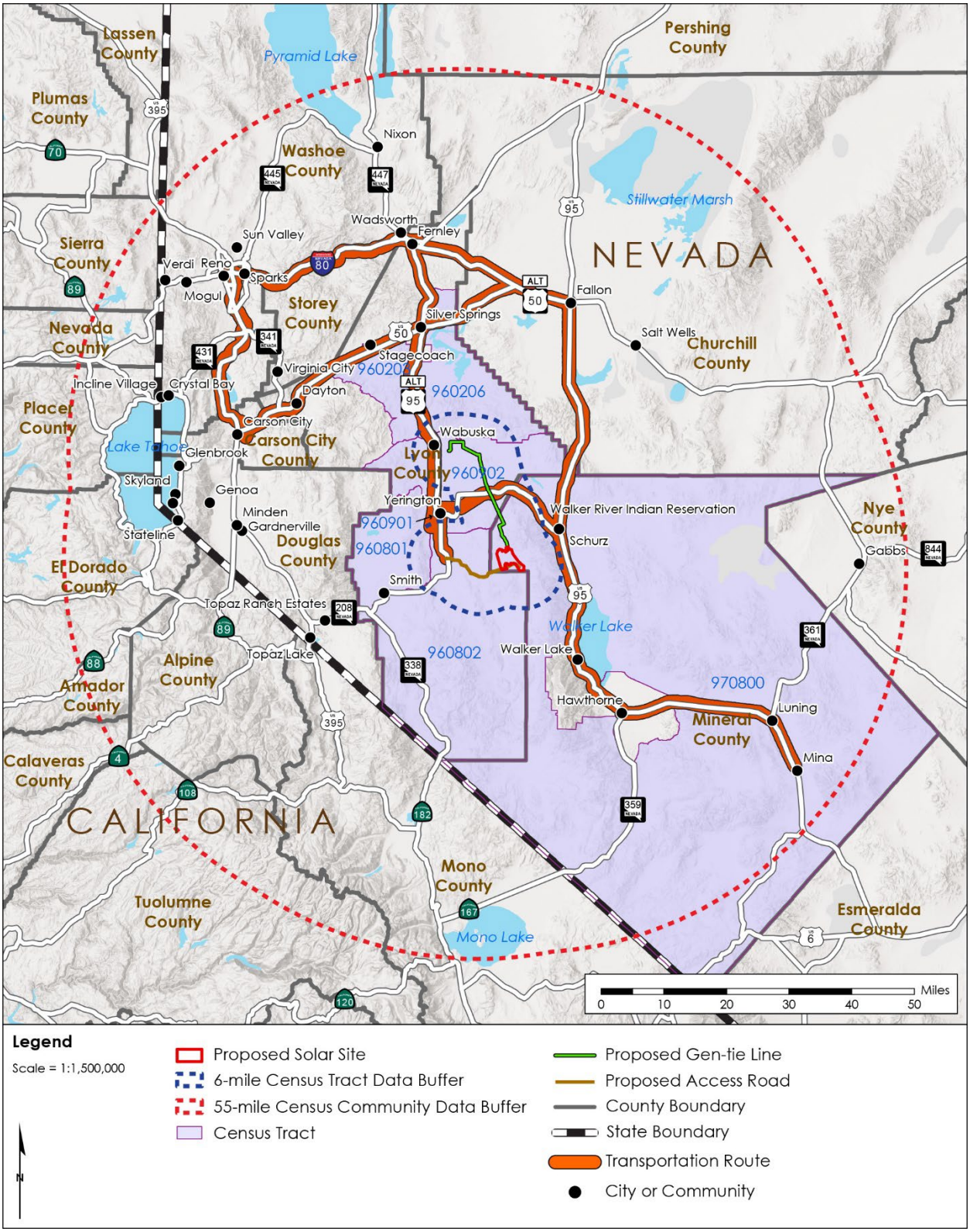
Decommissioning Impacts

Decommissioning is anticipated to have similar impacts as construction in terms of workforce size and duration. While the influx of workers is expected to be similar, lasting less than 2 years, it would not disproportionately affect EJ communities of concern. However, localized pressure on short-term rental housing could be greater in Yerington and nearby areas. Communities identified as EJ low-income, such as Fallon, Silver Springs, and Stagecoach, may also face increased pressure on housing supplies, potentially raising rental rates.

During decommissioning, increased vehicle trips on highways and local roads could lead to similar impacts as during construction, including longer commute times, road wear, and increased demands on local resources like gas stations and healthcare. EJ communities of concern could experience disproportionate adverse effects on human quality of life due to construction worker travel.

Given the uncertainty in predicting local socioeconomic conditions 30 years into the future, predicting adverse effects to EJ communities of concern during decommissioning is difficult. MMs SOC-2 and MM SOC-3 would require a Housing Workforce and Transportation Plan and a cooperative services agreement with the counties to reduce potential adverse effects in response to analysis of conditions at the time of decommissioning.

Figure 3.15-5 Commuter Routes during Proposed Project Construction



Source: (USEPA and USGS 2012; Tele Atlas North America, Inc. 2018; ESRI® 2014b; U.S. Census Bureau 2022)

Cumulative Impacts

Cumulative impacts to EJ communities could occur from construction or O&M schedule overlaps requiring accommodation for a large workforce. These impacts would be most likely linked to potential increased mining activity and additional solar and transmission projects that are in various planning stages. The Pumpkin Hollow Copper Mine Expansion is not projected to commence construction until after mid-2026, following the Project's construction phase. While some solar and transmission projects have proposed near-term schedules, the majority are yet to enter environmental review, thus avoiding construction overlap with Libra.

The 60 MW Luning Solar 2 project, approved in December 2021, may be constructed within the next year, potentially preceding Libra's construction. Depending on the timing and development of these solar facilities, cumulative impacts would either be sequential or additive. In O&M, the Project is not expected to considerably contribute to cumulatively adverse impacts on EJ communities concerning housing, traffic, air quality, dust, or visual resources, given minimal associated impacts with O&M. Additionally, the solar site's location aligns with VRM Class IV, allowing for major visual changes. Cumulative adverse impacts from construction and decommissioning could include pressure on the rental housing market, increased service ratios for emergency response and healthcare services, air quality and fugitive dust impacts, and traffic impacts, potentially affecting EJ communities. The Project's Workforce Housing and Transportation Plan (MM SOC-2) would address construction housing needs and alternative transportation options like vanpooling and shuttle services. A cooperative service agreement (MM SOC-3) with Lyon and Mineral counties would manage increased service needs. While other solar projects may implement similar plans, adverse cumulative effects are likely, disproportionately impacting EJ communities. Despite implementing Western Solar Plan PDFs and CRMP SOPs to reduce impacts, significant cumulative effects could still occur.

3.15.4.2 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction of the Project under Alternative 1 is anticipated to take additional time (18 months versus 16 months), which would increase the duration of impacts to housing, traffic, and services. Similarly, decommissioning under Alternative 1 is also anticipated to take additional time. The same PDFs, CRMP SOPs, MMs, and required plans as identified for the Proposed Action would be implemented for Alternative 1 to minimize adverse effects. These include, under MM SOC-2 and MM SOC-3, the Workforce Housing and Transportation Plan to identify the housing options for workers as well as a cooperative service agreement with counties and an added fee based on service needs. O&M impacts would be the same as under the Proposed Action. Cumulative adverse impacts to housing, services, and traffic could increase due to the increased construction schedule, which may overlap longer with other projects. PDFs, MMs, and required plans would reduce these effects, but potential adverse cumulative impacts could still occur.

3.15.4.3 *Alternative 2 – Supplemental Access During Construction*

Utilizing supplemental access routes to the Project solar site would have similar impacts to EJ communities of concern as the Proposed Action. The proposed construction area, workforce, and schedule would be the same. No new or greater impacts would occur from diverting some traffic along other routes to the Project site because no new EJ communities of concern would be adversely impacted. The additional routes still require traffic to travel through Yerington or along US 95A and would not change the location from which workers originate. The same PDFs, MMs, and required management plans would apply to reduce adverse effects as identified for the Proposed Action. Cumulative impacts to EJ communities of concern would be the same as for the Proposed Action.

3.15.4.4 *Alternative 3 – Alternative Gen-tie Connecting to Greenlink West*

Alternative 3 would eliminate construction of the proposed 24.1-mile gen-tie line and replace it with a 0.54-mile-long gen-tie and switching station located under the Greenlink West line. No new or greater adverse impacts to EJ communities of concern would occur under this alternative. Impacts associated with the 24.1-mile-long gen-tie in Lyon County would be eliminated, including potential generation of

dust near residences along the alignment. The Project under this alternative would remove gen-tie construction activities entirely from Lyon County, which would result in reduced impacts to certain EJ communities. The same PDFs, MMs, and required management plans would apply to reduce adverse effects as identified for the Proposed Action; however, since the solar site construction would be the same under this alternative as the Proposed Action, impacts would be similar and potentially adverse. Cumulative impacts to EJ communities of concern would, thus, be similar to those for the Proposed Action.

3.15.4.5 *No Action Alternative*

The Project would not be constructed under the No Action alternative. No impacts to EJ communities of concern would occur.

3.15.4.6 *Relevant PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize impacts to EJ communities.

Table 3.15-5 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• EJ1-1 • HMW1-1 • T2-1 • AQC1-1, AQC2-1, AQC3-1, and AQC4-1 • VR1-1, VR2-1, VR2-2, VR2-3, VR2-4, VR3-1¸ VR4-1
Carson City CRMP SOPs	• Common to All SOP 2 • Soil, Watershed, and Air SOPs 1, 2 and 4 • Visual Resource Management SOPs 2 and 3 • Rights-of-Way Corridors SOPs 4 and 5
Management Plans	• Fire Prevention and Safety Plan/Management Plan • Dust Control and Air Quality Plan (Available on the project website) • Traffic Management Plan • Site Restoration and Revegetation Plan (Available on the project website) • Decommissioning and Site Reclamation Plan • Workforce Housing and Transportation Plan • Lighting Management Plan (Outline available on the project website)

Mitigation Measures

The Project would comply with mitigation measures MM SOC-2 and MM SOC-3 from Section 3.14 Socioeconomics to minimize adverse impacts on EJ communities.

3.15.4.7 *Irreversible or Irretrievable Impacts and Residual Effects*

An irreversible or irretrievable effect resources refers to impacts on or losses to resources that cannot be recovered or reversed. There are no irreversible or irretrievable impacts that would affect EJ communities of concern. Residual effects are those effects that remain after mitigation has been applied. Some disproportionate and adverse residual effects in relation to housing, economic, and environmental consequences to EJ communities during the construction phase and decommissioning phase could persist. Residual effects from impacts to recreational access due to increases in traffic from construction and

long-term impacts to wildlife and vegetation could also result in disproportionate adverse effects to EJ communities of concern.

3.16 Public Health and Safety

3.16.1 Introduction

This section addresses public health and safety topics related to the construction, O&M, and decommissioning of the Project. This section is based on the Public Health and Safety Report (Panorama 2023), which also includes a Phase I Environmental Site Assessment by McGinley & Associates (McGinley 2023).

3.16.2 Analysis Area

The public health and safety analysis covers the Project site, including the solar site, gen-tie alignment, and access road, for both the Proposed Action and alternatives. Hazardous materials encompass substances and wastes, with the analysis area extending one mile around the Project to account for localized impacts. Emergency response evaluation includes the Project area in Mineral County and access roads in Lyon County and Yerington.

3.16.3 Affected Environment

3.16.3.1 *Fire Risk and Protection*

Data from the Nevada Division of Forestry's Natural Resources and Fire Information Portal indicates a low wildfire risk for the Project solar site and its immediate surroundings (NDF 2022). However, a segment of the gen-tie alignment northeast of Yerington and the Fort Churchill Generating Station faces moderate to extreme fire risk (Nevada WRA 2021). Nine wildfires occurred within 10 miles of the Project site, with human-caused ignition sources being less than half of them. The BLM is responsible for wildfires on BLM-managed land, while local jurisdictions handle non-wildfire incidents. The Mineral County Fire Department covers the Project solar site, while the Mason Valley Fire Protection District serves most of the gen-tie line, including Yerington and greater Mason Valley.

3.16.4 Environmental Consequences

3.16.4.1 *Methods*

This analysis was conducted through publicly available data accessed by GIS mapping tools, Project data provided by the Applicant, and an on-site assessment of existing environmental conditions.

3.16.4.2 *Proposed Action*

Construction Impacts

Fire Risk and Protection. Project construction and O&M pose a heightened risk of fire due to various factors such as vehicular operations, equipment use, smoking, battery failures, and the introduction of annual grasses that augment fuel load. A wildfire originating from the Project site could lead to substantial damage, including to the solar facility, transmission facilities, and nearby recreational areas. Additionally, it could result in hazardous materials releases, decreased air quality, and potential harm to personnel and wildlife in the vicinity. The risk of a wildfire spreading outside the Project area as a result of construction would be low based on the wildfire risk assessment ratings and vegetation characteristics in the Project area and based on past occurrences of wildfires in most of the Project area (Nevada WRA 2021a; 2021b; 2021c; NIFC 2023).

Western Solar Plan PDF WF1-1 requires fire management measures, including worker training and inspection protocols, to minimize fire risk during construction, O&M, and decommissioning of solar energy projects. Western Solar Plan PDF WF2-1 requires vegetation management to reduce on-site fire risks, preventing the establishment of invasive species and reducing the frequency of wildland fires.

However, a comprehensive Fire Prevention and Safety Plan, as outlined in Project MM PHS-1, is recommended to address all fire risks during construction and would minimize associated adverse effects.

Project MM SOC-3 requires coordination with local fire authorities, including the Mineral County Fire Department and the Mason Valley Fire Protection District, to assess the increase in demand for fire protection services. This ensures the establishment of cooperative service agreements to address potential impacts during construction, including additional fees based on service needs. Implementation of this measure, along with Western Solar Plan PDFs WF 1 and WF2-1 and MMs PHS-1, would reduce the risk of adverse effects from wildfire hazards associated with the Project.

Operation and Maintenance Impacts

Fire Risk. The likelihood of a wildfire during O&M activities would be low, given the site's low-to-moderate risk conditions and staff training requirements. The incorporation of fire management training into worker training, as required by Western Solar Plan PDF WF1-1, would ensure awareness of fire mitigation efforts throughout the Project's life cycle. While compliance with regulations and PDFs would reduce fire hazard risks, they would not eliminate them entirely. MM PHS-1 requires a Fire Prevention and Safety Plan, including a battery-specific fire suppression plan, to reduce fire hazards during operations. Implementation of PDFs WF1-1, WF2-1, HMW1-1, and MM PHS-1 would reduce adverse effects related to fire hazards during O&M. Additionally, Western Solar Plan HS1-1 requires a comprehensive Fire Prevention and Safety Plan, further reducing these adverse effects.

Decommissioning Impacts

Fire Risks. Potential effects from decommissioning would be similar to those described for construction, including an increase fire risk through vehicles and equipment operating on vegetated areas, smoking, battery failures, transmission lines, and introduction of annual grasses that would increase the fuel load. As described for construction, with implementation of Western Solar Plan PDFs WF1-1, WF2-1, and MM PHS-1 and SOC-1, decommissioning of the Project would not result adverse effects from an increase in the risk of wildfire.

Cumulative Impacts

Construction and O&M activities from adjacent cumulative projects involving heavy machinery or off-road vehicle use could heighten the risk of wildfire ignition. While adverse cumulative impacts are possible, the overall wildfire risk in the region, including the Project and cumulative projects, remains low (Nevada WRA 2021b). The Project's activities, which could potentially trigger fires or alter fire susceptibility, would contribute to the cumulative regional fire risk. However, measures outlined in Western Solar Plan MM PHS-1, including the preparation and implementation of a Fire Prevention and Safety Plan, along with adherence to PDFs WF1-1 and WF2-1, would reduce wildfire risks. Similarly, cumulative projects are likely to adopt fire prevention plans or adhere to Western Solar Plan PDFs, further mitigating the cumulative risk of fire.

3.16.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction, O&M, decommissioning, and cumulative impacts to public health and safety resources in Alternative 1 would be similar to those of the Proposed Action due to similar site characteristics and workforce. Alternative 1 could extend construction by two months, slightly amplifying impacts. However, modified construction methods would reduce air quality impacts from fugitive dust, lessening valley fever risks. Implementing the same PDFs as the Proposed Action would reduce adverse effects in Alternative 1.

3.16.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Providing supplemental access routes to the Project solar site during construction would result in the same impacts to public health and safety as the Proposed Action. No new or greater risks or impacts would occur from diverting some traffic along other routes to the solar site. The solar site and gen-tie would be constructed, operated, and decommissioned as described for the Proposed Action. The same PDFs and SOPs would apply to reduce adverse effects as identified for the Proposed Action. Cumulative impacts

would also be the same as for the Proposed Action. Supplemental routes would only be used during construction, and cumulative impacts would remain the same as described since use of the supplemental routes would not introduce any new or greater hazards that could contribute to cumulative effects.

3.16.4.5 *Alternative 3 – Alternative Gen-Tie Connecting to Greenlink West*

Construction, O&M, and decommissioning impacts to public health and safety would be reduced for Alternative 3 as compared to the Proposed Action because of the elimination of construction of a 0.54-miles long gen-tie line in lieu of a 24.1-mile gen-tie. The solar site, access, and amount of construction that could result in impacts, particularly fire risks, would be reduced. The same PDFs and SOPs applicable to the Proposed Action would be implemented for Alternative 3. Cumulative impacts would also be reduced since, under this alternative the gen-tie alignment would be reduced by 23.6 miles, which would reduce risks of hazardous materials spills, emergency response needs, and wildfire risks from the Project.

3.16.4.6 *No Action Alternative*

Under the No Action alternative, the Project would not be developed, and there would be no hazards or risks introduced to the public. Therefore, there would be no impacts to public health and safety in the analysis area.

3.16.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize health and safety impacts.

Table 3.16-1 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• HMW1-1, HMW2-1, HMW3-1, HMW4-1, and HMW4-2 • HS1-1 • WF1-1 and WF2-1
Carson City CRMP SOPs	• Common to all SOPs 8 and 23 • Hazardous Waste SOPs 2 and 3
Management Plans	• SPCCP • Health and Safety Program (including a Fire Prevention and Safety Plan/ Management Plan, Emergency Action Plan, Waste and Hazardous Materials Management Plan, and Trash Abatement Plan) • SWPPP • Site Restoration and Revegetation Plan (Available on the Project website) • Decommissioning and Site Reclamation Plan

Mitigation Measures

The Project would comply with the following mitigation measures as well as MM SOC-1 and MM SOC-3 from Section 3.14 Socioeconomics to minimize adverse impacts to public health and safety.

Table 3.16-2 Public Health and Safety Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM PHS-1: Fire Prevention and Safety Plan	The Applicant shall prepare and implement a Fire Prevention and Safety Plan to ensure the safety of workers and the public during Project construction, O&M, and decommissioning activities. The Fire Prevention and Safety Plan shall be submitted to the BLM for review and approval prior to the issuance of the NTP. The plan shall incorporate the use of appropriate fire protection equipment, worker training, and consultation with local fire departments to identify appropriate protocols and procedures for fire prevention and early response to minor fires. The plan shall also address the following recommendations, with particular focus on suppressants for fires from lithium-ion battery cells, including inert gas, carbon dioxide, and Halon as well as measures to protect batteries against thermal abuse: • Keep a water truck or other portable trailer-mounted water tank on-site and available to workers at all times for use in extinguishing small man-made fires. • Use fire watches during hot work on-site (e.g., welding, soldering, cutting, drilling, or grinding). • Incorporate the use of appropriate fire protection equipment, worker training, and consultation with local fire departments to identify appropriate protocols and procedures for fire prevention and early response to minor fire. The plan should limit where smoking can occur to minimize chances of igniting a fire and should identify proper vehicle maintenance and use to minimize fire risks. • Store battery packs at reduced state-of-charge[7] prior to and during construction to reduce the likelihood that crush, puncture, or external heating would lead to cell thermal runaway and a fire ignited by heated cell cases. • Ensure protocols are in place to quickly extinguish any transmission line breakages that could ignite a fire during construction. • Immediately report fires to 911 or (702) 631-2350 and make all accommodations to allow immediate safe entry of firefighting apparatus and personnel. • Coordinate with the BLM law enforcement or their designated representative to conduct an Origin and Cause Investigation on any human-caused fire on the Project site. Properly manage and preserve evidence in coordination with the BLM to minimize disturbance of potential evidence located at the fire scene.

3.16.4.8 *Irreversible and Irretrievable Impacts and Residual Effects*

The Project's compliance with health and safety regulations reduces potential irreversible or irretrievable impacts on public and worker safety. Standard practices during construction, O&M, and decommissioning would minimize occupational health risks. Although hazardous materials are used, their

[7] *State-of-charge* refers to percent that the battery is charged.

accidental release would be unlikely to cause irreversible harm due to controlled quantities and mitigation measures. PDFs and health/safety plans further minimize exposure risks. No foreseeable actions would cumulatively increase hazard exposure. Residual effects on public health and safety, including occupational risks, EMF exposure, and intentional acts, would not be not anticipated post-mitigation and regulatory compliance.

3.17 Transportation and Traffic

3.17.1 Introduction

This section details the current transportation and traffic conditions in the analysis area, focusing on non-recreational modes used for material and equipment movement and worker commuting during the Project's construction, O&M, and decommissioning. Project impacts on recreational access, including OHV travel, are covered in Section *3.12 Recreation*.

BLM regulations primarily address travel and transportation management for recreational purposes, as outlined in the BLM Manual 1626 (BLM 2011b) and Handbook 9113-1 Roads Design(BLM 2011). Since most Project-related traffic impacts occur on non-BLM lands, they are governed by local and regional transportation policies

3.17.2 Analysis Area

The analysis area for transportation and traffic includes the transportation systems within Mason Valley in Lyon and Mineral counties, Nevada (see Figure 3.17-1, focusing on the main public roads for construction, O&M, and decommissioning of the Project. Regional travel routes for the Project are shown in Figure 3.17-2. Materials, equipment, and commuter trips may originate outside the analysis area. Project-related traffic is not expected to impact regional corridors like I-80, SR 439, US 50, or Reno-Sparks area roads.

The travel routes in this analysis include US 95A, SR 339, SR 827, SR 208, East Walker Road, and Reese River Road (Figure 3.17-3). Project traffic would use US 95A, SR 339, SR 827, SR 208, East Walker Road, and Reese River Road. Under Alternative 2, SR 827 and East Pursel Lane may be used within Yerington, along with unnamed, unpaved transmission line roads. Other roads in Mason Valley are not proposed as main transportation routes for the Project.

3.17.3 Affected Environment

3.17.3.1 *Regional and Local Roadway Facilities*

Project Roadways

The regional roadways that could be impacted by the Project are described below and are shown in Figure 3.17-1. Affected roadways are described in Table 3.17-1.

Table 3.17-1 Affected Roadway Descriptions

Road name	Description
US 95A	Paved, two-lane, arterial highway that traverses undeveloped rural areas, with an average speed limit of 60 mph. US 95A runs east–west from the US 95 junction to Yerington, and north/south from the US 50 junction at Silver Springs to Yerington. US 95A is maintained by the NDOT.
SR 339	Paved, two-lane, collector highway that runs north-south on the west side of Yerington and the Mason Valley. SR 339 extends approximately 11.5 south from the junction of US 95A to its junction with SR 208, bypassing the urban

Road name	Description
	and agricultural areas of the greater Yerington area. US 339 is maintained by the NDOT.
SR 827	Also locally referred to as Mason Road, is a paved, two-lane, minor collector road that runs east-west from its junction with SR 339 to the west, through the intersection of SR 208, and then turns in to an unpaved road approximately 1.5 miles to the east. The paved portion of SR 827 is maintained by the NDOT.
SR 208	Road extending south from US 95A at the north end of Yerington. Project traffic would utilize SR 208 from the intersection of SR 827, heading south. SR 208 is a mostly straight, paved, two-lane, collector highway that traverses an active agricultural area. SR 208 also serves as the main street through downtown Yerington, with a speed limit ranging from 25 mph in the downtown core commercial district to 50 mph south of Yerington. This road is also maintained by NDOT.
East Walker Road	turns east approximately 8.2 miles south of the junction of US 95A and SR 208. East Walker Road is a two-lane unpaved rural road approximately 24 feet wide. The road has three culvert crossings, including one over the East Walker River and two over irrigation ditches. Two houses and agricultural fields are within the first 0.5-mile portion of the road. At the 0.75-mile point, the road turns to the southeast into a remote, undeveloped desert landscape. East Walker Road is the primary access point to the Walker State Recreation Area, approximately 4.25 miles from the intersection of East Walker Road and SR 208. The segment from SR 208 to the intersection with Reese River Road is 5.9 miles, of which 3.6 is on BLM land and 2.3 miles is on Lyon County or State-managed lands. All of East Walker Road is maintained by Lyon County.
Reese River Road	Traverses east into Mineral County, intersecting the Project solar site approximately 5.5 miles east of the intersection with East Walker Road. Reese River Road is an unpaved road averaging approximately 15 feet wide. The BLM maintains Reese River Road.
East Pursel Lane	Under Alternative 2, East Pursel Lane would be accessed from SR 827 and SR 208, would also be utilized during the construction phase of the Project as a supplemental access route to the Project site, reducing total traffic volumes on East Walker Road. East Pursel Lane is an unpaved private access road owned by Nevada Copper. The northern route of East Pursel Lane is primarily used by NV Energy to service the substation to the east of the mine.

Figure 3.17-1 Transportation Corridors in the Proposed Project Area

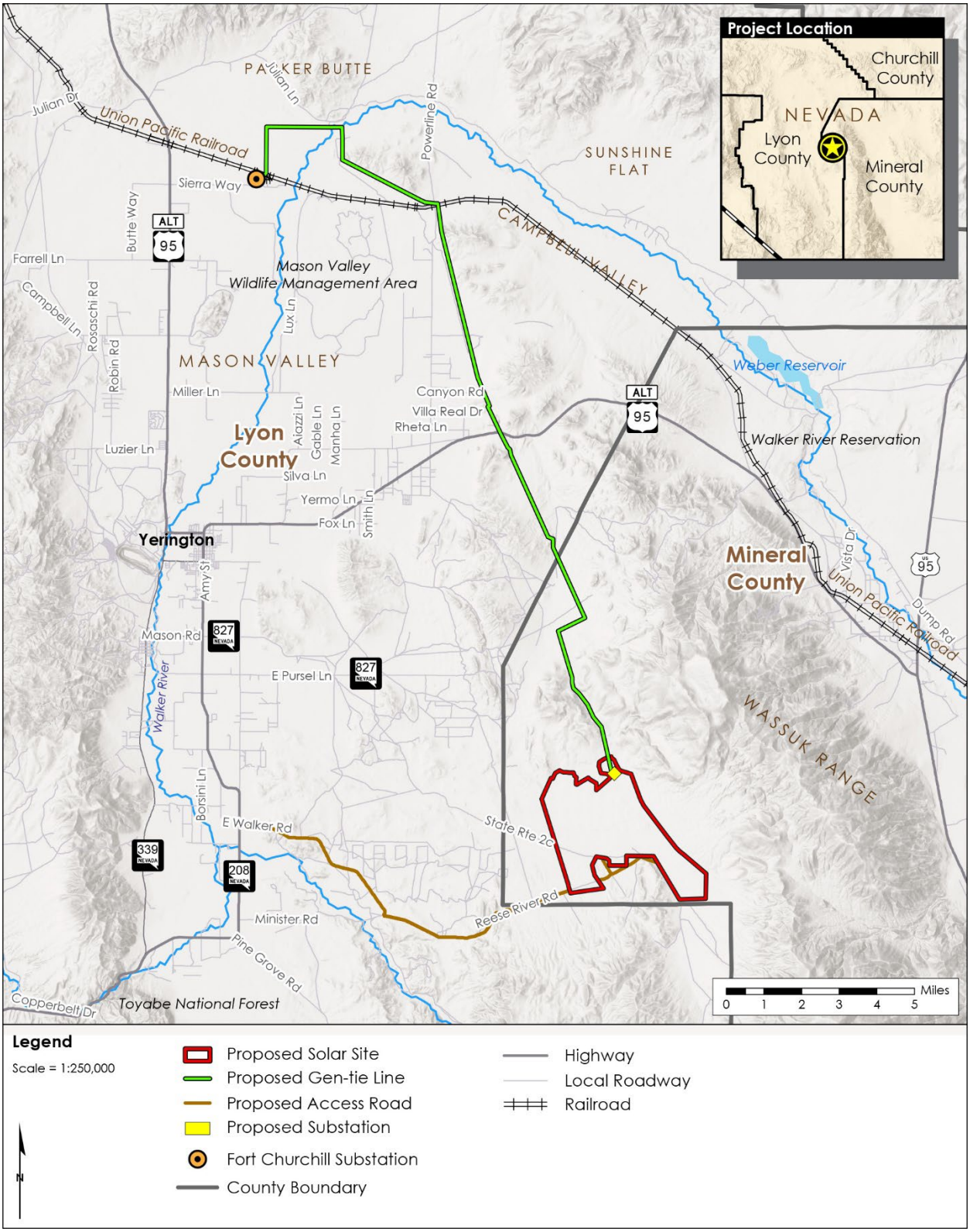


Figure 3.17-2 Transportation Routes to the Proposed Project Site

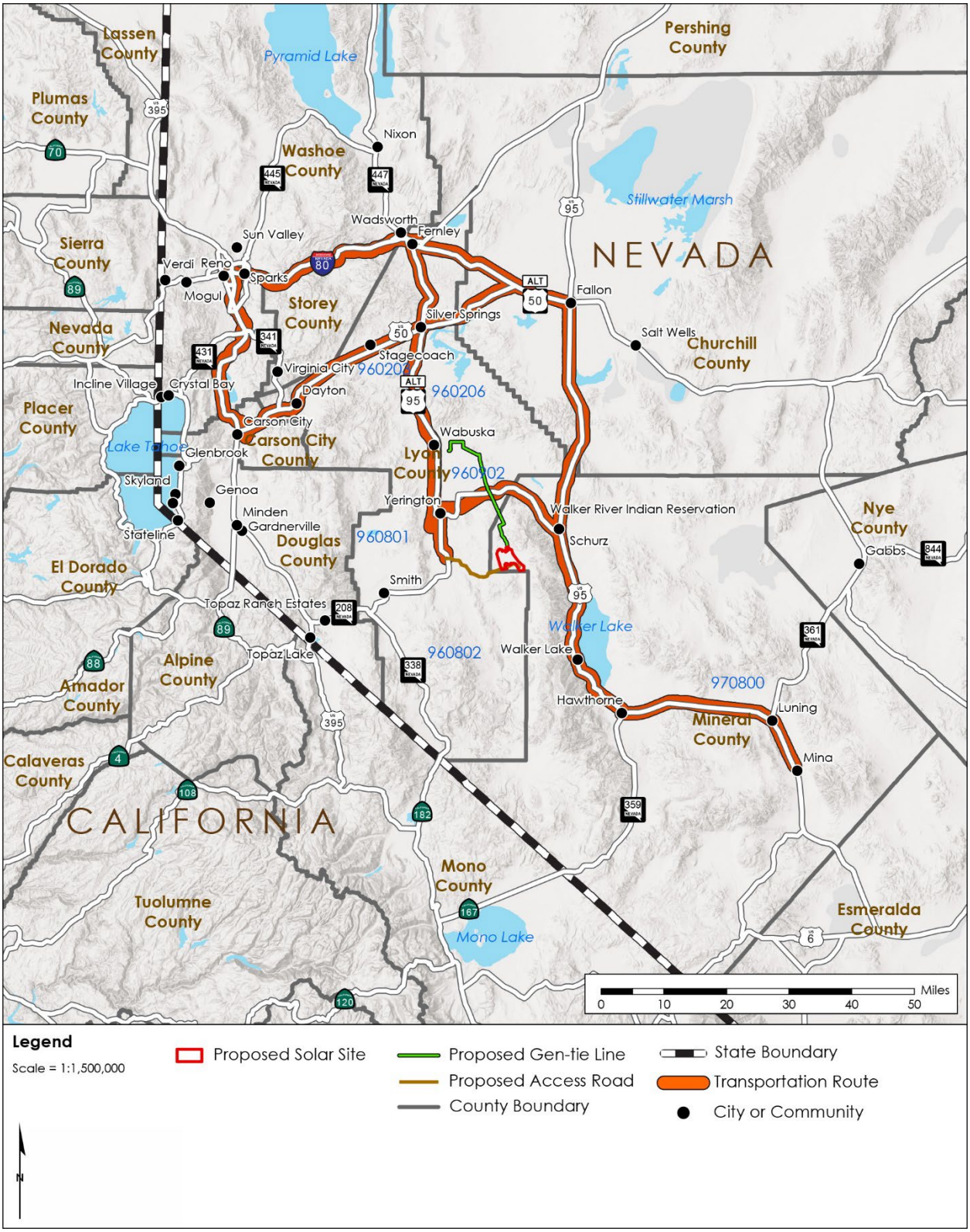
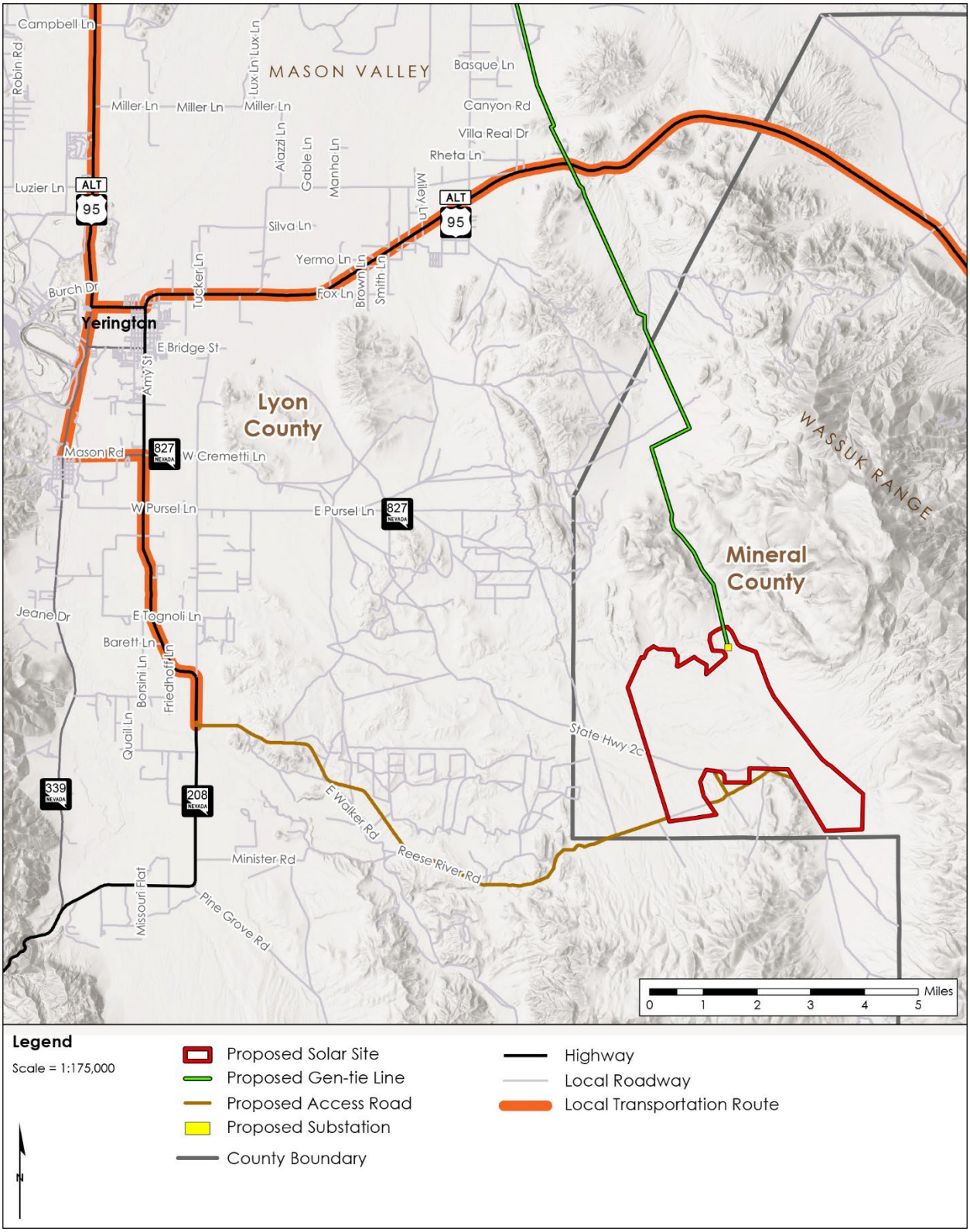


Figure 3.17-3 Local Roadway Access for the Proposed Project



Traffic Counts for Major Roadways

NDOT publishes annual traffic count data on their Traffic Records Information Access online GIS application. Annual average daily traffic (AADT) counts are available for SR 339, SR 827, SR 208, and US 95A near the Project area (provided in Table 3.17-2). AADT is not available for East Walker Road, Reese River Road, or East Pursel Lane.

Table 3.17-2 Affected Transportation Route Average Daily Traffic Data

Road name	Managing entity	AADT (Year 2022) *
SR 208 (Station 0190108, 300ft. S. of Mason Rd.)	NDOT	4,000
US 95A (Station 0190115, .6 mi. N. of Miller Ln.)	NDOT	4,700
SR 339 (Station 0190063, 720 ft. N. of SR 827)	NDOT	3,800
SR 827 (Station 0190065, 400 ft. W. of SR 208	NDOT	1,300
East Walker Road	Lyon County	N/a
Reese River Road	BLM	N/a
East Pursel Lane	Nevada Copper	N/a

* AADT = total volume of vehicle traffic of a highway or road for a year divided by 365 days

Source: (NDOT 2022)

3.17.4 Environmental Consequences

3.17.4.1 *Methods*

Methods to evaluate impacts were developed using a combination of Federal Highway Administration (FHWA) traffic movement indicators, analysis using desktop GIS software, and telephone calls or in-person meetings with Lyon County, NDOT, and the BLM. As described in detail below, for potential impacts to traffic volumes, generalized level of service (LOS) indicators from FHWA were used as the baseline (FHWA 2017). LOS defines traffic movement in the context of mobility and roadway design. For comparison to existing AADT estimates and measurements, construction traffic (worker and haul truck) daily round trips were estimated for the Project access roads.

Meetings were conducted with Lyon County and the BLM to discuss design standards for Project roads under their jurisdiction (i.e., East Walker Road and Reese River Road, respectively). These meetings indicated transportation facilities should retain existing structural and traffic capacity standards.

For potential impacts to traffic volumes, generalized LOS indicators from FHWA were used to establish a baseline and define the potential for measurable impacts (FHWA 2017). LOS values define traffic movement in context of user mobility and roadway design and are defined in Table 3.17-3.

Table 3.17-3 LOS Definitions

LOS Name	Definition
LOS A	Free-flow traffic with users unaffected by the presence of other users
LOS B	Stable traffic flow with a high degree of freedom to select speed but with some influence from other users

LOS Name	Definition
LOS C	Restricted flow that remains stable but with significant interactions with others in the traffic stream. The general level of comfort and convenience declines noticeably at this level
LOS D	High-density flow in which speed and freedom to maneuver are severely restricted and comfort and convenience have declined even through flow remains stable
LOS E	Unstable flow at or near capacity levels with poor levels of comfort and convenience
LOS F	Stop and go waves, poor travel times, low comfort and convenience, and increased accident exposure

A speed limit of 45 miles-per-hour was used for SR 208, as it is the lowest available estimate in the guidance and accounts for slower overall traffic speeds that vary through Yerington and the southern roadway portion. A speed limit of 45 mph was used for SR 339 to account for travel through the urbanized area as the road intersects with multiple roads connecting to the urbanized Yerington area. The speed limit on SR 827 is 45 mph. A 60 mile-per-hour average speed limit was used for US 95A. For US 95A, given the baseline AADT, it appears to be at a LOS A. SR 208, SR 339, and SR 827 appear to be currently operating at a LOS B based on AADT (FHWA 2017). For this analysis, any change in LOS to a lower service level represents a potential impact on users. LOS should stay at a D or higher to be acceptable. The volumes for LOS A, B, and C for US 95A, SR 208, SR 339, and SR 827 are shown in Table 3.17-4.

No traffic volume data is available for East Walker Road, Reese River Road, or East Pursel Lane. Additionally, the FHWA guidance does not apply to rural unpaved roads. Qualitative analysis is provided for these roads, based on discussions with Lyon County and the BLM.

3.17.4.2 *Proposed Action*

Construction Impacts

Roadway Volumes and Level of Service. The construction phase is expected to involve an average of approximately 400 workers, with a peak of up to around 700 workers at any given time, as indicated in the POD. These workers would primarily commute daily from the Reno and Carson City Metropolitan areas. Material deliveries to the site would occur periodically between 7:00 a.m. and 7:00 p.m., up to seven days a week (Arevia 2023)..

Heavy construction equipment would be moved on site at the beginning of construction and would remain throughout construction, as needed. Daily vehicle traffic would be primarily composed of workers' passenger cars/light trucks. For this analysis, the average of 542 worker trips per day was assumed if all phases were to occur at the same time. This is likely an overestimate. As shown in Table 3.17-5, total construction vehicle trips could, conservatively, reach up to 855 trips per day over the 16-month construction period. Table 3.17-4 describes the daily volume changes to SR 208, SR 339, SR 827, and US 95A as under the Proposed Action.

Table 3.17-4 Level of Service Volume Comparison

Road Name	AADT (Year 2022)	Volume that starts LOS B	LOS C	Current LOS	Volume increase from Construction traffic	Total volume	LOS with Project
US 95A (Station 0190115, .6 mi N of Miller Ln)	4,700	19,000	24,200	A	18%	5,555	A
SR 208 (Station 0190108, 300 ft. S. of Mason Rd.)	4,000	3,400	8,600	B	21%	4,855	B
SR 339 (Station 0190063, 720 ft. N. of SR 827)	3,800	3,400	8,600	B	23%	4,655	B
SR 827 (Station 0190065, 400 ft. W. of SR 208	1,300	3,400	8,600	B	66%	2,155	B

Source: Simplified Highway Capacity Calculation Method for the Highway Performance Monitoring System (FHWA 2017)

Table 3.17-5 Average Daily Construction Trips

Construction Phase	Daily worker vehicles	Daily haul truck	Daily water truck	Daily light truck
Civil Works	78	47	40	5
Installation of PV arrays	183	15	40	5
Installation of electrical collection systems	85	4	20	5
Installation of on-site collector substation	38	6	20	5
Civil works gen-tie	78	47	20	5
Installation of gen-tie	80	4	20	5
Total all phases (average daily)	542	123	160	30

Source: (RCH 2023)

Traffic volume increases are expected to impact drive times on US 95A, SR 208, SR 339, and SR 827, but the LOS will remain unchanged (A on US 95A and B on SR 208, SR 339, and SR 827). Construction and delivery trucks will make 313 trips on US 95A, resulting in a 6% traffic increase, and 8% increases on SR 208 and SR 339, and 24% on SR 827, none of which will reduce the LOS.

Most traffic volume increases will come from commuting workers, especially during peak hours, potentially affecting local traffic in Yerington. Implementing MM TR-1, requiring remote parking and a shuttle for 50% of workers, will reduce daily vehicle trips from 524 to 300 each way using 12-person vans. Additional measures include split shifts and a Workforce Housing and Transportation Plan to manage traffic concerns. MM SOC-2 also requires a Workforce Housing and Transportation Plan before

construction to address temporary housing, trip scheduling, and traffic routing, further mitigating impacts. Despite these controls, traffic impacts, lasting 16 months during construction, may still be adverse.

Road Safety and Design *General Safety Impacts.* The Project's construction activities would result in an increase in vehicle traffic, including delivery trucks and construction vehicles, which could pose hazards to other road users. Although crash data does not indicate an existing risk along the Project access route (NDOT 2020), a Traffic Management Plan would be required. MM TR-2 would require safety measures such as traffic control devices and flaggers during high traffic periods or deliveries of large loads, especially at key intersections and near residential areas. Special attention would be given to East Walker Road due to its use by agricultural operations and the Walker River State Recreation Area. Implementation of MM TR-2 would reduce construction-related traffic hazards. Safety impacts for the affected roadways is described in Table 3.17-6.

Table 3.17-6 Road Safety and Design Impacts for Affected Roadways

Road Name	Impact
US 95A	Large delivery trucks would adhere to NDOT safety regulations and would not pose safety hazards on US 95A. However, installation of the gen-tie line might necessitate temporary closure of US 95A east of Yerington and would be coordinated with NDOT. Encroachment permits and authorizations would be secured beforehand. Use of existing roads is prioritized per Carson City CRMP SOP 4, with additional spur roads needed for gen-tie pole access. Adverse effects would be reduced through proper coordination and implementation of encroachment permits and the Traffic Management Plan.
SR 339	Safety hazards on SR 339 are not anticipated as safety requirements for oversized or hazardous material transport on NDOT highways would be followed. Adverse effects would not occur with implementation of MM TR-2, which would include the use of traffic control measures during deliveries of large or oversized loads.
SR 827	The intersection of SR 827 and SR 208 is a four-way stop. Adverse effects would be minimized with implementation of MM TR-2, requiring traffic control devices and flaggers during periods of high traffic volumes or during deliveries of large or oversized loads.
SR 208	The intersection of SR 208 and East Walker Road could require safety improvements due to partially obstructed views. The Applicant would coordinate with Lyon County Roads Department and NDOT for final design and potential intersection modifications, as per MM TR-2. Construction could temporarily reduce lanes on SR 208, with traffic control managing traffic flow. Safety improvements, if deemed necessary, would be completed before Project construction begins, reducing transportation impacts.
East Walker Road	Three culverts are situated in the initial 0.6-mile stretch of East Walker Road from the SR 208 intersection. The culverts are currently capable of handling truck traffic and no improvements or replacement is proposed. Given its unpaved nature, increased traffic on East Walker Road could lead to fugitive dust, posing safety risks and health concerns for nearby residences. To address this, the POD requires the development of a Dust Control and Air Quality Plan, aligning with Western Solar Plan PDF AQC2-1. Additionally, the Project could potentially pave the first 1.5 miles of East Walker Road, decisions would be

	made in collaboration with Lyon County Roads Department and local homeowners. A maintenance agreement with Lyon County for the 30-year Project lifespan would ensure compliance with county standards. Although increased traffic on the remaining portions of East Walker Road and Reese River Road could also raise dust emissions, no sensitive receptors are nearby. The implementation of the Dust Control and Air Quality Plan would reduce adverse effects. Moreover, MM TR-3 requires pre- and post-construction assessments of East Walker Road, ensuring any damage is addressed promptly. Adverse effects would be minimized by requiring assessment and repair of any public roads during or after construction, in accordance with mitigation measures and monitoring.
Reese River Road	The existing road base and width of Reese River Road is inadequate and would be improved to safely accommodate construction truck traffic. Reese River Road is maintained by the BLM, and all improvements would be completed in accordance with the BLM Manual 9113-1 Roads Design Handbook (BLM 2011) and in communication with the CCDO in accordance with Western Solar Plan PDF T2-1. Damage from heavy traffic could occur on the road. MM TR-3 requires maintenance of the roadway for the life of the Project, commensurate with its use by the Project.

Emergency Services. Emergency response vehicles including EMS, County Sheriff, State Highway Patrol, and fire departments currently use roadway facilities in the Project area. Access for emergency services to the Project site would always be ensured during construction, with additional emergency access available via SR 208 to West Bridge Street and East Pursel Lane through the Pumpkin Hollow Copper Mine property, then south along a BLM-managed transmission ROW. The Applicant would establish a cooperative agreement with Nevada Copper to facilitate emergency access through their property. Adverse effects on emergency services are not anticipated during project construction.

Operation and Maintenance Impacts

During the O&M phase, up to 15 employees would be present daily at the Project site for security, maintenance, and repairs, commuting from off-site residences. Operations would involve occasional use of vehicles and equipment like crane trucks and forklifts, with no heavy equipment utilized during routine operations. As a result, traffic impacts, including LOS and safety, are expected to be minimal. Key public roadways traversing the Project site would remain open throughout the Project's lifespan, aligning with CRMP SOP 5. Transportation resource effects during this phase would be less than construction and would not be adverse.

Decommissioning Impacts

The workforce and length of time for decommissioning the Project is expected to be similar to or less than that of the construction period. Effects on regional and local roadway operations would be similar to those anticipated to occur during construction. Project MMs TR-1 and TR-2 along with the Traffic Management Plan measures would also apply to decommissioning. Implementation of mitigation measures and management plans would minimize adverse effects.

Cumulative Impacts

The Project's construction timeline is not expected to coincide with other identified solar development projects, except potentially with the proposed Greenlink West Transmission Line. While many cumulative solar projects are situated north of Yerington, they would not utilize the same roadways as the Project. Greenlink West's construction may overlap with the Project's, but its workforce and traffic impacts would be smaller and limited to certain areas along its linear route. Discussions with Nevada Copper indicate that their planned expansion is not expected to commence during the Project's

construction period. Overall, any compounding impacts would be confined to the overlapping construction period, likely lasting only a few months. The Project is not expected to have adverse cumulative effects during O&M due to minimal worker trips. However, the potential construction of the Pumpkin Hollow Copper Mine Expansion following the Project's completion could extend adverse impacts, with heavy traffic loads likely using SR 208 in Yerington. While the Project will implement measures to mitigate effects during construction, adverse cumulative effects are possible. All identified cumulative projects are expected to be completed before the Project's decommissioning, minimizing further cumulative impacts.

3.17.4.3 *Alternative 1 – Major Drainage Avoidance and Fenced Corridors with Vegetation and Topography Maintenance*

Construction, O&M, decommissioning, and cumulative impacts to transportation resources, including LOS, safety and design, and emergency access would be the same under Alternative 1 as described for the Proposed Action because the proposed access route and workforce would be very similar. The same PDFs and MMs, as well as the same plans including the Traffic Management Plan and Workforce Housing and Transportation Plan (MM SOC-3), as identified for the Proposed Action would be implemented for Alternative 1 to reduce adverse effects. As under the Proposed Action, some adverse effects to LOS and safety, due to the scale of construction, are expected. This alternative may require larger equipment as well as a longer construction period, extended from 16 to 18 months, which may slightly increase the adverse effects as compared with the Proposed Action.

3.17.4.4 *Alternative 2 – Alternative Supplemental Access During Construction*

Construction Impacts

Alternative 2 would reduce the traffic volumes on the southern portions of SR 208 and East Walker Road by diverting approximately 25 percent of daily traffic to the supplemental access routes identified in Chapter 2. Minor roadway improvements, including grading and additional road base would be added within the existing footprint of the roadway. Due to the single-lane roadway, a pilot car or other means of safety would provide safe access to and from the Project site. Vehicles would still need to travel along the northern portions of SR 208 through Yerington's commercial core. LOS impacts would be similar for the Proposed Action. Use of SR 827 and East Pursel Lane by approximately 25 percent of the construction worker traffic would require a cooperative agreement between the Applicant and Nevada Copper that would outline maintenance responsibilities and terms. If the supplemental route off of US 95A were used, impacts along SR 339, SR 827, and SR 208 would be reduced. Project MMs TR-1 and TR-2 along with the Traffic Management Plan and Workforce Housing and Transportation Plan would still be required to reduce adverse effects. Impacts to LOS and safety would be reduced as compared with the Proposed Action by spreading out the construction traffic routes but could still be adverse due to the scale of construction and the relatively small size of Yerington.

Operation and Maintenance, Decommissioning, and Cumulative Impacts

O&M, decommissioning, and cumulative impacts are the same as described for the Proposed Action. The alternate routes would not be used during O&M but may be used during decommissioning, in which case the impacts to LOS and safety could be slightly reduced as compared with the Proposed Action for decommissioning.

3.17.4.5 *Alternative 3 – Alternative Gen-Tie Connecting to Greenlink West*

Construction Impacts

Alternative 3 would reduce the construction workforce needed by eliminating the 24.1-mile gen-tie line, resulting in a 30 percent reduction in daily worker and truck trips as compared to the Proposed Action. Despite this reduction, LOS impacts and mitigation measures would remain similar. Traffic safety, design, and emergency access impacts would also be similar as those of the Proposed Action. With the same mitigation measures in place, adverse impacts would be reduced compared to the Proposed Action.

Operation and Maintenance, Decommissioning, and Cumulative Impacts

O&M, decommissioning, and cumulative impacts on transportation resources would be slightly reduced for Alternative 3 as compared to the Proposed Action due to a smaller workforce. US 95A would not be affected by the gen-tie crossing, and decommissioning would be shorter. Mitigation measures from the Proposed Action, including PDFs, SOPs, MMs, and management plans, would still apply to Alternative 3 to reduce effects during decommissioning. Additionally, cumulative impacts would be lessened as the smaller workforce would coincide with the construction of proposed Greenlink West Transmission Line outside Yerington.

3.17.4.6 *No Action Alternative*

Under the No Action alternative, the Project would not be developed. Therefore, there would be no impacts to transportation and traffic in the analysis area.

3.17.4.7 *Relevant Required PDFs, the CRMP SOPs, Management Plans, and Mitigation Measures*

The Project would comply with the following PDFs from the Western Solar Plan and SOPs from the Carson City CRMP (BLM 2001) (See Appendix B). The listed management plans would be required by the BLM ROW grant and implemented during the Project to minimize traffic impacts.

Table 3.17-7 Relevant Required PDFs, SOPs, and Management Plans

Source	Title Reference
Western Solar Plan PDFs	• AQC2-1 • T2-1
Carson City CRMP SOPs	• Common to All SOP 2 • Rights-of-Way Corridors SOP 4 and 5
Management Plans	• Dust Control and Air Quality Plan (Available on Project website) • Traffic Management Plan • Workforce Housing and Transportation Plan

Mitigation Measures

The Project would comply with the mitigation measures in Table 3.17-8 and MM SOC-3 from *Section 3.14 Socioeconomics* to minimize adverse traffic impacts.

Table 3.17-8 Transportation and Traffic Mitigation Measures

Mitigation Measure Identifier and Title	Description
MM TR-1: Workforce Housing and Transportation Plan	Under MM SOC-2, specific components of the plan shall include: • A vanpool/shuttle service shall be identified along with worker parking areas that can service an estimated 50-percent of the peak hour commuting workforce from northern Yerington or along 95A to the job site. • Workers shall be scheduled in split shifts, as feasible, to reduce peak traffic volumes. • Traffic control measures, such as flaggers, traffic control devices, escort vehicles, and signage shall be dictated in the plan, particularly

Mitigation Measure Identifier and Title	Description
	along the first 0.5-mile segment of East Walker Road near the two residences.
MM TR-2: Traffic Management Plan Measures	The Traffic Management Plan shall include the use of traffic control measures such as traffic control devices and flaggers during high traffic periods or during deliveries of large or oversized loads, particularly at the intersections of SR 827 and SR 208 and SR 208 and East Walker Road and along the first 0.5 mile of the road near homes. Additional measures shall include: • Identify traffic control measures needed, consistent with the requirements in the Manual of Uniform Traffic Control Devices (MUTCD) and specify the circumstances under which each is required. Traffic control measures may include escort vehicles for wide loads, signage, and flaggers. • Use static and variable message signs, as necessary, to inform drivers that there may be delays or trucks entering traffic due to construction. • Provide a breakdown of the number, type, capacity, and dimensions of the construction vehicles that would service the site. • Provide an estimate of the average daily or weekly number of vehicles per vehicle type during each major phase of the work. • Identify effective and safe routes for use by passenger/worker vehicles, delivery vehicles, and excavation and construction vehicles. • Enforce the chosen construction travel routes through contractor stipulations and conditions and periodic verification. • Identify a contact for complaints and indicate how complaints should be addressed. • Coordinate with Lyon County Roads Department and NDOT during final design to determine the potential need for intersection modifications and any design parameters that would be required or desirable. Coordinate with landowners to establish agreements if improvements require encroachment onto private properties and provide the appropriate compensation and if appropriate post construction restoration for encroachments on private property.
MM TR-3: Road Conditions Assessment and Maintenance Agreement	The Applicant shall conduct a pre-construction and post-construction road condition assessment along East Walker Road. The pre-construction road condition assessment shall include photographs or a video recording. The Applicant shall submit the pre-construction road condition assessment to Lyon County Public Works or other applicable agency no less than 30 days prior to construction. Following construction, the Applicant shall conduct a post-construction road condition assessment. If damage to roads occurs as a result of construction traffic, the Applicant shall restore damaged roadways within 60 days after the completion of construction and decommissioning to a pre-construction condition, based on the pre-construction road condition assessment, or to a condition agreed upon by the Applicant and Lyon County, and obtain any necessary

Mitigation Measure Identifier and Title	Description
	permits. The Applicant shall also ensure maintenance of East Walker Road for the life of the Project through development of a 30-year maintenance agreement with Lyon County Roads that identifies the Applicant's maintenance responsibilities commensurate with its use of the road for each phase of the Project.

3.17.4.8 *Irreversible and Irretrievable Impacts and Residual Effects*

There would be no irreversible commitments of resources because all roads would remain in their existing capacities after decommissioning of the Project, and current traffic volumes would be reestablished. Some residual effects to access would occur even after application of mitigation due to the increases in traffic from construction on US 95A, SR 339, SR 827, and SR 208, East Walker Road, and Reese River Road. Residual effects may still be adverse due to the scale of construction.

Chapter 4 Consultation and Coordination

4.4 Introduction

This chapter summarizes the consultation and coordination activities conducted for the Project with interested agencies, organizations, Tribes, and individuals. The primary goal of the NEPA public-involvement process is to ensure that all interested and affected parties are aware of the Project. The scoping period includes the initial presentation of the Project to the public and opportunities for the public and agency representatives to provide comments.

4.5 Public Involvement Process

4.5.1 Scoping

The BLM published an NOI to prepare an EIS for the Project in the *Federal Register* on April 24, 2023, which initiated a 30-day public scoping period for the Project, ending on May 24, 2023. The BLM hosted a virtual public scoping meeting for the Project on May 8, 2023. A postcard notifying identified agencies and stakeholders of the scoping meeting was sent by certified mail. The scoping meeting had 15 attendees. The BLM received 25 emails and letters during the scoping period. A Scoping Report was prepared to summarize the comments addressed (BLM 2023). The Scoping Report is available on the BLM's National NEPA Register website.

4.5.2 Draft EIS Public Comment Period and Public Comments

The Draft EIS was published concurrently with the publication of the Notice of Availability (NOA) in the *Federal Register.* The publication was followed by a 45-day public comment period to receive comments on the Draft EIS. Within the 45-day public comment period, the BLM held an in-person public meeting in Yerington, Nevada on February 6, 2024, and a virtual public meeting on February 7, 2024, to provide the public with information on the Draft EIS, respond to questions, and gather public comments. The in-person scoping meeting had 24 attendees and the virtual meeting was attended by 20 people.

The BLM received written comments by mail, email, and verbal comments transcribed at the in-person public meeting, and through the online comment form on the BLM National NEPA Register website. The BLM received a total of 34 submissions (See Appendix E: Public Comment, Responses, and Revisions to the Draft Environmental Impact Statement). All comments on the Draft EIS were given equal consideration, regardless of the method of submittal and whether or not the submittal was part of an organized letter writing campaign. In responses to the substantive comments (as defined under 40 CFR 1503.4[b]) received, the BLM made corrections to analyses or data used in the EIS or explained why the comments do not warrant additional changes to the EIS. The substantive and non-substantive comments received, the BLM's response to substantive comments, and additional information regarding the comment receipt and response process are included in *Appendix E: Public Comment, Responses, and Revisions to the Draft Environmental Impact Statement* Report. A copy of the Libra Solar Project Final EIS is available for public review at the following location:

Bureau of Land Management, Carson City District Office
5665 Morgan Mill Road
Carson City, Nevada 89701

The Final EIS is also available at: https://eplanning.blm.gov/eplanning-ui/project/2022592/570.

4.6 Formal Consultation with Tribal Governments

The BLM has initiated government-to-government consultation with Indian Tribes, pursuant to Executive Order 13175 of November 6, 2000 (Consultation and Coordination With Indian Tribal Governments); Section 106 of the National Historic Preservation Act (NHPA); National Environmental Policy Act (NEPA); American Indian Religious Freedom Act (AIRFA); and Executive Order 13007, Indian Sacred Sites; and consistent with the Solar Programmatic Agreement (2012).

The BLM is conducting on-going government-to-government consultation with Bridgeport Indian Colony, Fallon Paiute-Shoshone Tribe, Pyramid Lake Paiute Tribe, Reno-Sparks Indian Colony, Walker River Paiute Tribe, Washoe Tribe of Nevada and California, Yerington Paiute Tribe, and Yomba Shoshone Tribe. Key concerns include potential impacts to the Pistone-Black Mountain NCA and other nearby sensitive cultural sites, particularly along the gen-tie line. BLM invited the following Tribes, which are within an extended regional area, to participate in scoping: Moapa Band of Paiutes, Las Vegas Paiute Tribe, Kaibab Band of Paiutes, Paiute Indian Tribe of Utah, Ely Shoshone Tribe, and Duckwater Shoshone Tribe. The Moapa Band of Paiutes provided scoping comments on topics such as biological resources, vegetation removal, viewshed analyses, Project water use, and cultural resources.

On June 26, 2023, and July 12, 2023, the BLM hosted virtual tribal meetings to present the Project, show maps of the Project facilities, and provide an overview of key resource findings based on the completed technical studies. Representatives from the Walker River Paiute Tribe, Reno-Sparks Indian Colony, and Fallon Paiute Shoshone Tribe participated in the meetings. BLM received input regarding important hunting areas and concerns related to the Pistone-Black Mountain NCA that were incorporated into the analysis, as appropriate.

BLM hosted two virtual tribal meetings on April 4, 2024, to review the BLM's preferred alternative, the affected and avoided cultural resources, the Historic Properties Treatment Plan, and the Cultural Resources Monitoring and Post-Review Discovery Plan for the EIS. Representatives from the Walker River Paiute Tribe and the Washoe Tribe of Nevada and California participated in the meetings.

The BLM has identified potential impacts to cultural resources in this EIS and is continuing discussions with Tribes through formal and informal consultation to ensure that concerns are considered in proposed mitigation.

4.7 National Historic Preservation Act Section 106 Consultation

Section 106 of the NHPA (54 USC § 306108), and its implementing regulations at 36 CFR 800, requires federal agencies to consider the effects of proposed projects (undertakings) on any historic properties, and to provide the ACHP and opportunity to comment. The BLM initiated Section 106 consultation with the ACHP and the Nevada SHPO on April 14, 2023. The NHPA, and its implementing regulations, provide guidance for using NEPA to comply with Section 106. Specifically, the regulations at 36 CFR 800.8(c), allow a federal agency to use the NEPA environmental review process to comply with Section 106 of the NHPA in lieu of the procedures set forth in 36 CFR 800.3 - 800.6.

The BLM is using the environmental review process to fulfill its requirements to consider effects to historic properties under Section 106 of the NHPA. As part of the process, the BLM notified the ACHP, the SHPO, Indian Tribes, and all consulting parties that the BLM will use the environmental review process to meet the Section 106 compliance requirements, consistent with 36 CFR 800.8(c) on April 14,

2023. Indian Tribes have also been invited to participate specifically in the NEPA review and under Section 106 of the NHPA. Consultation with the SHPO is ongoing, the results of which will be disclosed in the ROD.

4.8 Endangered Species Act Section 7 Consultation

Threatened, endangered, proposed, or candidate species, as identified under the ESA, would not be impacted by the Project. No Section 7 consultation was required as part of the Project. The USFWS is a Cooperating Agency.

4.9 Cooperating Agency Coordination

In July 2022, the BLM sent Cooperating Agency invitation letters for the Project to the following federal, state, local agencies, and Indian Tribes.

Federal
Bureau of Indian Affairs, Western Nevada Agency
US Fish and Wildlife Service
US Army Corps of Engineers
US Environmental Protection Agency
US Department of Defense (Hawthorne Army Depot)
US Bureau of Reclamation
US National Parks Service

State of Nevada
State Historic Preservation Office
Nevada State Parks
NV Energy
Nevada Department of Environmental Protection
Nevada Department of Transportation
Nevada Department of Wildlife
Nevada Division of Water Resources
Nevada Department of Conservation and Natural Resources
Nevada Department of Forestry

Local Agencies
Lyon County
Mineral County
Churchill County
City of Yerington

Tribal governments
Bridgeport Indian Colony
Fallon Paiute-Shoshone Tribe
Pyramid Lake Paiute Tribe
Reno-Sparks Indian Colony
Walker River Paiute Tribe
Washoe Tribe of Nevada and California
Yerington Paiute Tribe
Yomba Shoshone Tribe
Moapa Band of Paiutes
Las Vegas Paiute Tribe
Kaibab Band of Paiutes
Paiute Indian Tribe of Utah
Ely Shoshone Tribe
Duckwater Shoshone Tribe

The Cooperating Agencies that accepted Cooperating Agency invitation include USEPA, Hawthorne Army Depot, USFWS Migratory Bird Program, NDOW, Mineral County, and Lyon County. The BLM conducted a Cooperating Agency kick-off meeting for the Project, as well as additional meetings on alternatives for the Proposed Action, to gather input from the agencies for the NEPA analysis. The Cooperating Agencies also participated in review of administrative draft documents for the Draft EIS, as well as review of resource reports, studies, and modeling utilized for the NEPA analysis.

The BLM provided notification of the publication, including a link to the document location, of the Draft EIS to the seven federal, nine state, four local agencies listed above, and the eight tribal governments identified in Section 4.6 for government-to-government consultation. The BLM hosted virtual

cooperating agency meetings after the close of the public comment period to review public comments received and discuss key concerns. The cooperating agencies were provided with a draft of *Appendix E: Public Comment, Responses, and Revisions to the Draft Environmental Impact Statement* to review and their comments were incorporated into the responses and/or EIS where appropriate.

4.10 Next Steps in the NEPA Process

Following a 30-day waiting period, the BLM will make a decision about whether to approve, deny, or approve with modifications the application.

Chapter 5 Literature Cited and List of Preparers

5.1 List of Preparers

Table 5.1-1 BLM Staff Contributing to the Preparation of the EIS

Contributor	Role/responsibility
Frank Giles	State Air Resource Specialist (Air Quality)
Wyatt Fereday	Hydrologist (Water Resources and Soils)
Christine McCollum	Archaeologist (Cultural Resources, Native American Concerns, Paleontology)
Jonathan Gordon	Wildlife Biologist (Wildlife, Endangered Species)
Mark Mazza	Rangeland Management Specialist (Rangeland)
Dean Tonenna	Botanist (Threatened or Endangered Plant Species, Sensitive Plants)
Lawrence Rose	Rangeland Management Specialist, Weeds Coordinator (Noxious and Invasive, Non-Native)
John Axtell	Wild Horse and Burro Specialist (Wild Horses and Burros)
Paul Amar	Outdoor Recreation Planner (Recreation, Wilderness, Travel Management, Lands with Wilderness Characteristics)
Jason Wright	Archaeologist (Visual Resources)
Matthew Fockler, PhD	Socioeconomic Specialist, Great Basin Zone (NV, ID, UT) (Socioeconomics, Environmental Justice)
Dave Schroeder	Environmental Protection Specialist (Wastes – Hazardous or Solid, Geothermal Resources)
Don Shannon	Fire Ecologist (Public Health and Safety, Fire Management)
Taylor Burnham	Geologist (Geology – Minerals and Materials)
Terah Malsam	Realty Specialist (Lands and Realty, Assistant Project Manager)
Kim Dow	Carson City District Manager
Shevawn Sapp	Acting Stillwater Field Manager
Shedra Rakestraw	Assistant Field Office Manager, Sierra Front Field Office
Melanie Hornsby	Planning and Environmental Coordinator, Military Liaison (NEPA Compliance, Project Manager)

Table 5.1-2 Third Party Consultants

Contributor	Role/responsibility
Tania Treis	Panorama, Project Manager, Soils, Water Resources
Keri Hill	Panorama, Deputy Project Manager, Visual Resources, Rangeland, Transportation and Traffic
Aaron Lui	Panorama, Senior Manager, Visual Resources
Jenna Savois	Panorama, Planner, Environmental Justice, Socioeconomics, Air Quality, Cultural Resources, Native American Concerns
Kelsey Patterson	Panorama, Senior Planner/Biologist, Wildlife, Vegetation and Noxious Weeds
Garret Peterson	Panorama, Planner, Recreation, Land Use and Realty
Miriam Liberatore	Panorama, Public Health and Safety
Lacar Musgrove	Panorama, Technical Editing, QA/QC
Edward Stoner	ASM Affiliates, Cultural Resources
Ryan Young	Phoenix Biological Consulting, Small Mammal Trapping Study, Botanical Survey Report, Eagle Nesting Survey Report, Migratory Bird Survey Report, Bat Acoustic Study, Jurisdictional Delineation Report,
Mike Ratte	RCH Group, Air Quality Technical Report
Jeff Moffett	Triple Point Strategic Consulting LLC, Economic and Fiscal Impact Assessment
Tony Dimpel	McGinley and Associates (Now Universal Engineering Sciences), Phase 1 Environmental Site Assessment
Ken Loy	West Yost Affiliates, Groundwater Impact Analysis
Westwood	Preliminary Drainage Study
Travis Jokerst	EnviroMine, Due Diligence Report

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