

APPENDIX C

MITIGATION MEASURES

APPENDIX C: MITIGATION MEASURES

The National Park Service places a strong emphasis on avoidance, minimization, and mitigation of impacts. To help ensure that field activities protect natural, cultural, and social resources and the quality of the visitor experience, mitigation measures have been developed. The following section discusses mitigation measures that would occur prior to, during, and after construction of specific management actions.

Topic	Mitigation Measure	Responsibility
GENERAL CONSTRUCTION MANAGEMENT MEASURES		
MM-GCM-1 General Construction Management	<p>All Contractor and subcontractor employees shall receive a brief orientation about working in Yosemite National Park and the El Portal Administrative Site prior to actually performing work. The orientation describes the efforts to be taken by the Contractor and subcontractor employees to protect the natural, cultural and physical resources of YNP while working on this and other projects. This orientation also describes mitigation and other environmental protection measures that must be adhered to at all times while in the Park.</p> <p>All contractor and subcontractor employees shall view a government provided orientation video to ensure each is fully aware of the natural and cultural resource protection and mitigation requirements of work at YNP, or in the El Portal Administrative Site. Government staff will provide the initial orientation. Subsequent on-going awareness orientation for new employees and when site conditions change shall be performed by contractor and integrated into construction operation procedures.</p> <p>The Contractor shall maintain a manifest tracking all contractor personnel, when they received their orientation training, and when they started work. Contractor personnel shall be field identifiable as having received their orientation training by means of a readily visible sticker on their hard hat.</p> <p>Prior to entry into the park, Contractor shall steam-clean heavy equipment to prevent importation of non-native plant species, tighten hydraulic fittings, ensure hydraulic hoses are in good condition and replace if damaged, and repair all petroleum leaks. Inspect the project to ensure that impacts stay within the parameters of the project area and do not escalate beyond the scope of the environmental assessment, as well as to ensure that the project conforms with all applicable permits or project conditions. Store all construction equipment within the delineated work limits. Contractor shall also confine work areas within creek channels to the smallest area necessary.</p> <p>If deemed necessary, demolition/construction work on weekends or federal government holidays may be authorized, with prior written approval of the Superintendent.</p> <p>Contractor shall remove all tools, equipment, barricades, signs, surplus materials, and rubbish from the project work limits upon project completion. Contractor shall repair any asphalt surfaces that are damaged due to work on the project to original condition. Contractors shall also remove all debris from the project site, including all visible concrete, timber, and metal pieces.</p> <p>The park shall develop a Communications Strategy Plan to alert necessary park and Concessioner employees, residents and visitors to pertinent elements of the construction work schedule.</p> <p>Contractor shall verify utility locations by contacting the Underground Services Alert prior to the start of construction.</p>	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
GENERAL CONSTRUCTION MANAGEMENT MEASURES (cont.)		
MM-GCM-1 General Construction Management (cont.)	<p>The Contractor shall provide protective fencing enclosures around construction areas, including utility trenches to protect public health and safety.</p> <p>The NPS will apply for and comply with all federal and state permits required for construction-related activities.</p> <p>Contractor and NPS shall implement compliance monitoring to ensure that the project remains within the parameters of National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) compliance documents.</p> <p>Develop an emergency notification plan that complies with park, federal, and state requirements and allows contractors to properly notify park, federal, and/or state personnel in the event of an emergency during construction activities. This plan will address notification requirements related to fire, personnel, and/or visitor injury, releases of spilled material, evacuation processes, etc. The emergency notification plan will be submitted to the park for review/approval prior to commencement of construction activities.</p> <p>Notify utilities prior to construction activities Identify locations of existing utilities prior to removal activity to prevent damage to utilities. The Underground Services Alert and NPS maintenance staff will be informed 72 hours prior to any ground disturbance. Construction-related activities will not proceed until the process of locating existing utilities is completed (water, wastewater, electric, communications, and telephone lines). An emergency response plan will be required of the contractor.</p>	
SOILS AND GEOHAZARDS		
MM-GEO-1 Soils Management	<p>The Contractor shall confine all earth moving activities to within the work limits as defined in the site plans. The displacement of soil or other materials outside the defined limits shall be approved by the contracting officer.</p> <p>Landscape: Land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.</p> <p>Topsoil shall be salvaged and placed in a separate location from sub-soils and replaced on top of other soils as the trench is backfilled. The location for stock piling soils and other woody materials shall be approved by the contracting officer.</p> <p>Fungal Pathogens In Soil (Root Rot): Fungal pathogens that have negative impacts on oaks and conifers are present in certain areas in Yosemite Valley. Soil infected with these pathogens shall not be imported into areas that are free of the pathogens. If construction drawings indicate that infected soil is present in the work site, the following procedures must be followed:</p> <ul style="list-style-type: none"> • Ensure that infected soil is stored within the construction zone. Should infected soils be stockpiled outside of the construction zone, ensure that stockpiles are placed outside of areas that do not have the fungal pathogen. Protect stockpiles of infected soil to prevent transport by wind, water, animal, or human traffic. • Clean equipment buckets and tires or hand tools used in areas containing fungal pathogens before moving to or working in unaffected areas. • Whenever possible, all stumps shall be removed from excavations and disposed of in a legal manner outside of the Yosemite National Park boundary. 	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
SOILS AND GEOHAZARDS (cont.)		
MM-GEO-1 Soils Management (cont.)	<ul style="list-style-type: none"> Stump Treatment when stumps cannot be removed: The treatments following tree removal must be universal throughout the park to avoid inadvertently spreading infection. Eradication of the disease is not possible, but its' spread can be managed. <ul style="list-style-type: none"> Conifers: Treat all stumps (>6 inches in diameter in recreational use areas, >12 inches diameter in undeveloped areas) with Sporax within a few days of felling the tree. If a stump is ground, it still must be treated with Sporax, and then covered with soil. If the stump is removed, no chemical treatment is required. Remove all of the root material >3 inches in diameter. Standing trees that have been dead for less than one year must have stumps treated with Sporax once they are removed. Deciduous: Oaks should be left whenever possible, if the tree must be cut, the entire stump and root system must be removed from the Park. Disturb no more than 15 percent of the roots for any given tree. Do not over-water oak trees. Do not compact soil within drip lines of the tree. Treatment of Infected Soils: Remove root material by sifting or sorting soil before backfilling. <ul style="list-style-type: none"> Treatment of soils in an annosus zone. Only infected HA areas need to be treated for removal of root material. Standard specification for roots to be removed from disturbed soil: >3 inches diameter or >20 inches in length. Remove ALL stumps from excavation. Do not move soil from infected areas. Topsoil shall be salvaged and reused in the same place from which it was excavated. If the soil is to be windrowed and used later, it should be sorted for root chunks prior to storage. Conserve and salvage topsoil for reuse. Materials will be reused to the maximum extent possible All disturbed soil and fill slopes shall be stabilized in a manner consistent with the provisions of MM-HYD-1. 	
HYDROLOGY AND WATER QUALITY		
MM-HYD-1 Stormwater Pollution Prevention Plan	Contractor shall prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that designates construction best management practices to be used to control the sources of fine sediment and to capture and filter it before entering the river. The SWPPP shall define the characteristics of the site, identify the type of construction that will be occurring, and describe the practices that will be implemented to control erosion and the release of pollutants in stormwater. At a minimum, the SWPPP shall address the following, as applicable:	Contractor

Topic	Mitigation Measure	Responsibility
HYDROLOGY AND WATER QUALITY (cont.)		
MM-HYD-1 Stormwater Pollution Prevention Plan (cont.)	<p>Stabilization Practices</p> <ul style="list-style-type: none"> The stabilization practices to be implemented shall specify the intended stabilization practices, which may include one or more of the following: temporary seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, erosion control mats, protection of trees, preservation of mature vegetation, etc. On the daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., clearing and grubbing, excavation, embankment, and/or grading); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated. Unless otherwise directed by the Contracting Officer for the reasons below (i.e., unsuitable conditions or no activity for less than 21 days), stabilization practices shall be initiated as soon as practicable, in any portion of the site where construction activities have temporarily or permanently ceased, but no more than 14 calendar days after the activities cease. Unsuitable Conditions - Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceases is precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable after conditions become suitable. No Activity for Less Than 21 Days - Where construction activity will resume on a portion of the site within 21 days from when activities ceased (e.g., the total time period that construction activity is temporarily ceased is less than 21 days), then stabilization practices do not have to be initiated on that portion of the site by the 14th day after construction activity temporarily ceased. <p>Structural Practices</p> <ul style="list-style-type: none"> The Contractor shall implement structural practices to divert flows from exposed soils, temporarily store flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Location and details of installation of structural practices shall be depicted on the construction drawings. <p>Silt Fences</p> <ul style="list-style-type: none"> The Contractor shall provide silt fences as a temporary structural practice to minimize erosion and sediment runoff. Silt fences shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Silt fences shall be installed in the locations indicated on the drawings or as needed based on Contractor operations. Final removal of silt fence barriers shall be upon approval by the Contracting Officer. Silt fences shall extend a minimum of 16 inches above the ground surface and shall not exceed 34 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with a minimum 6-inch overlap, and securely sealed. A trench shall be excavated approximately 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The 4-inch by 4-inch trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be removed upon approval by the COR. 	

Topic	Mitigation Measure	Responsibility																					
HYDROLOGY AND WATER QUALITY (cont.)																							
MM-HYD-1 Stormwater Pollution Prevention Plan (cont.)	<p>Straw Bales</p> <ul style="list-style-type: none"> Straw bales are not authorized for use in storm water control at YNP. They have the potential to introduce exotic species into the Park environment. <p>Diversion Dikes</p> <ul style="list-style-type: none"> Diversion dikes shall have a maximum channel slope of 2 percent and shall be adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel shall be 18 inches. The minimum base width shall be 6 feet and the minimum top width shall be 2 feet. The Contractor shall ensure that the diversion dikes are not damaged by construction operations or traffic. Diversion dikes shall be located as shown on the drawings or as needed based on Contractor operations. Location of diversion dikes shall be fully coordinated with cultural and natural environmental protection requirements described in Section 01355, Natural, Cultural, and Physical Resources Protection. <p>Filter Fabric</p> <ul style="list-style-type: none"> The geotextile shall comply with the requirements of ASTM D 4439, and shall consist of polymeric filaments that are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements: <table> <tr> <th colspan="3">FILTER FABRIC FOR SILT SCREEN FENCE</th></tr> <tr> <th><u>Physical Property</u></th><th><u>Test Procedure</u></th><th><u>Strength Requirement</u></th></tr> <tr> <td>Grab Tensile</td><td>ASTM D 4632</td><td>100 lbs. min.</td></tr> <tr> <td>Elongation (%)</td><td></td><td>30 % max.</td></tr> <tr> <td>Trapezoid Tear</td><td>ASTM D 4533</td><td>55 lbs. min.</td></tr> <tr> <td>Permittivity</td><td>ASTM D 4491</td><td>0.2 sec⁻¹</td></tr> <tr> <td>AOS (U.S. Std Sieve)</td><td>ASTM D 4751</td><td>20-100</td></tr> </table> <p>Silt Fence Stakes and Posts</p> <ul style="list-style-type: none"> The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when hardwood is used and 4 inches by 4 inches when softwood is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet. <p>Identification Storage and Handling</p> <ul style="list-style-type: none"> Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873. 	FILTER FABRIC FOR SILT SCREEN FENCE			<u>Physical Property</u>	<u>Test Procedure</u>	<u>Strength Requirement</u>	Grab Tensile	ASTM D 4632	100 lbs. min.	Elongation (%)		30 % max.	Trapezoid Tear	ASTM D 4533	55 lbs. min.	Permittivity	ASTM D 4491	0.2 sec ⁻¹	AOS (U.S. Std Sieve)	ASTM D 4751	20-100	
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Topic	Mitigation Measure	Responsibility
HYDROLOGY AND WATER QUALITY (cont.)		
MM-HYD-1 Stormwater Pollution Prevention Plan (cont.)	<p>Maintenance</p> <ul style="list-style-type: none"> The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures. Silt fences shall be inspected in accordance with the below paragraph, Inspections. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed with approval of COR. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. Diversion dikes shall be inspected in accordance with the below paragraph, Inspections. Close attention shall be paid to the repair of damaged diversion dikes and necessary repairs shall be accomplished promptly. When diversion dikes are no longer required, they shall be shaped to an acceptable grade. <p>Inspections</p> <ul style="list-style-type: none"> The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and area where vehicles exit the site at least once every 7 calendar days and within 24 hours of the end of any storm that produces 0.5 inches or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month. Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the Storm Water Pollution Prevention Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles exit the site shall be inspected for evidence of offsite sediment tracking. For each inspection conducted, the Contractor shall prepare a report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Storm Water Pollution Prevention Plan, maintenance performed, and actions taken. The report shall be furnished to the COR within 24 hours of the inspection as a part of the Contractor's daily CQC Report. A copy of the inspection report shall be maintained on the job site. 	
MM-HYD-2 Non-Hazardous Liquid Waste Management	<p>Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related wastewater off Government property in accordance with all Federal, State, Regional and Local laws and regulations.</p> <p>Water contaminated with silt, grout, or other construction by-product must be pumped to a holding tank. Location of the holding tank will be proposed by Contractor and approved by Contracting Officer.</p>	Contractor

Topic	Mitigation Measure	Responsibility
HYDROLOGY AND WATER QUALITY (cont.)		
MM-HYD-3 Hazardous Materials and Wastes	<ul style="list-style-type: none"> Identify potentially hazardous substances to be used on the job site. Identify handling procedures to ensure that hazardous substances are not released into the air, water, or ground. Comply with Federal, State, and local laws and regulations for storage, handling, and disposal of these materials. Storage of hazardous or flammable chemicals in the staging area or elsewhere on the site is prohibited except as approved by the Contracting Officer. Hazardous materials shall not be discarded into the jobsite debris or waste-disposal facilities. Empty containers shall be removed from the site and disposed of in a manner prescribed by law. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. A copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time is to be maintained on site and submitted to the Contracting Officer. Before new hazardous materials are brought on site or removed from the site, the MSDS file shall be updated and submitted to the Contracting Officer. 	Contractor
MM-HYD-4 Spill Prevention and Response Plan (SPRP)	<p>The California Regional Water Quality Control Board has issued a Cleanup and Abatement Order and Time Schedule Order to Yosemite National Park ordering that no sewage spills occur. The Contractor shall be required to follow the requirements of the Order and shall prepare a Spill Prevention and Response Plan and take appropriate spill prevention measures during all phases of the work. The California Regional Water Quality Control Board requires a minimum of 10 days to review the SPRP. All recommendations by the Board will be implemented at no additional cost to the NPS.</p> <p>The primary purpose of the SPRP is to prevent sewage spills from occurring by proper planning and protection of the project area, and then to respond to any sewage spills that may occur during the course of this project including appropriate notification of staff. The Plan will be general in nature and typical to all phases of the work with site specific plans required for each area involving trenching or any work with the possibility of accessing the existing system. The sewer lines are located throughout Yosemite Valley and in close proximity to waterways and stream channels such that spilled sewage could possibly reach the Merced River.</p> <p>The SPRP is structured in two parts – first a Spill Prevention Plan and then a Spill Response Plan. The Spill Prevention Plan (SPP) includes evaluation of specific conditions, set-up of containment for actual construction work as well as for bypass pumping. Sewer bypasses must be constructed to tie existing lines into the new system and to tie the new system into the existing system. The Spill Response Plan (SRP) includes the initial response to stop and contain a spill, notification of staff, clean-up, and follow-up documentation. The SPP and the SRP together comprise the entire SPRP. A template of a plan follows at the end of this Section. An electronic version of this template will be provided to the successful bidder.</p> <p>All Contractor employees are required to be trained in the Spill Prevention Control in accordance with this SPRP.</p>	Contractor

Topic	Mitigation Measure	Responsibility
HYDROLOGY AND WATER QUALITY (cont.)		
MM-HYD-5 Hazardous Materials Spill Prevention and Response Plan	<p>Contractor shall provide a Hazardous Materials Spill Prevention and Response Plan to address spill prevention and response measures for hazardous substances used on site, including fuels. Prior to the start of work, the Contractor shall submit a plan that complies with YNP, Federal and State requirements and allows contractors to properly notify officials in the event of an emergency occurring during construction activities. YNP requirements include, and the plan shall state, at a minimum:</p> <ul style="list-style-type: none"> • During non-work operations, stationary equipment shall be parked over specially prepared containment pads designed to trap any leaking oil, fuel, or hydraulic fluids. • Inspect construction site daily for proper storage of hazardous materials, proper parking of equipment on containment pads, and for hydraulic and oil leaks of equipment, tighten hoses, and ensure they are in good condition. • Routine oiling and lubrication shall be conducted in areas with secondary containment using Best Management Practices (BMPs) at all times. Refueling of equipment in wetlands or stream channel areas is not allowed at any time. • Contractor shall maintain secondary containment for all equipment operating with fluids (such as drilling) or when direct discharge of leakage, spills, or other source of construction or equipment fluids can flow directly to any streambed, whether flowing with water or dry. Containment shall be designed and installed so as to prevent accidental spills into streambeds in the event of mechanical failure or hose breakage. • Contractor shall maintain spill response materials on the project site when using heavy equipment to ensure rapid response to small spills. These materials shall include absorbent pads, booms, or other materials as appropriate to contain oil, hydraulic fluid, solvents, and hazardous material spills. A list of the spill response materials to be kept on site shall be submitted to the Contracting Officer. • Contractor shall provide names and phone numbers of appropriate contractor's personnel to be contacted at any time (24 hours per day) regarding accidental release of hazardous substances to air, soil or water. This list shall be submitted to the Contracting Officer and a copy visibly displayed in work areas on site. • Contractor shall have the Contracting Officer's and other appropriate Government emergency numbers posted and shall immediately notify the Contracting Officer or other Government representative on any accidental release of hazardous substances to air, soil or water. • Hazardous or flammable chemicals shall be prohibited from storage in the staging area, except for those substances identified in the Oil and Hazardous Materials Spill Prevention, Control, and Countermeasure Plan. Hazardous waste materials shall be immediately removed from project site in approved containers. • Comply with all applicable regulations and policies during the removal and remediation of asbestos, lead paint, and polychlorinated biphenyls. 	Contractor

Topic	Mitigation Measure	Responsibility
VEGETATION AND WETLANDS		
MM-VEG-1 Protection from Exotic Plant Species:	<p>The park and contractor shall undertake measures to prevent the introduction of exotic species in the project area and staging areas. All earth moving equipment must enter the Park free of dirt, dust, mud, seeds, or other potential contaminant. Equipment exhibiting any dirt or other material attached to frame, tires, wheels, or other parts shall be thoroughly cleaned by the Contractor before entering the Park.</p> <p>All equipment will be directed to the El Portal Maintenance Facility for inspection prior to commencing work. Areas inspected shall include, but not be limited to, tracks, track guard/housings, belly pans/under covers, buckets, rippers, and other attachments.</p> <p>Equipment that does not pass inspection will be turned around to the nearest cleaning facility outside the park. If vehicles are unable to drive to El Portal due to size or load restrictions, vehicles will be inspected at a mutually agreed site by the Contracting Officer prior to entering the Park. The Contractor shall notify the Construction manager at least two work days (not including weekends) prior to bringing any equipment into the Park. Equipment found to have entered the Park with potential contaminants will be removed from the Park at the direction of the Contracting Officer at Contractor's sole expense.</p> <p>Contractor shall minimize ground disturbance to the greatest extent possible.</p> <p>The contractor shall get approval in writing from the Contracting Officer for fill material that must be used in a way or stored in a location not clearly specified in the contract.</p> <p>Fill materials used within the top 12 inches of finished grade are required to be free of exotic and noxious weed species and shall have the source locations approved by the Contracting Officer. The Contractor shall submit to the Contracting Officer a list of proposed sources for imported fill materials requiring certification 30 calendar days in advance of importing material. The presence of noxious weed species is grounds for rejection of the source.</p> <p>If exotic weed species are found or suspected, the Contractor may be required to strip the top 12 inches of source material and only import sub-surface material and/or sterilize the material, at the Contracting Officer's discretion. The presence of the following particularly noxious weed species are grounds for rejection of the source: spotted knapweed, yellow star-thistle, perennial pepperweed, broom species, and other species on the California State List of Noxious Weeds. If spraying is required, the Contractor shall provide a licensed operator to spray according to applicable state regulations and park management guidelines (e.g., the Invasive Species Management Plan). The Contractor shall not spray any herbicides until approved in writing by the Contracting Officer.</p> <p>Drain and flush all pumps, tanks, live wells, buckets and other containers that might carry water contaminated with exotic plants and animals, such as the zebra mussel, prior to bringing equipment into the park. Thoroughly wash all hauling tanks and equipment using a hard spray from a garden hose. If equipment was used in infested waters, use the following steps to clean the equipment:</p> <ul style="list-style-type: none"> • Wash with hot water (140 F or 40 C) or a high pressure washer (250 pounds per square inch). Remove all aquatic weeds -- they can carry zebra mussels. • Disinfect equipment. Recent research shows that disinfection of nets and equipment with benzalkonium chloride at typical treatment rates (10 milligrams per liter for 24 hours, 100 milligrams per liter for 3 hours, or 250 milligrams per liter for 15 minutes) will effectively eliminate most exotic animals. Two other commonly used disinfectants, calcium hypochlorite and iodine, are ineffective against zebra mussels. 	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
VEGETATION AND WETLANDS (cont.)		
MM-VEG-1 Protection from Exotic Plant Species (cont.)	<ul style="list-style-type: none"> Adult zebra mussels can live more than a week out of water in moist, shaded areas. Dry pumps, nets and other equipment used in infested waters in the sun for two to four days after cleaning. If adult mussels are present, dry equipment for two weeks. 	
MM-VEG-2 Vegetation Inventory and Assessment	<p>Plant Condition Inventory: The Contractor and the Contracting Officer or designated representative, shall perform an on-site inventory of trees and other overall vegetation features within or near to the work limits. A print of the contract drawings showing tree locations and a photo record will be used to note condition of trees and vegetation. This annotated drawing will be retained by the Contracting Officer for use during the final walk-through and tree/vegetation assessment. This walk through shall be a part of the project closeout requirements (see Section 01770, Project Closeout).</p> <p>On-site inventory shall be scheduled in coordination with the pre-construction conference.</p> <p>Access to work sites requiring travel through undeveloped areas outside the work limits must be approved by the contracting officer.</p> <p>Provide temporary barriers (e.g., orange construction fence) to protect existing trees, plants and critical root zones that are designated to remain, but are: (1) within the construction limits; 2) on or just outside the construction limits; (3) within the clearing limits (i.e., the zone extending 5 feet beyond the staked construction limits); or (4) on, or just outside the clearing limit line. Barriers shall be in place before construction begins.</p> <p>Trees, shrubs, vines, grasses, and other vegetative features indicated and defined on the Drawings to be preserved shall be clearly identified by marking, fencing, or any other approved techniques. The Contractor shall restore vegetative features damaged or destroyed during construction operations outside the limits of the approved work area.</p> <p>Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy resources including trees, shrubs, vines, grasses, topsoil, and landforms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized.</p> <p>Removal of trees will be performed by YNP in advance of Contractor's work. Should it be determined during the course of work that additional trees or tree roots require removal, Contractor shall notify the Contracting Officer who will coordinate an inspection and determination by the appropriate authorities whether to remove the tree or not.</p> <p>After tree removal, large roots may remain in the ground. Contractor shall be responsible for carefully removing in-ground tree roots of removed trees to permit excavation, drilling, or other ground penetrating construction activities. During tree root removal, do not use backhoes, chains, or other equipment in a manner that will harm roots of adjacent trees.</p> <p>Minimize disturbance to tree trunks and root zones to prevent damage to trees.</p> <p>Adjust trenches and other excavations to keep them beyond the drip line wherever possible.</p> <p>Attempt to maintain the following minimum clearances between the edges of tree trunks and excavation:</p> <ul style="list-style-type: none"> for trees more than 30-inch-in-diameter - 10 feet 	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
VEGETATION AND WETLANDS (cont.)		
MM-VEG-2 Vegetation Inventory and Assessment (cont.)	<ul style="list-style-type: none"> • for trees between 15-inch and 30-inch-in-diameter - 8 feet • for trees less than 15-inch-in-diameter - 5 feet <p>Adjust the survey line, as necessary to maintain required clearances.</p> <p>Notify the Contracting Officer of any proposed trenches or other excavations within the drip line of trees.</p> <p>Steps to Mitigate Damage to Roots Due to Excavation:</p> <p>Take steps (as called for below) to mitigate damage to tree roots due to excavation, wherever the following circumstances apply:</p> <ul style="list-style-type: none"> • Wherever excavation must take place within the drip line of oak trees regardless of diameter. • Wherever excavation must take place within the drip line of trees other than oaks, for all trees 12 inches or larger in diameter. <p>Trees which are anticipated to meet these criteria and therefore require steps to mitigate damage to roots due to excavation are shown on the drawings. Adjustments in trench alignment or other factors may result in variations in which trees are affected. The Contractor shall accommodate these variations at no additional expense to the Government.</p> <p>Following are the steps which are required to mitigate damage to roots due to excavation:</p> <ul style="list-style-type: none"> • Excavate carefully where tree roots might be encountered. Where roots 2 inches and larger are encountered, hand excavate as required to prevent damage to roots. Tunnel under roots to be saved, hand excavating as necessary. • Do not cut roots over 2-inch-in-diameter without approval of Contracting Officer. • Cleanly saw-cut roots between 1-inch and 2-inch-in-diameter where they interfere with work; do not cut roots except as necessary. Roots between 1-inch and 2-inch-in-diameter which must be cut shall be cleanly saw-cut near the edge of trench closest to the tree to prevent roots from being dislodged from soil by equipment. • Avoid soil compaction within plant root zones with heavy equipment and vehicles within the project work limits. • Do not cut wheels or make sharp turns with wheeled or tracked equipment in root zones. • Do not pile excavated soil against tree trunks. • Do not mechanically compact soils in undeveloped areas except to meet minimum compaction requirements as approved by the contracting officer. • Maintain original soil topography in plant root zones whenever possible. <p>Preserve tree snags where feasible as potential bat or bird habitat.</p>	

Topic	Mitigation Measure	Responsibility
VEGETATION AND WETLANDS (cont.)		
MM-VEG-3 Plant Appraisal	<p>If the Contractor destroys or injures trees and vegetation designated for protection or outside the work limits, the Contractor will be assessed damages prior to final progress payment.</p> <p>Replacement costs for damaged vegetation will be computed according to the method described in the International Society of Arboriculture's 1992 Guide for Plant Appraisal. This method is based on the cost of the largest commonly available tree or shrub, with modifications based on species value, condition, and location. A trained arborist or professional plant appraiser from the California region will be hired by the NPS to make the damage appraisal. The arborist's fees will be included in the damage assessment.</p> <p>This damage appraisal process will be triggered by any of the following types of damage to vegetation outside the work limits or unauthorized disturbance of vegetation within the work limits.</p> <ul style="list-style-type: none"> • Removal of any tree or shrub. • Pruning or removal of more than 30 percent of a tree or shrub canopy. • Removal or fracture of any limb or trunk that is one of the major structural entities of the damaged plant. • Removal or fracture of any limb greater than 12 inches in diameter. • Bark damage or removal around more than 30 percent of the trunk circumference. • Trenching or soil disturbance within the critical root zone that is deeper than 1-foot unless shown on the Drawings. <p>If the damaged vegetation is protected under the Endangered Species Act or other special legislation, additional penalties may be assessed as per consultation with the U.S. Fish & Wildlife Service.</p> <p>Pruning or removal of vegetation shall be supervised by Contracting Officer. The designated personnel may designate plant species for salvage. When authorized and supervised by the Contracting Officer, the Contractor is exempted from any penalties that might be assessed due to damage to vegetation.</p> <ul style="list-style-type: none"> • Acceptable disturbance to roots is limited to 15 percent of the area under the drip line being either cut or filled. Any tree with more than 50 percent of its roots disturbed should be removed during construction at the direction of the Contracting Officer. • Wounds occurring from construction activity may be possible entry sites for disease spores. If a tree is accidentally injured during construction, it may need to be removed at the direction of the Contracting Officer. <p>Trench alignments or other factors may result in variations in which trees are affected. The Contractor shall accommodate these variations at no additional expense to the Government.</p> <p>Minor cuts and damaged areas shall be assessed by the Contracting Officer. Repair to the plant will be at the recommendation of the YNP personnel and approval of the Contracting Officer.</p>	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
VEGETATION AND WETLANDS (cont.)		
MM-VEG-4 Wetlands Delineation	Delineate wetlands and apply protection measures during construction. Wetlands shall be delineated by qualified National Park Service staff or certified wetland specialists and clearly marked prior to work. Perform activities in a cautious manner to prevent damage caused by equipment, erosion, siltation, etc.	Yosemite National Park; Contractor
MM-VEG-5 Wetlands Regulation	<p>The Contractor shall adhere at all times to the conditions of U.S. Army Corps of Engineers Nationwide Permit No. 33, Temporary Construction, Access and Dewatering, with the following conditions as a minimum:</p> <ul style="list-style-type: none"> • All work will be subject to the Standard and Technical Conditions of the Certification of the California Regional Water Quality Control Board, a copy which will be provided to the Contractor. • Work in streambeds is to be performed in periods of low water conditions. Contractor shall monitor stream flow conditions and weather forecasts at all times during the course of the work. During thunderstorms or other intense rain conditions, streambeds at Yosemite can fill rapidly. <p>Re-grade and restore disturbed areas to preexisting contours to maintain drainage patterns.</p>	Contractor
MM-VEG-6 Wetlands Protection	<p>The Contractor shall fence construction areas adjacent to aquatic habitats to prohibit the movement of aquatic species into the construction area and to control siltation and disturbance in aquatic habitats.</p> <p>The Contractor shall salvage and reuse wetland soils as fill to the maximum extent possible.</p> <p>The Contractor shall use trench plugs where designated on the drawings in wetland areas to prevent changes to natural flow patterns.</p> <p>During dewatering, intakes shall be completely screened with wire mesh not larger than 5 millimeters to prevent aquatic species from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction.</p> <p>Access routes to and through work locations in the meadows and wetlands shall be planked with 1 1/8" plywood, stabilization mats or other method approved by the contracting officer.</p>	Yosemite National Park, Project Manager; Contractor
MM-VEG-7 Monitoring	Ongoing monitoring undertaken by Yosemite's interdisciplinary Visitor Use and Impacts Monitoring Program regularly assesses conditions in meadows and along riverbanks, providing important information on the success of restoration efforts. In addition, the park performs regular monitoring for invasive plants, stock use impacts, wildlife abundance and diversity, and visitor experience. To evaluate the success of particular restoration actions, monitoring plans will be implemented specific to each restoration project. Geophysical and biological parameters will be monitored over time to determine restoration success and recovery rates. Pre and post-restoration vegetation and soil sampling and photo points are examples of monitoring to measure project success.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
WILDLIFE AND SPECIAL STATUS SPECIES		
MM-WL-1 Fish and Wildlife Protection	<p>The Contractor and Contractor's employees shall not feed any animals within Yosemite National Park.</p> <p>The Contractor shall make all reasonable efforts in accordance with the plans and specifications for the protection of threatened or endangered or candidate species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.</p> <p>Contractor shall schedule construction activities with seasonal consideration of wildlife lifecycles to minimize impacts during sensitive periods (i.e., after bird nesting seasons, when bats are neither hibernating nor have young, etc); limit the effects of light and noise on adjacent habitat through controls on construction equipment; and provide adequate education and enforcement to limit construction worker activities that are destructive to wildlife and habitats.</p> <p>Contractor shall maintain routes of escape from excavated pits and trenches for animals that might fall in. During construction activities, Contractor personnel shall maintain vigilance for animals caught in excavations and take appropriate action to free them.</p> <ul style="list-style-type: none"> Excavation pits shall have a ramp or incline at either end to allow for human and wildlife escape. Each morning prior to commencing work activities, Contractor shall inspect construction site for trapped wildlife in excavation pits and carefully remove. If necessary, contact the Contracting Officer for assistance. 	Yosemite National Park; Contractor
MM-WL-2 Bear Precautions	<p>Bears may be present at any location within the YNP boundaries, including at the project site. The Contractor shall incorporate the following precautions in all activities within the YNP boundary.</p> <p>All food, toiletries, and scented items (i.e., bug spray) shall be placed in bear boxes at the construction site provided by the Contractor. Bear boxes must remain closed and latched at all times, unless items are being retrieved. No food, toiletries, or scented items shall be stored in vehicles or left out.</p> <ul style="list-style-type: none"> All food waste and food-related waste shall be disposed of in accordance with Non-Hazardous Solid Wastes requirements described elsewhere within this section. All vehicles shall be checked daily to ensure that no items that may attract bears remain inside an unattended vehicle. Items that shall not be left in vehicles include canned food, drinks, soap, cosmetics, toiletries, domestic trash, recyclable food containers, ice chests, grocery bags, and unwashed items used for preparing or eating meals. All windows and doors in recreational vehicles or trailers used for lodging or office space shall be closed and latched when not occupied. The Contractor shall walk the job site at the end of each day and check for trash, food, and food-related items remaining at the site and dispose of the items in a bear-proof receptacle. Proper food storage is important to the welfare of the Yosemite bear population and is required by law. The Contractor shall receive and all Contractor personnel shall read a brochure entitled, The Bears are not to Blame, provided by NPS staff as a courtesy. Contractor staff shall call the Save-a-Bear hotline (209) 372-0322 to report overflowing trash containers, improperly stored food, or bear sightings. 	Contractor

Topic	Mitigation Measure	Responsibility
WILDLIFE AND SPECIAL STATUS SPECIES (cont.)		
MM-WL-3 Special Status Plant Species	<p>If special-status plant species are identified within the construction disturbance zone, in particular within restoration and revegetation areas, avoid special-status plant populations to the extent feasible during construction activities.</p> <p>If it is not feasible for construction activities to avoid special status plant species, species conservation measures will be developed in coordination with Yosemite National Park natural resources staff. Measures may include salvage of special-status plants for use in revegetating disturbed areas and transplantation of special-status plants wherever possible using methods and monitoring identified in the revegetation plan, monitoring to ensure successful revegetation, protection of plantings, and replacement of unsuccessful plant materials if practicable.</p>	Yosemite National Park; Contractor
MM-WL-4 Elderberry Longhorn Beetle Conservation Guidelines	Yosemite National Park and Contractor shall adhere to the "Conservation Guidelines for the Valley Elderberry Longhorn Beetle" (USFWS 1999) to avoid and minimize adverse impacts on the federally listed valley elderberry longhorn beetle. The guidelines specify avoidance and protection measures; transplantation specifications; requirements for planting additional seedlings, cuttings, and associated native species; monitoring; and reporting. Establish an estimated 1.53 acre conservation area at the Greenemeyer Sand Pit for elderberry shrubs and required additional species, pending specifications of U.S. Fish and Wildlife Service Biological Opinion for the final Merced River Plan/EIS.	Yosemite National Park; Contractor
MM-WL-5 Construction Timing	Schedule construction activities with seasonal consideration of wildlife lifecycles to minimize impacts during sensitive periods (i.e., after bird nesting seasons, when bats are neither hibernating nor have young, etc).	Yosemite National Park; Contractor
MM-WL-6 Bat Habitat Protection Guidelines	<p>A qualified bat biologist will conduct surveys prior to construction to evaluate whether habitat that will be affected by the proposed action provide hibernacula or nursery colony roosting habitat for bat species.</p> <p>If bats are detected during reproduction or hibernation periods, disturbance of potential habitat will be delayed until the bats can be excluded from the area in a manner that does not adversely affect their survival or that of their young.</p> <p>If bats are detected during reproduction or hibernation periods, disturbance of potential habitat will be delayed until the bats can be excluded from the area in a manner that does not adversely affect their survival or that of their young.</p> <p>If surveys conducted immediately prior to construction do not reveal any bat species present within the project area, then the action will begin within three days to prevent the destruction of any bats that could move into the area after the survey.</p>	Yosemite National Park; Contractor
MM-WL-7 Bird Habitat Protection Guidelines	<p>Beginning in early spring, a park wildlife biologist will conduct bird surveys and review current owl reports to determine whether special status species are present and may be mating, nesting, or foraging in the project vicinity.</p> <p>If nesting birds are observed (e.g., discovered by workers) that are not special status species, the project manager will notify the park wildlife biologist who will recommend steps to avoid undesirable impacts to the nest or young.</p>	Yosemite National Park, Project Manager

Topic	Mitigation Measure	Responsibility
LIGHTSCAPES		
MM-LITE-1 Yosemite Lighting Guidelines	All new sources of lighting, or substantial modifications to structures with existing sources of exterior lighting, shall conform to the standards set forth in the Yosemite Lighting Guidelines, available on the park's website at: http://www.nps.gov/yose/naturescience/dark-night-sky.htm .	Yosemite National Park; Contractor
MM-LITE-2 Night Lighting During Construction	Minimize night lighting during work. If night lighting is necessary, design lighting to be minimal, directed downward, and shielded.	Yosemite National Park; Contractor
SOUNDSCAPES		
MM-NOI-1 Construction Work Plan and Schedule	<p>Contractor shall submit to the park for review and approval prior to commencement of construction a construction work plan/schedule that specifies the ways in which the contractor will minimize construction-related noise in noise-sensitive areas. At a minimum, the plan shall state the following:</p> <ul style="list-style-type: none"> • Ensure that all construction equipment has functional exhaust muffler systems. • Use hydraulically or electrically powered construction equipment, when feasible. • Locate stationary noise sources as far from sensitive receptors as possible. • Limit the idling of motors except as necessary (e.g., concrete mixing trucks). • A construction schedule that minimizes impacts to adjacent noise-sensitive activities. • Engine braking ("jake" brakes) shall not be used in lodging, camping or residential areas. Engine brakes that are used shall be muffled. • Continuous noise abatement is required to prevent disturbance and nuisance to Park visitors and workers and to the occupants of adjacent premises and surrounding areas. • If the Contracting Officer determines excessive noise is emanating from the construction site, the Contractor may be required to provide sound barriers to deflect noise transmission from visitor areas or other areas impacted by noise. <p>Construction noise shall be minimized through use of best available noise control techniques wherever feasible. Sound levels must be kept to a minimum at all times. Equipment and machinery shall not exceed 85 db when measured at 100 linear feet distance. Contractor shall use sound attenuated compressors and generators that comply with the most recent California Department of Transportation standards.</p>	Contractor

Topic	Mitigation Measure	Responsibility																																																										
SOUNDSCAPES (cont.)																																																												
MM-NOI-2 Noise Management Levels	<p>Contractor shall ensure that all construction equipment and practices adhere to the following noise limitations:</p> <p>Repetitive and/or intermittent, high-level noise: Permitted only during Daytime.</p> <p>Do not exceed the following dB(A) limitations at 50 feet:</p> <table><thead><tr><th><u>Sound Level in dB(A)</u></th><th><u>Time Duration of Impact Noise</u></th></tr></thead><tbody><tr><td>70</td><td>More than 12 minutes in any hour</td></tr><tr><td>80</td><td>More than 3 minutes in any hour</td></tr></tbody></table> <p>Maximum permissible construction equipment noise levels at 50 feet:</p> <table><thead><tr><th><u>Earthmoving</u></th><th><u>dB(A)</u></th><th><u>Materials Handling</u></th><th><u>dB(A)</u></th></tr></thead><tbody><tr><td>Front Loaders</td><td>75</td><td>Concrete Mixers</td><td>75</td></tr><tr><td>Backhoes</td><td>75</td><td>Concrete Pumps</td><td>75</td></tr><tr><td>Dozers</td><td>75</td><td>Cranes</td><td>75</td></tr><tr><td>Tractors</td><td>75</td><td>Derricks Impact</td><td>75</td></tr><tr><td>Scrapers</td><td>80</td><td>Pile Drivers</td><td>95</td></tr><tr><td>Graders</td><td>75</td><td>Jack Hammers</td><td>75</td></tr><tr><td>Trucks</td><td>75</td><td>Rock Drills</td><td>80</td></tr><tr><td>Pavers, Stationary</td><td>80</td><td>Pneumatic Tools</td><td>80</td></tr><tr><td>Pumps</td><td>75</td><td>Saws</td><td>75</td></tr><tr><td>Generators</td><td>75</td><td>Vibrators</td><td>75</td></tr><tr><td>Compressors</td><td>75</td><td></td><td></td></tr></tbody></table> <p><i>Ambient Noise:</i></p> <p>Maximum noise levels (dB) for receiving noise area at property line shall be as follows:</p> <table><tbody><tr><td>Residential receiving area</td><td>Daytime: 65 dB Nighttime: 45 dB</td></tr><tr><td>Commercial/Industrial receiving area</td><td>Daytime: 67 dB Nighttime: 65 dB</td></tr></tbody></table> <p>In the event the existing local ambient noise level exceeds the maximum allowable receiving noise level (dB), the receiving noise level maximum for construction operations shall be adjusted as follows:</p> <p>Residential receiving area: Maximum 3 additional dB above the local ambient as measured at property line.</p> <p>Commercial/Industrial receiving area: Maximum 5 additional dB above the local ambient as measured at the property line.</p>	<u>Sound Level in dB(A)</u>	<u>Time Duration of Impact Noise</u>	70	More than 12 minutes in any hour	80	More than 3 minutes in any hour	<u>Earthmoving</u>	<u>dB(A)</u>	<u>Materials Handling</u>	<u>dB(A)</u>	Front Loaders	75	Concrete Mixers	75	Backhoes	75	Concrete Pumps	75	Dozers	75	Cranes	75	Tractors	75	Derricks Impact	75	Scrapers	80	Pile Drivers	95	Graders	75	Jack Hammers	75	Trucks	75	Rock Drills	80	Pavers, Stationary	80	Pneumatic Tools	80	Pumps	75	Saws	75	Generators	75	Vibrators	75	Compressors	75			Residential receiving area	Daytime: 65 dB Nighttime: 45 dB	Commercial/Industrial receiving area	Daytime: 67 dB Nighttime: 65 dB	Contractor
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Topic	Mitigation Measure	Responsibility
SOUNDSCAPES (cont.)		
MM-NOI-3 Field Quality Control	<p>Contractor shall assess potential effects of construction noise on adjacent neighbors or facility occupants in accordance with ASTM E1686 and as follows:</p> <p>Ambient noise measurement: Measure at the property line at a height of at least four (4) feet above the immediate surrounding surface. Average the ambient noise level over a period of at least 15 minutes.</p> <p>Ambient noise measurement at urban sites: Conduct during morning peak traffic hour between 7 A.M. and 9 A.M. and afternoon peak traffic hour between 4 P.M. and 6 P.M. In addition, conduct a 24-hour measurement at the proposed project site to document the noise pattern throughout the day. Adjust and weight for seasonal and climatic variations.</p> <p>Monitor noise produced from construction operations in accordance with ASTM E1780.</p>	Contractor
AIR QUALITY		
MM-AIR-1 Dust Abatement Program	<p>The Yosemite National Park and/or a contractor (as appropriate) shall prepare, implement, and comply with a dust abatement program during construction. Measures include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Water or apply soil stabilizers to disturbed areas; • When hauling dry materials, securely cover truck beds to prevent blowing dust or loss of debris; • Limit speeds to a maximum of 15 mph within construction areas. Slower speeds shall be maintained if necessary to reduce dust formation. • Minimize vegetation clearing; • Re-vegetate disturbed areas post construction; • At construction zone access points, prevent paved areas from accumulating mud, soils, and other organic materials. 	Yosemite National Park; Contractor
MM-AIR-2 Equipment Exhaust Controls	<p>The Yosemite National Park and/or a contractor (as appropriate) shall prepare, implement, and comply with equipment exhaust controls program during construction. Measures include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes. Clear signage shall be provided for construction workers at all access points; • Require that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM; • Require all contractors use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines; • Require all equipment operations to occur during daytime hours to minimize effects of local inversions; • Equipment operations shall be in accordance with all Federal and State air emission and performance laws and standards. • Vehicles or equipment with excessive emissions or discharging black smoke will be removed from operation immediately and may not be used until appropriate maintenance and repairs have corrected the emissions problem. 	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
VISITOR EXPERIENCE		
MM-VEX-1 Non-Hazardous Solid Waste Management Measures	<p>Waste, trash, and debris shall be controlled at all times and disposed in authorized containers in the Contractor's staging area.</p> <p>All sanitary waste (garbage) must be disposed of in approved, bear-proof disposal bins. Provide lockable, bear-proof dumpsters with lids for waste (garbage) storage. Lids shall be equipped with carabineers/heavy wire lid locks. Verify that dumpster lids are secure at close of work each day.</p> <p>Construction debris (rubbish) may be stored in unlidded dumpsters or construction debris truck/trailers and removed on a regular basis. Do not mingle sanitary or green waste with construction debris.</p> <p>All large, normally open top, waste bins or dumpsters shall be lidded and clearly marked "No Food or Trash".</p> <p>All construction personnel shall adhere to park regulations concerning food storage and refuse management.</p> <p>The Contractor shall designate an employee to police the work site daily for waste, wrappers, food packaging and the like. All waste shall be picked up and disposed of in lidded bear-proof dumpsters.</p> <p>Green waste shall be segregated from other non-green waste for processing at disposal site.</p> <p>Burying or burning of trash and debris on-site is not permitted. All un-used materials, trash, and debris shall be the property of the Contractor and shall be transported outside of the YNP boundary for disposal in accordance with law.</p> <p>Remove debris from permanently closed spaces prior to enclosing them.</p> <p>Properly secure trash during the workday and remove all trash from site at the end of each workday</p>	Yosemite National Park; Contractor
MM-VEX-2 Scenic Resource Protection	<p>Fence construction staging areas and construction activity areas to visually screen construction activity and materials.</p> <p>Consolidate construction equipment and materials to the staging areas at the end of each work day to limit the visual intrusion of construction equipment during nonwork hours.</p>	Yosemite National Park; Contractor
TRANSPORTATION		
MM-TRA-1 Traffic Control Plan	<p>Contractor shall prepare a Traffic Control Plan. This plan shall include but not be limited to the following:</p> <ul style="list-style-type: none"> • Maps showing how any detour routes will be signed and controlled. • Submission of specific street closure and detour plans for each segment of the project no less than 3 weeks prior to beginning construction on any segment. • Description of how Contractor shall provide for the protection of pedestrians and bicyclists, and safe vehicle passage through the use of signs and flagpersons. In addition, address how access for emergency vehicles, chain-up areas and snow plow turn around areas, police, rangers, fire and disaster units shall be maintained at all times. • Show how any detour routes will be signed and controlled. Furnish and install all signs. Provide flagpersons as required. • Revise and update the Traffic Control Plan to reflect changes in the project schedule or sequence of work, as required. 	Contractor

Topic	Mitigation Measure	Responsibility
TRANSPORTATION (cont.)		
MM-TRA-1 Traffic Control Plan (cont.)	<ul style="list-style-type: none"> Show measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud and dust transported onto paved public roads by vehicles or runoff. Revise and update specific Traffic Control Plan to reflect changes in the project schedule as required, or to accommodate the traffic control plans of other projects concurrently under construction in the project vicinity or the Yosemite Valley. <p>The YNP Project Manager will provide temporary traffic routing and control information from other on-going or planned projects that may affect the Contractor's Traffic Control Plan. The Contractor shall accommodate the information from these other traffic control plans as necessary and bring any conflicts to the attention of the COR immediately.</p>	
MM-TRA-2 Road Closure Traffic Control and Detour Plans contents.	<p>Prepare and submit specific Road Closure Traffic Control and Detour Plans for each area of the project not less than 3 weeks before beginning construction on any segment. Provide for the following:</p> <ul style="list-style-type: none"> Temporary closure of both lanes of traffic (subject to the requirements listed herein) shall be limited to periods of 20 minutes maximum. Requests for additional closure periods shall be submitted in writing to the Contracting Officer a minimum of 7 days prior to any planned road closures. Single lane traffic diversions shall comply with the detail in "Traffic Control System for Two Lane Conventional State Highways" in California Department of Transportation Standard Specifications, Section 02201, Paragraph 1.1 D. 	Contractor
MM-TRA-3 Traffic Control Devices	<p>Traffic control devices shall be provided in sufficient quantities and types as required to provide safe and adequate traffic control.</p> <p>During hours of darkness, approved lights and/or flares shall be included, in proper working order, to illuminate signs and hazards and alert approaching traffic.</p> <p>Barricades shall be furnished and maintained along all open trenches in contact with traffic.</p> <p>No work may begin on any day or at any time before traffic control devices have been placed, test driven and, if required, adjusted and revised.</p> <p>All traffic control devices shall be placed in accordance with the Manual of Traffic Controls and favorably reviewed Traffic Control Plan.</p> <p>Locations of devices shall be adjusted to suit the conditions and circumstances of each detour situation. In all cases, signs shall be placed to most effectively convey their messages to approaching traffic.</p> <p>Immediately after traffic control devices have been placed, the detour shall be test driven by the COR and Contractor's representative.</p> <p>Test drive shall include approach to the detour from each possible direction and traversing full length of each detour route.</p> <p>The Contractor shall adjust and revise all traffic control devices as determined to be required by test drive through and shall repeat test drive if determined necessary by the COR.</p> <p>The Contractor shall provide additional traffic control devices if required to maintain flow of traffic through construction operation.</p>	Contractor

Topic	Mitigation Measure	Responsibility
TRANSPORTATION (cont.)		
MM-TRA-3 Traffic Control Devices (cont.)	<p>The Contractor shall maintain all traffic control devices, at proper locations and in proper working order, at all times during construction operations and whenever a hazard resulting from Contractor's operations exists.</p> <p>The Contractor shall adjust and revise traffic control devices, placement, etc., to suit changing conditions around construction operations.</p> <p>Traffic control devices shall remain in place at all times required to alert approaching traffic of upcoming hazards.</p> <p>After hazard has been removed, all traffic control devices shall be removed. Signs shall be removed or their messages covered.</p>	
MM-TRA-4 Traffic Control Flaggers	<p>The Contractor shall employ flaggers:</p> <ul style="list-style-type: none"> As required for each specific detour. At all locations on a construction site where barricades and warning signs cannot control the moving traffic. <p>Where flaggers are required, they shall be logically placed in relation to the equipment or operation so as to give adequate warning and shall be placed approximately 100 feet ahead of impact point.</p>	Contractor
MM-TRA-4 Traffic Control Flaggers (cont.)	<p>A warning sign shall be placed ahead of the flagger reading: "Flagger Ahead." The distance between the sign and the flagger should be based on the average traffic speed, allowing approximately 50 feet for each 10 miles per hour.</p> <p>During hours of darkness, flagger stations shall be illuminated such that the flagger will be clearly visible to approaching traffic. Lights for illuminating the flagger station shall receive favorable review by the COR.</p> <p>The flagger shall be provided with and wear a red or orange warning garment when flagging. Flaggers shall be provided with approved hand signs and two way radios for communication.</p> <p>When flagging during hours of darkness, the flagger shall signal with a red light or flare and shall have a belt and suspender harness outside his garment fitted with reflectors or made from reflectorized cloth, unless the garment is well reflectorized in one of these ways.</p>	
MM-TRA-5 Traffic Control and Maintenance	<p>Traffic control and construction operations shall conform to the requirements of California Department of Transportation Standard Specifications, Section 12, except as modified herein.</p> <p>The Contractor shall provide, install, and maintain all necessary signs, lights, flares, barricades, markers, cones, flagmen, and other protective facilities and shall take all necessary precautions for the protection and for the convenience and safety of Park employees, public traffic, and Yosemite Concession Service operations. All such protective facilities and precautions to be taken shall conform to the U. S. Department of Transportation, Federal Highway Administration Manual on Uniform Traffic Control Devices for Streets and Highways, Part VI-Traffic Control for Highway Construction and Maintenance Operations, latest edition, and as amended.</p> <p>Provide for the protection of pedestrians, bicyclists, and equestrians at all times.</p>	Contractor

Topic	Mitigation Measure	Responsibility
TRANSPORTATION (cont.)		
MM-TRA-5 Traffic Control and Maintenance (cont.)	<p>Provide adequate, safe, non-skid bridging material over trenches, including shoring when trenching in pavement areas to handle all types of vehicular traffic.</p> <p>Whenever the Contractor's operations create a hazardous condition, the Contractor shall furnish flagpersons and guards as necessary to give adequate warning of any dangerous conditions to be encountered, and shall furnish, erect, and maintain such fences, barricades, lights, signs, and other devices as necessary to prevent accidents and avoid damage or injury to persons. Employ flagpersons to direct traffic as required to ensure safe vehicular travel. While on duty, flagpersons and guards shall be equipped with orange safety wearing apparel and a paddle-type signal, which shall be clean and in good repair.</p> <p>Provide two-way programmable radios to flagpersons if they are not in sight of each other at all times, or if necessary to ensure safe passage of vehicles.</p> <p>Provide, install, and maintain all signs, barricades, posts, guards and notices whenever a road or trail must be completely closed. Note that if posts are installed in ground, Contractor must contact USA-Dig and Archaeological Monitor for clearance to avoid culturally-sensitive areas. Remove or cover signs in conflict with traffic control requirements.</p> <p>Provide for passage and access of emergency vehicles, police, rangers, fire and disaster units at all times. Contractor assumes any and all liability for any damages resulting from failure to provide said access.</p> <p>Replace permanent pavement markings and traffic signs upon completion of each phase of work.</p> <p>At the end of each day's work or as soon as the work is completed remove all traffic control devices no longer needed to permit free and safe passage of traffic. Removal shall be in reverse order of installation. The traveled way shall not be obstructed with material, bedding, trench soil, nor with barricades or excavations. Excavations shall be backfilled, covered with steel traffic plate covers, or otherwise suitably protected so that traffic can pass unobstructed, as required, at night or over weekends and holidays. Temporary road repairs shall include road base and cold mix as specified to maintain a smooth, hard surface. The Contractor shall provide weekend and holiday road maintenance and repairs as necessary.</p> <p>All roads shall be kept open for public travel at all times unless specific written permission to close or restrict the use of a particular road is given by the COR. The Contractor is responsible for snow and ice control within the project limits utilizing NPS approved methods. Permission shall be granted upon approval of the specific Street Closure Traffic Control and Detour Plan for the intended closure. In the event that closing of a particular road is approved, it shall be the responsibility of the Contractor to notify the COR to reconfirm the hours and dates of the street closure and routes of detours at least 7 calendar days in advance of their occurrence, and again to notify the COR when the travel restriction is discontinued.</p> <p>No materials or equipment shall be stored where it will interfere with the free and safe passage of public traffic, and at the end of each day's work and at other times when construction operations are suspended for any reason, the Contractor shall remove all equipment and other obstructions from that portion of the roadway to be opened for use by public traffic. No material or other obstructions shall be placed within 20 feet of fire hydrants, which shall at all times be readily accessible to the fire department, nor within 10 feet of United States mailboxes. Off-loading of materials at staging area shall be coordinated with the Contracting Officer as necessary.</p>	

Topic	Mitigation Measure	Responsibility
TRANSPORTATION (cont.)		
MM-TRA-5 Traffic Control and Maintenance (cont.)	<p>Traffic delays due to Contractor's activities and associated traffic control shall not exceed 20 minutes, unless prior written approval has been received from the Contracting Officer.</p> <p>Alternative access for Park visitors to all major features and facilities in the Park shall be maintained using the existing road system.</p> <p>Full access shall be provided year-round to the public for all operating Park facilities (hotels, campgrounds, bike paths, trails, stores, restaurants, museums, restrooms, etc.), unless the project includes closing, rehabilitating or reconstructing those facilities, except trail closures for equipment and material transfer or transport described in Section 01110, Summary of Work.</p>	
HISTORIC STRUCTURES		
MM-HIST-1 Historic Road Character	To minimize the effect of new culvert construction on historic road character within the valley, the new walls should be stone (not veneer), constructed using compatible stone in a form and masonry pattern that is compatible with the nearby historic period masonry.	Yosemite National Park; Contractor
MM-HIST-2 Evaluation of The Ahwahnee Tennis Court	Prior to meadow restoration, the park shall, as per Section 106 of the NHPA, reevaluate the Ahwahnee tennis court for its continued integrity and eligibility as a contributor to the Ahwahnee Hotel Complex, and the extent to which the removal of the now defunct tennis court would impact the remaining contributors to the hotel complex. In the event that this resource is determined the maintain sufficient integrity to reflect its historic significance as a contributor, and that its loss would result in an adverse effect to the National Register hotel, in the event that avoidance is infeasible, the Park shall attempt resolution of adverse effects as per CFR § 800.6 establish appropriate mitigation of adverse effects through a Memorandum of Agreement between the Park and SHPO. Potential mitigation of impacts may include such actions as completing recordation through photographic and archival documentation, or providing for photographic interpretation of the site within the Ahwahnee Hotel.	Yosemite National Park; Contractor
MM-HIST-3 Evaluation of Revetment Removal Sites	Prior to any ground disturbing activities associated with revetment, further analysis and possible documentation at each site would be required in order to assess potential adverse effects to historic resources.	Yosemite National Park; Contractor
MM-HIST-4 Evaluation of Revetment Removal Sites	As per Section 106 of the NHPA, prior to construction or demolition activities, the Park shall survey the project area for potential impacts to historic buildings, structures, and districts within the project area of potential effect (APE). This will include a review of existing known historic resources for their continued integrity and eligibility for listing in the National Register, identification of currently unknown historic properties within the APE, determination of potential adverse effects and resolution of those effects in compliance with 36 CFR Part 800 – Protection of Historic Properties. Every effort shall be made to avoid adverse impacts. These efforts may include screening and/or sensitive design that would be compatible with cultural landscape resources.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
HISTORIC STRUCTURES (cont.)		
MM-HIST-5 Submittals	<p>Historic Preservation Treatment Program: The contractor shall submit a written plan for each phase or process including protection of surrounding materials during operations. Contractor shall describe in detail materials, methods, and equipment to be used for each phase of work.</p> <p>If alternative methods and materials to those indicated are proposed for any phase of work, contractor shall provide a written description including evidence of successful use on other, comparable projects, and program of testing to demonstrate effectiveness for use on this Project.</p> <p>The contractor shall document, through videotape or photograph and submit to the Contracting Officer prior to commencement of work, existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by historic treatment operations.</p>	Yosemite National Park; Contractor
MM-HIST-6 Removed and Salvaged Historic Materials:	<p>Contractor shall handle removed and salvaged historic materials in accordance with the following:</p> <ul style="list-style-type: none"> • Clean salvaged historic items. • Pack or crate items after cleaning. Identify contents of containers. • Store items in a secure area until delivery to the NPS. • Transport items to storage area approved by Contracting Officer. • Protect items from damage during transport and storage. • Do not dispose of items removed from existing construction without prior written consent of Contracting Officer. 	Yosemite National Park; Contractor
MM-HIST-7 Removed and Reinstalled Historic Materials	<p>Contractor shall handle removed and reinstalled historic materials in accordance with the following:</p> <ul style="list-style-type: none"> • Clean and repair historic items to functional condition adequate for intended reuse. • Pack or crate items after cleaning and repairing. Identify contents of containers. • Protect items from damage during transport and storage. • Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated. 	Yosemite National Park; Contractor
MM-HIST-8 Existing Historic Materials to Remain	The contractor shall protect construction indicated to remain against damage and soiling during historic treatment. When permitted by Contracting Officer, items may be removed to a suitable, protected storage location during historic treatment, and cleaned and reinstalled, as appropriate, to their original locations after historic treatment operations are complete.	Yosemite National Park; Contractor
MM-HIST-9 Storage and Protection	When removed from their existing location, contractor shall store historic materials within a weather-tight enclosure where they are protected from wetting by rain, snow, or ground water, and temperature variations. Contractor shall secure stored materials to ensure protection from theft.	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
HISTORIC STRUCTURES (cont.)		
MM-HIST-9 Storage and Protection (cont.)	<ul style="list-style-type: none"> Identify removed items with an inconspicuous mark indicating their original location. Develop a key plan when many similar items are scheduled for removal and reinstallation. 	
MM-HIST-10 Exterior Cleaning and Repairing	<p>Contractor shall conduct exterior cleaning and repair of historic structures in accordance with the following:</p> <ul style="list-style-type: none"> Proceed with the work only when forecasted weather conditions are favorable. Not attempt repairs during rainy or foggy weather. Not apply primer, paint, putty, or epoxy when the relative humidity is above 80 percent. Not remove exterior elements of structures when rain is forecast or in progress. Not perform exterior wet work when the air temperature is below 40 deg F (5 deg C). Not begin cleaning, patching, or repairing when there is any likelihood of frost or freezing. Not begin cleaning when either the air or the surface temperature is below 45 deg F (7 deg C) unless approved means are provided for maintaining a 45 deg F (7 deg C) temperature of the air and materials during, and for 48 hours subsequent to, cleaning. 	Yosemite National Park; Contractor
MM-HIST-11 General Historic Resource Protection	<p>Contractor shall undertake the following historic resource protection measures:</p> <ul style="list-style-type: none"> Comply with manufacturer's written instructions for precautions and effects of products and procedures on adjacent building materials, components, and vegetation. Ensure that supervisory personnel are present when work begins and during its progress. Protect existing materials during installation of temporary protections and construction. Not deface or remove existing materials. Obtain Contracting Officer approval prior to Attaching temporary protection to existing construction. Protect landscape work adjacent to or within work areas as follows: <ul style="list-style-type: none"> Provide barriers to protect tree trunks. Bind spreading shrubs. Use coverings that allow plants to breathe and remove coverings at the end of each day. Do not cover plant material with a waterproof membrane for more than 8 hours at a time. Set scaffolding and ladder legs away from plants. Prior to the start of work or any cleaning operations, test drains and other water removal systems to ensure that drains and systems are functioning properly. Notify Contracting Officer immediately of drains or systems that are stopped or blocked. Not begin Work of this Section until the drains are in working order. 	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
HISTORIC STRUCTURES (cont.)		
MM-HIST-11 General Historic Resource Protection (cont.)	<ul style="list-style-type: none"> • Provide a method to prevent solids including stone or mortar residue from entering the drains or drain lines. Clean out drains and drain lines that become blocked or filled by sand or any other solids because of work performed on corresponding project. • Protect storm drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass. 	
MM-HIST-12 Protection During Application of Chemicals	<p>Contractor shall undertake the following during the application of chemicals:</p> <ul style="list-style-type: none"> • Protect persons, motor vehicles, surrounding surfaces of building being restored, building site, plants, and surrounding buildings from harm or damage resulting from applications of chemical cleaners and paint removers. • Comply with requirements in Division 01 Section "Temporary Facilities and Controls." • Cover adjacent surfaces with materials that are proven to resist chemical cleaners selected for Project unless chemicals being used will not damage adjacent surfaces. Use covering materials that contain only waterproof, UV-resistant adhesives. Apply masking agents to comply with manufacturer's written instructions. Do not apply liquid masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining. • Do not clean surfaces during winds of sufficient force to spread cleaning solutions to unprotected surfaces. • Neutralize and collect alkaline and acid wastes and dispose of outside park boundaries. • Dispose of runoff from chemical operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors. 	Yosemite National Park; Contractor
MM-HIST-13 Protection During Use of Heat-Generating Equipment	<p>Contractor shall comply with the following procedures while performing work with heat-generating equipment, including welding, cutting, soldering, brazing, paint removal with heat, and other operations where open flames or implements utilizing heat are used:</p> <ul style="list-style-type: none"> • Obtain Contracting Officer's approval for operations involving use of open-flame or welding equipment. <ul style="list-style-type: none"> - Notification shall be given for each occurrence and location of work with heat-generating equipment. - Obtain the appropriate permit from the park as required. • As far as practical, use heat-generating equipment in shop areas or outside the building. • Before work with heat-generating equipment commences, furnish personnel to serve as a fire watch (or watches) for location(s) where work is to be performed. • Do not perform work with heat-generating equipment in or near rooms or in areas where flammable liquids or explosive vapors are present or thought to be present. Use a combustible gas indicator test to ensure that the area is safe. • Remove and keep the area free of combustibles, including, rubbish, paper, waste, etc., within area of operations. <ul style="list-style-type: none"> - If combustible material cannot be removed, provide fireproof blankets to cover such materials. 	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
HISTORIC STRUCTURES (cont.)		
MM-HIST-13 Protection During Use of Heat-Generating Equipment (cont.)	<ul style="list-style-type: none"> Where possible, furnish and use baffles of metal or gypsum board to prevent the spraying of sparks or hot slag into surrounding combustible material. Prevent the extension of sparks and particles of hot metal through open windows, doors, holes, and cracks in floors, walls, ceilings, roofs, and other openings. Inspect each location of the day's work not sooner than 30 minutes after completion of operations to detect hidden or smoldering fires and to ensure that proper housekeeping is maintained. Where sprinkler protection exists and is functional, maintain it without interruption while operations are being performed. If operations are performed close to automatic sprinkler heads, shield the individual heads temporarily with guards. 	
MM-HIST-14 Historic Preservation Treatment Procedures	<p>Contractor shall undertake the following historic preservation treatment procedures:</p> <ul style="list-style-type: none"> Retain as much existing material as possible; repair and consolidate rather than replace. Use additional material or structure to reinforce, strengthen, prop, tie, and support existing material or structure. Use reversible processes wherever possible. Use traditional replacement materials and techniques if possible. New work shall be distinguishable from old work and original materials and techniques. Record the existing condition before commencing with repair work; document with preconstruction photos, sketches and field notes. Record repair work during construction with periodic construction photos and daily inspection reporting. Photo documentation is specified in Division 01 Section "Photo Documentation For Historic Preservation Projects". Prohibit smoking by personnel performing work on or near historic structures. Notify Contracting Officer of visible changes in the integrity of material or components whether due to environmental causes including biological attack, UV degradation, freezing, or thawing; or due to structural defects including cracks, movement, or distortion. <ul style="list-style-type: none"> Do not proceed with the work in question until directed by Contracting Officer. Where Work requires existing features to be removed, cleaned, and reinstalled, perform these operations without damage to the material itself, to adjacent materials, or to the substrate. Identify new or replacement materials and features with inconspicuous, permanent marks to distinguish them from original materials. Record the legend of identification marks and the locations of these marks on Record Drawings. When cleaning, match samples of existing materials that have been cleaned and identified for acceptable cleaning levels. Avoid over-cleaning to prevent damage to existing materials during cleaning. Only the gentlest methods available should be attempted. Initiate cleaning using hand cleaning methods before introducing power cleaning methods and equipment. 	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
ARCHEOLOGICAL RESOURCES		
MM-AR-1 Archeological Resources	<p>Train all members of the restoration/construction teams in proper handling of inadvertent discovery of archaeological resources. Training would involve information regarding the types of archeological materials that are likely present in the specific project area, how to identify archeological materials, and the procedures for contacting the appropriate parties in the event that archeological materials are encountered during restoration/construction activities.</p> <p>All restoration/construction personnel would be required to participate in the training, and written guidelines would be prepared and distributed to aid in identification of archeological materials and to inform workers of the procedures to follow in case of a discovery or potential discovery. If buried archeological resources such as flaked stone or groundstone, historic debris, building foundations, midden soils or human bone are inadvertently discovered during ground-disturbing activities, work shall stop in that area and within a 100-foot radius of the find until a qualified archeologist can assess the significance of the find.</p> <p>Inadvertent discoveries would be treated in accordance with 36 CFR 800.13 (Protection of Historic Properties: Post-review discoveries). The archeological resource would be assessed for its eligibility for listing on the National Register in consultation with the SHPO and representatives of traditionally associated American Indian tribes and groups (if it is an American Indian archeological site), and a determination of the project effects on the site would be made. If the site would be adversely affected, a treatment plan would also be prepared as needed during the assessment of the site's significance. Assessment of inadvertent discoveries may require archeological excavations and/or archival research to determine resource significance. Treatment plans would fully evaluate avoidance, project redesign, and data recovery alternatives before outlining actions proposed to resolve adverse effects.</p> <p>If human skeletal remains are encountered, protocols under federal and state law would apply. All work shall stop in the vicinity of the discovery, and the find would be secured and protected in place. The appropriate county coroner (Mariposa or Merced) and Park Archeologist would both be immediately notified. If analyses determine that the remains are American Indian, and that no further coroner investigation of the cause of death is required, the coroner would then be required to contact the NAHC (pursuant to Section 7050.5[c] of the California Health and Safety Code) and the County Coordinator of Indian Affairs. The remains would also be treated in accordance with the Native American Graves Protection and Repatriation Regulations at 43 CFR 10.4 (Inadvertent discoveries).</p>	Yosemite National Park; Contractor
MM-AR-2 Ground Disturbance and Testing	<p>Management actions involving moderate to severe ground disturbance (trail reroutes; formalization of social trails; excavations for subsurface utilities; development of campgrounds; removal of abandoned infrastructure and/or facilities, construction of buildings, structures, parking lots, and roads; topographic recontouring; decompaction and plant salvage; and actions that may focus visitor use at areas with sensitive surface resources) within or adjacent to the boundaries of known archeological sites shall be preceded by intensive surface survey and/or controlled subsurface testing, as determined appropriate given past studies and findings.</p> <p>Initial limited testing shall be conducted in the area(s) proposed for ground disturbance, to first determine if the presence of site components can be verified. If so, the methods of achieving the proposed action may be modified and/or relocated, if possible. If effects could not be avoided, archeological treatment measures would be site-specific and contingent on previous studies' results and the level of work proposed.</p>	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
ARCHEOLOGICAL RESOURCES (cont.)		
MM-AR-3 Ground Disturbance and Monitoring	<p>A Government provided Archeological Monitor, and as necessary, Native American Monitor, will observe all ground-disturbing site work, including construction of temporary facilities at all culturally sensitive areas, from a safe location mutually agreed on by Contractor, Contracting Officer and Monitors. As new ground is broken, Monitors will examine excavated materials, using construction layout centerline and perimeter staking as a reference point to record locations of findings.</p> <p>Monitoring may also be included as part of a treatment plan for individual resources following initial testing as per MM-AR-2</p> <p>Prior to construction, mark with flagging all sensitive cultural resources to be protected within the project area identified per the requirements of the plans and specifications. Proper placement of flagging shall be verified by the Contracting Officer. Upon verification, erect necessary fencing to identify and protect cultural resources from disturbance.</p> <p>Do not begin ground-penetrating work such as excavation, trenching, drilling, or stump and root removal in culturally sensitive areas without the presence of Archeological Monitor, and if required, Native American Monitor.</p> <p>The archeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. If the monitor determines that any portion of the proposed action could have an adverse effect on the site, alternative methods of accomplishing the action shall be discussed with the restoration personnel. Restoration activities within site boundaries shall be conducted using manual tools rather than mechanized equipment whenever possible, and no stock animals or wheeled vehicles used for transport of workers and tools shall be allowed within 10 meters of the known site boundary.</p> <p>If Archeological Monitor or Native American Monitor discovers resources, immediate relocation of the work to a non-sensitive area may be required to allow Monitors to take soil samples and record resources. While Monitors are documenting resources in sensitive areas, Contractor shall relocate work to non-sensitive areas.</p> <p>If an Archeological Monitor requires access to a construction area the contractor shall furnish safe access, free from recognized hazards, to enable the monitor to complete his/her duties. This will commonly involve trench access when soil sampling is deemed necessary by the Archeologist.</p> <p>If resources are discovered while Monitors are absent, stop work immediately and report the discovery to the Contracting Officer.</p> <p>Stop Work: Cease all activities in the area of discovery and protect the resources discovered. In the event the discovery represents human remains or any objects subject to the Native American Graves Protection and Repatriation Act (NAGPRA), the NPS will follow procedures outlined in NAGPRA regulations. This will require a stoppage of work in the area of work for a minimum of 30 calendar days. In the event of an inadvertent discovery of Cultural Resources, be prepared to stop work and continue in other areas.</p> <p>The Contractor shall plan, schedule, and execute the work to prevent stoppages at one area from stopping all work at the construction site.</p>	Yosemite National Park; Contractor

Topic	Mitigation Measure	Responsibility
ARCHEOLOGICAL RESOURCES (cont.)		
MM-AR-4 Daily work schedule	<p>A Daily Work Schedule is required for all work occurring within archeologically sensitive areas. Include all work that is to occur within the area and key the schedule to the drawings to include the following:</p> <ol style="list-style-type: none"> 1. Starting and ending dates of ground-disturbing construction. 2. Locations of temporary facilities, such as barriers, field offices, staging areas, sanitary facilities, borrow pits, and haul and access roads. 3. Types of construction, such as clearing, topsoil stripping, structure or trench excavation, landscaping, and post construction clean-up. 4. Methods and equipment used for each type of construction. 5. Plan for relocating work in the event of temporary work stoppages at each archeologically sensitive area 6. A permit is required for any archeological investigations (e.g. excavation, shovel testing, coring, pedestrian survey, underwater archeology, rock art documentation, or other types of reconnaissance including the archaeological monitoring of construction) carried out on parklands by non-NPS personnel, unless carried out under a contract or a cooperative agreement specifically written for archeological investigations. Permits are issued under the Archaeological Resources Protection Act of 1979 (ARPA). The NPS does not issue a permit for archeological investigations carried out by NPS archeologists, or to archeologists working on NPS archeological projects under a contract or cooperative agreement. 7. Applicants should submit a Permit Application (DI Form 1926 (Rev Sept 2004) OMB No. 1024-0037, approved through 1/31/2008 – the Permit Application form is available in pdf format) to the manager of the park in which they propose to work; or to the regional director, with a copy to the park manager. 	Yosemite National Park; Contractor