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Mitigation Monitoring and Reporting Program for the Integrated Resources Plan

Prepared for
City of Los Angeles
Bureau of Sanitation
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Integrated Resources Plan Mitigation Monitoring and Reporting Program

1.0 Introduction

The California Environmental Quality Act (CEQA), Section 21081.6, requires public agencies to adopt a reporting and monitoring program for the changes to the project that have been adopted to mitigate or avoid significant effects on the environment. CEQA requires this program to be adopted by the public agency at the time findings are made for the project. This Mitigation Monitoring and Reporting Program (MMRP) contains the elements required by CEQA for the *City of Los Angeles Integrated Resources Plan Facilities Plan* (City of Los Angeles et al., 2004). This MMRP is organized in the following way:

- Section 1. Introduction. This presents the CEQA requirement for preparing this MMRP and an outline of the MMRP.
- Section 2. Summary of Recommended Project. This provides an overview of the components of the recommended project. Including wastewater, recycled water, and runoff components.
- Section 3. Mitigation Measures. This section lists the mitigation measures discussed in detail in the Final Environmental Impact Report.
- Section 4. Additional Voluntary Measures. In addition to the mitigation measures required to minimize project impacts, additional voluntary measures are also included to be responsive to public comments on the project, specifically the recommended alignment for the Glendale Burbank Interceptor Sewer. This section presents these additional measures that will be implemented by the City of Los Angeles.

2.0 Summary of Staff Recommended Alternative

The staff Recommended Alternative, which is Alternative 4 as described in detail in the *City of Los Angeles Integrated Resources Plan Final Environment Impact Report* (Final EIR), for which this MMRP has been developed, is composed of the components described below. Program-level components would be subject to further environmental review.

1. Wastewater Components (project-level, except Valley Spring Lane Interceptor Sewer [VSLIS])
 - a. Hyperion Process Upgrades. The upgrades include up to 12 new digesters, the new truck-loading facility, and up to two new modules of secondary clarifiers.
 - b. Tillman Expansion to 100 mgd. The expansion includes new primary and secondary clarifiers, advanced treatment processes, and new disinfection processes.
 - c. Tillman Storage. This includes the new storage tank beneath the existing Cricket Field.



- d. LAG Storage and Advanced Treatment. This includes a 5-MG wastewater storage tank, a 5-MG recycled water storage tank, and the option to add advanced treatment at LAG.
 - e. Recommended NEIS II Alignment. The staff recommended NEIS II alignment would be constructed from the Division Street, Griffith Park, and Pecan Grove shaft sites. Air treatment facilities (ATFs) would be operated at the Griffith Park and Pecan Grove sites.
 - f. Recommended GBIS Alignment. The staff recommended GBIS Alignment would be constructed from the Pecan Grove, Travel Town, Barham, and Caltrans North Hollywood Maintenance Yard shaft sites. ATFs would be operated at the Pecan Grove and Caltrans sites.
 - g. VSLIS (program-level). The alignment of this component will be determined at a future time.
2. Recycled Water Components (program-level)
 - a. Nonpotable Reuse. This component would expand the recycled water distribution system to nonpotable users.
 - b. Groundwater Recharge. This component would use recycled water from advanced treatment for groundwater replenishment, if the City decides to implement such a program.
3. Runoff Components (program-level)
 - a. Low-Flow Diversions. Low-flow diversions in the coastal areas would reroute polluted runoff to the sewer system.
 - b. Smart Irrigation. These devices would be installed Citywide to reduce over-watering.
 - c. Dry Weather Runoff Management: Urban Runoff Plants (URPs). URPs would be installed along Compton Creek and Ballona Creek to treat dry weather runoff and produce recycled water. URPs also could be used to treat urban runoff in inland areas for beneficial reuse.
 - d. Dry Weather Runoff Management: Treatment Wetlands. Treatment wetlands also could be used to treat urban runoff in inland areas for beneficial reuse.
 - e. Wet Weather Runoff Management: Onsite Management. Under this component, wet weather runoff would be captured at a neighborhood level and retained for onsite percolation at schools, government facilities, parks and open spaces, vacant lots, and unused alleys. In addition, cisterns would be used to capture and store wet weather runoff onsite at schools and government facilities.
 - f. Wet Weather Runoff Management: URPs. Under this component, if nonstructural methods to management wet weather runoff as described under “item e” above or as otherwise implemented to meet total maximum daily load (TMDL) requirements are not effective, URPs could be used in coastal areas to capture and treat wet weather runoff.

- g. Wet Weather Runoff Management: Nonurban Regional Recharge. This component would construct a pipeline that routes nonurban runoff from the northwestern areas of the San Fernando Valley to the spreading grounds in the eastern area of the San Fernando Valley. The runoff would be used for groundwater replenishment.

3.0 Mitigation Measures

The mitigation measures described in the following pages are summarized from the Final EIR (City of Los Angeles et al., 2006). Mitigation measures are provided for the Design, Construction, and Operational phases of the project. In developing specifications for implementing the mitigation measures, the reader is directed to the Final EIR. The mitigation measures in this MMRP should be considered in conjunction with the text in the body of the Final EIR. Mitigation measures apply to components of the Recommended Alternative, as indicated below.

The MMRP provides: (1) descriptions of the proposed mitigation measures, (2) the party who would be responsible for implementing the mitigation measure, (3) monitoring phase or phases, (4) the method or means of implementing the mitigation measure, (5) the party who would be responsible for enforcing the mitigation and for ensuring that the monitoring action has been undertaken, and (6) the party responsible for monitoring compliance with the measure.

The mechanisms that will be used to verify the implementation of the mitigation measures include design drawings, construction documents intended for use by construction contractors and construction managers, field inspections, field reports, and other periodic or special reports. A recordkeeping system will be developed; and a repository will be identified for the various forms, reports, documents, and drawings that will be prepared during project design and construction. These records will be made available for inspection by the public.

3.1 Aesthetics Mitigation

The following measures will be implemented for all applicable components of the Recommended Alternative.

AES-MM-1: Construction of shaft sites in recreational and residential areas will be screened in a manner that minimizes aesthetic incompatibility with the surrounding uses.	
Implementation Responsibility:	City Design Staff, Department of Recreation and Parks if applicable, Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

AES-MM-3: Aboveground structures (i.e., storage tanks and ATFs) will be screened with architectural treatment and landscaping.	
Implementation Responsibility:	City Design Staff (Bureau of Engineering or Los Angeles Department of Water and Power), Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

AES-MM-4: To the extent feasible, permanent structures (i.e., pump stations, storage tanks, and URPs) will be designed and located in a manner that does not remove, alter, or destroy an existing valued natural or urban feature that contributes to the valued aesthetic character of an area; or so that key views are not blocked.	
Implementation Responsibility:	City Design Staff (BOE or LADWP), Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

AES-MM-5: To the maximum extent feasible, all pump stations and storage tanks will be constructed belowground. However, in the event that portions or all of storage tanks are located aboveground, the tanks will be surfaced with nonglare material and painted an appropriate color to blend with the surrounding landscape. Landscaping surrounding the tanks shall be provided to minimize visual impacts of the tanks.	
Implementation Responsibility:	City Design Staff (BOE or DWP), Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

AES-MM-6: URPs will be designed to minimize the contrast of the plant with the surrounding aesthetic character and land uses.	
Implementation Responsibility:	City Design Staff Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

AES-MM-7: Construction sites in residential areas shall be screened from view to minimize light intrusion at the boundary of the adjacent light-sensitive areas. In addition, other measures to minimize light intrusion includes directing lighting down onto the construction area, avoiding use of outwardly directed spotlights (including the headlights of equipment where feasible), and use of shielding on lights to isolate the illuminated area.	
Implementation Responsibility:	City Design Staff (BOE or DWP), Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management



The following measures will be implemented for all applicable wastewater components of the Recommended Alternative.

AES-MM-2: If ATFs are in recreational facilities, they will be located in a manner that least affects the adjacent recreational uses.	
Implementation Responsibility:	City Design Staff, Department of Recreation and Parks, Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

AES-MM-11: Prior to the operation of the proposed improvements at Hyperion, a lighting control plan shall be required for each of the new facilities. The lighting control plan would include, as applicable, but not limited to, measures that minimize light intrusion (such as installing the lowest illumination feasible, using soft yellow/orange/pink lighting elements, and low-pressure sodium elements), and directing lighting away from adjacent light-sensitive areas and/or adding elements to shield adjacent light-sensitive areas from spillover lighting (elements such as baffles, shades, and hoods that would direct lighting downward).	
Implementation Responsibility:	City Design Staff, Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

3.2 Air Quality Mitigation

The following measures will be implemented for all applicable components of the Recommended Alternative.

AQ-MM-1: Emulsified diesel fuel shall be used for all construction equipment.	
Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

AQ-MM-2: Diesel particulate filters shall be used for all construction equipment.	
Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

The following measures will be implemented for all applicable wastewater components of the Recommended Alternative.

AQ-MM-3: Schedule construction activities such that odorous sources are uncovered or unsealed for as short a time as possible.	
Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

AQ-MM-4: Schedule construction activities such that odorous sources are uncovered or unsealed during the time of day when odors are observed to be at a minimum (generally during low-flow hours).

Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

AQ-MM-5: Implement a multiphased odor mitigation program at Tillman and LAG that will be based on an odor study at each plant. In the first phase, odor control studies for Tillman and LAG will be prepared to identify the specific process sources of odors that are causing odor complaints, evaluate whether the odor sources are candidates for odor control based on operational modifications and/or facilities-based modifications, identify specific operational changes that can be implemented to reduce or minimize the process odors, and identify specific capital improvement projects that can reduce or minimize process odors. In the second phase, the identified operational measures will be implemented. Such measures could include, but not be limited to, chemical addition. In the third phase, capital facilities would be implemented and could include, but not limited to, improved primary tank covers, aeration basin covers, and the installation of additional odor-scrubbing systems.

Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

AQ-MM-6: For Hyperion, implement the following odor control projects:

Short-Term Odor Projects

- Headworks Facility: Make temporary repairs to the piping and grit removal systems.
- Grit Pad Door: Install a roll-up door on the Grit Pad storage unit to minimize odors releases.
- Primary Settling Tanks: Rehabilitate two sets (Batteries B and D) of tanks and provide aluminum covers.
- Intermediate Pump Station (IPS): Isolate each working bay during replacement of the screw pumps.
- LoCAT Facility (Desulfurization facility): Replace the carbon beds to minimize hydrogen sulfide odors.

Long-Term Odor Projects

- Headworks Facility: Redesign the Headworks Facility and incorporate new odor control and piping systems.
- Primary Settling Tanks: Rehabilitate the last set of primary tanks (Battery C) with new covers and install new air scrubbers.
- Intermediate Pump Station: Design and implement a new odor control stem for the IPS.

Truck-Loading Facility: Design and implement a new truck-loading facility that would combine solids handling processes and would use best available odor control technology.

Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

AQ-MM-7: Locate ATF exhaust stacks a minimum of 100 feet from the nearest sensitive receptor, if applicable.

Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management



AQ-MM-8: Set a stack exhaust concentration performance standard limit equal to or less than 0.5 ppm, or at a level required by SCAQMD, if applicable.

Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

3.3 Biological Resources Mitigation

The following measures will be implemented for all applicable components of the Recommended Alternative.

BIO-MM-1: If habitat suitable for raptor nesting or other native bird species occurs on any Proposed Project site, a survey for active raptor nests will occur 30 days prior to commencement of any construction activities during the raptor nesting season, February 1 to June 30. In addition, within 7 days prior to any construction activities during the general nesting season for birds, March 15 to August 15, a survey of nesting birds will be conducted. Any active raptor or other bird nests observed during the survey will be mapped on construction plans. Restrictions on construction activities will be implemented in the vicinity of the nest until the nest is no longer active as determined by a qualified biologist. Typically, a 300- to 500-foot buffer zone (or as determined appropriate by a qualified biologist) is designated around a nest to allow construction to proceed while minimizing disturbance to the active nest. Once the nest is no longer active and the young have dispersed, construction can proceed within the buffer zone.

Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

BIO-MM-3: During design of program-level components, if the facilities would be located on a nonurban, undeveloped, or open space area, or would otherwise have the potential to affect biological resources, a qualified biologist will perform a site survey to determine the potential of the component to affect biological resources (special-status plants, wildlife, and habitats, wetlands, and trees protected under local ordinances and policies). If biological resources are present, alternative site locations or design modifications that would avoid impacts to the biological resources would be implemented. If avoidance cannot be implemented, consultation with agencies having jurisdiction over identified resources would occur to identify case-by-case and/or species-specific mitigation.

Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

BIO-MM-4: To reduce potential secondary impacts to the extent or quality of wetland and or riparian habitat in surface waters due to implementation of Dry Weather Runoff – Low-Flow Diversion (Coastal and Inland) and Dry Weather Runoff – Urban Runoff Plants or Treatment Wetlands, a survey would be conducted during the design phase to determine if wetlands exist downstream of the diversion point and upstream of the effluent discharge point. If wetlands are present, the diversion point would be redesigned to occur downstream of the wetlands, or a new location would be selected for the URP, treatment wetlands, or low-flow diversion.

Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

The following measures will be implemented for all applicable wastewater components of the Recommended Alternative.

BIO-MM-2: To reduce potential impacts to special-status plant species with potential to occur at the Barham Shaft Site, focused protocol surveys for special-status plant species will be conducted during the appropriate period for each species. If no special-status plant species is found at the Barham Shaft Site, no further mitigation would be required.

In the event focused surveys locate a regionally important population of special-status plants on the Proposed Project site, mitigation could be required. Mitigation for special-status plants is determined through coordination and negotiation between the appropriate resource agencies and the Proposed Project proponent. Determination of appropriate mitigation is determined on a case-by-case basis, considering factors such as quality of habitat on the project site, size of plant populations located, and status of the species. Mitigation could include avoidance of the plants to the greatest extent possible, relocation of specimens with monitoring/collection of seeds, or purchase of offsite habitat areas containing the observed special-status plant species.

Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

BIO-MM-5: Prior to construction, a qualified biologist will review the City of Los Angeles tree ordinances. The qualified biologist then will identify and quantify the protected trees that need to be removed at the Riverside East Shaft Site, Barham Shaft Site, and/or other component locations, as applicable. Any replacement requirements listed in the City of Los Angeles ordinance with regard to protected oak trees will be obeyed.

Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management



3.4 Cultural Resources Mitigation

The following measures will be implemented for all applicable components of the Recommended Alternative.

<p>CUL-MM-1 (paleo): Paleontological Resources Awareness materials for the IRP will be developed by a qualified paleontologist and provided to staff on projects, as applicable. Paleontological Resources Awareness materials will include, but will not be limited to, the following:</p> <ul style="list-style-type: none"> ■ Preconstruction orientation for construction site and management personnel to educate staff on the sensitivity of paleontological resources, including resource types previously encountered and geologic units in and depths at which previous paleontological resources have been located in the vicinity of specific components ■ Procedures to follow in the event resources are identified during ground-disturbing activities 	
Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

<p>CUL-MM-2 (paleo): All excavations in geologic formations with high potential to contain paleontological resources will be monitored for paleontological resources by a qualified paleontologist. All geologic formations, except surficial Quaternary or younger alluvium and Recent dune sand, have high potential to contain paleontological resources.</p> <p>The qualified paleontologic monitor will be present during excavation of undisturbed soils and will use professional judgment to determine actual sediment conditions at the site. Monitoring will be eliminated if a potentially fossiliferous geologic unit is not present in the subsurface at the project site, or, if present, is determined by the qualified paleontologist upon exposure and examination to have low potential to contain fossils.</p>	
Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

<p>CUL-MM-3 (<i>paleo</i>): The paleontologic monitor will be equipped to salvage fossils of regional or statewide significance at the time that they are unearthed to avoid construction delays. Monitors will be empowered to halt temporarily or divert construction activities to allow removal of abundant or large specimens of regional or statewide significance.</p> <p>Recovery of discovered resources will be undertaken by a qualified paleontologist, and construction in the vicinity of that discovery will resume once those inadvertently discovered resources have been recovered properly. Staff will continue construction work in the area only after directed by the qualified paleontologist.</p> <p>Recovered paleontological resources specimens will be prepared to a point of identification of regional or statewide significance.</p>	
Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

<p>CUL-MM-4 (<i>paleo</i>): Recovered paleontological resources specimens of regional and statewide significance will be curated to a qualified museum repository with permanent retrievable storage (such as the LACM).</p> <p>To the extent possible, all paleontological resources of regional or statewide significance recovered during implementation of the IRP Facilities Plan will be curated at the same location and will be made available for educational study by qualified individuals.</p>	
Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

<p>CUL-MM-5 (<i>paleo</i>): In the event any paleontological resources are uncovered during ground-disturbing activities, a Report of Findings will be prepared with an appended itemized inventory of the recovered specimens. Individual Reports of Finding, inventories, and museum curation agreements will be prepared upon completion of the construction of each component and copies will be submitted to the project file and LACM.</p>	
Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management



CUL-MM-6: (archaeo): A Cultural Resources Monitoring Plan for the IRP will be developed by a Registered Professional Archaeologist in coordination with the State Historic Preservation Office (SHPO), if Section 106 applies to implementation of a specific Alternative component. The Plan will be provided to staff, as applicable.

The Cultural Resources Monitoring Plan for the IRP will include, but not be limited to, the following:

- Preconstruction orientation for construction site and management personnel to educate staff on the sensitivity of archaeological resources, traditional cultural properties, and human remains.
- Field procedures, including procedures to follow in the event resources are identified during ground-disturbing activities
- Depths at which previous archaeological resources have been located in the vicinity of specific components

A qualified cultural resources specialist will identify the location (surface extent and depth) of Holocene deposits that have the potential to contain archaeological deposits; the locations that contain Holocene deposits will be included in the Plan. The Plan also will identify areas (surface extent and depth) where Holocene deposits do not exist or are known to be highly disturbed.

Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

CUL-MM-7: (archaeo): All ground-disturbing activities, using surface construction methods, in Holocene sediments with high potential to contain archaeological resources (as defined in Section 3.7.3.1, Methodology) will be monitored by a qualified archaeologist. Side walls and spoils will be inspected, as safety conditions permit, to identify any artifacts or cultural features that could be exposed during construction.

The archaeological monitor will be empowered to divert construction activities if any cultural resources are encountered, and a qualified archaeologist will evaluate the eligibility of the resources for listing on the NRHP or CRHR, as applicable. Staff will continue construction work in the area only after directed by the qualified archaeologist.

Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management



CUL-MM-8: (archaeo): Prior to construction, a Discovery and Treatment Plan for the IRP will be developed by a qualified archaeologist. The Discovery and Treatment Plan will meet NRHP and CRHR standards and will be submitted to the State Board if the implemented component is funded through the State Revolving Fund.

The Discovery and Treatment Plan will describe in detail procedures to follow upon discovery of prehistoric and historic resources, resources determined not to be eligible for listing on the NRHP and CRHR, resources determined to be eligible for listing on the NRHP and CRHR, and human remains. Additionally, the Plan will describe requirements for recording, reporting, curating, and coordinating with culturally affiliated Native Americans.

Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

CUL-MM-9: (archaeo): In the event any archaeological resources are uncovered during ground-disturbing activities, a Report of Findings will be prepared with an appended itemized inventory of the recovered specimens. Individual Reports of Findings, inventories, and museum curation agreements will be prepared upon completion of the construction of each component, and copies will be submitted to the Project file and to appropriate agencies. The report, inventory, and museum curation agreement, if applicable, would signify completion of the program to mitigate impacts to archaeological resources.

Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

CUL-MM-10: (archaeo): Program-level components will require project-level studies, including literature searches, to determine the cultural resources sensitivity of the component location prior to initiation of site development and/or construction. These studies will include recommendations for evaluation, treatment, and recovery of cultural resources determined to be eligible for listing in the NRHP and CRHR. A report will be prepared to document the results of the studies, will be reviewed and approved by the City, and will satisfy State Board SRF requirements where they apply.

Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

CUL-MM-11: (archaeo): Once the location and method of construction are determined for each program-level component, further coordination with Native American individuals and tribes will be conducted to document the presence or absence of traditional cultural properties within the specific areas of potential effects (APEs) of the program-level components.

Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

CUL-MM-12: (archaeo): In the event of an accidental discovery of human remains in a location other than a dedicated cemetery, the steps and procedures specific in Health and Safety Code 7050.5, State CEQA Guidelines 15064.5(3), and Public Resources Code 5097.98 find must be implemented.

Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

3.5 Geology Mitigation

The following measures will be implemented for all applicable wastewater components of the Recommended Alternative.

GEO-MM-1: For the potential of sewer pipe breakage at the Hollywood-Raymond fault crossing for NEIS - II, the City of Los Angeles will reroute flows to the maximum extent, and then repair the break as soon as possible. The City of Los Angeles also will conduct a detailed subsurface investigation for NEIS II, including drilling borings and soil sample collection, to more accurately locate the trace of the Hollywood-Raymond fault and to analyze soil/bedrock conditions in the area of where the pipelines cross the faults.

The geotechnical investigation will identify design recommendations and options for addressing the fault crossings, including the following:

- Consider the recent study by Jacobs Associates (Jacobs) of NEIS II design alternatives at the Hollywood-Raymond fault crossing that give consideration to several construction design features to mitigate and/or minimize the potential damage to the pipe in the event the fault moves (Jacobs, 2005). Two linings could be used for the pipe along with short pipe segments to spread the offset over a larger number of joints. Another alternative would be to use a welded-steel lining and cement grout to enhance the structural capacity and ductility.
- Consider a vault reach, where an enlarged cavern would be constructed to allow the carrier pipe to deform across the zone of offset in a controlled manner. With the addition of maintenance shafts, this vault could allow for inspection and repair of the pipeline at the fault crossing. Vault construction is dependent on the soil/bedrock conditions to be determined in future investigations.
- Consider a design option that provides a larger tunnel and lining diameter for the reach that crosses the fault zone. This option is advantageous if the location of the fault offset is uncertain, and/or if ground conditions are not favorable for vault construction.

Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management



GEO-MM-2: To control settlement, implement the following:

- Require the tunnel contractor to limit surface settlement to 0.75-inch (19 mm) along the tunnel alignment as a performance standard, but establish a goal to limit surface settlement to 0.50-inch (12.7 mm) or less. Require additional preconstruction geotechnical studies to define the nature of the soils and to refine the means of achieving the performance specification.
- Require the use of compaction grouting or other method to fill voids where appropriate and offset potential settlement when excess material has been removed during excavation.
- Grout the tunnel in advance to provide adequate soil support and minimize settlement as geotechnical conditions require. This will be required in cases where major structures need more stringent settlement criteria than the 0.50-inch (12.7 mm) specified earlier.
- Monitor settlement along the Project alignment using a series of settlement monuments and other measuring devices above the route of the selected alignment. Leveling surveys will be conducted before tunneling reaches a given area when the heading is in the immediate vicinity, to monitor possible ground movements.
- Conduct a preconstruction survey of buildings, including dwellings, to establish a baseline against which potential construction-induced damage would be measured.
- Describe and define in the contract specifications for tunnel construction the monitoring requirements for the tunneling operation with regard to performance criteria. During the tunneling operation, the soils encountered will be monitored relative to the anticipated soil conditions as described in the Geotechnical Baseline Report.
- Specify the capability of the earth pressure balance or slurry shield tunneling machines to process large cobbles and boulders to minimize settlement. Tunnel machine selection and method of operation will be based on anticipated ground conditions.
- Consult and coordinate with the USACE prior to the start of construction regarding construction methods and performance criteria in the Los Angeles River crossings.

Areas of potential ground loss from tunnel operations for NEIS II, GBIS, and VSLIS will be identified during and immediately after tunneling, and mitigation measures will be implemented. However, settlement associated with the tunneling operation could occur within days and months of construction.

Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

3.6 Hazards and Hazardous Materials Mitigation

The following measure will be implemented for all applicable components of the Recommended Alternative.

HAZ-MM-1: To minimize vector issues, surface treatment wetlands will be constructed and operated so as not to cause vector problems (public nuisances), particularly mosquitoes, as defined in the State Health and Safety Code. Such measures could include, but would not be limited to, subsurface treatment wetlands or preparation and implementation of a vector control plan (in coordination with the Vector Control District).

Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management



3.7 Hydrology and Water Quality Mitigation

The following measures will be implemented for all applicable wastewater components of the Recommended Alternative.

WQ-MM-1: Prior to installing advanced treatment facilities at Tillman, additional studies will be completed to determine if brine from the advanced treatment process will be compatible with the treatment processes and to establish operating parameters for Tillman to ensure that brine will not cause the water quality violations at the point of discharge from Hyperion and LAG.	
Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

WQ-MM-2: Pipelines for NEIS II, GBIS, and VSLIS will be designed such that fault crossings would withstand or accommodate fault ruptures likely to occur, based on the applicable earthquake data. In addition, after each major earthquake, NEIS II, GBIS, and VSLIS will be inspected by closed-circuit television or other method. Any identified breaks in the interceptors will be repaired.	
Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

3.8 Noise and Vibration Mitigation

The following measures will be implemented for all applicable components of the Recommended Alternative.

NV-MM-1: Construction contracts will specify that all construction equipment will be equipped with mufflers and other suitable noise attenuation devices.	
Implementation Responsibility:	City Design Staff (BOE or DWP) – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration – DWP Staff
Monitoring Responsibility:	BOE Management – Construction Management – DWP Management

NV-MM-2: If construction sites have a line-of-sight to sensitive receptors, temporary noise curtains will be constructed along the perimeter of the construction sites where the line-of-sight would occur. The height and placement of the noise curtains will break the line-of-sight from any sensitive receptors. The noise curtain, in conjunction with other mitigation measures, will provide sufficient noise attenuation to prevent increases in ambient noise levels at adjacent sensitive receptors by 5 decibels or more. Additionally, noise curtains will be installed at all construction sites within 500 feet of a school.	
Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

NV-MM-3: Prior to the start of construction activities, the contractor will submit a comprehensive noise control plan for review and approval of the project engineer. The noise control plan will identify best possible construction-staging locations and noise-monitoring procedures, evaluate anticipated construction noise impacts and mitigation measures, and establish reporting requirements and complaint response procedures. For nighttime construction activities, the Noise Control Plan will impose restrictions on the use of equipment with backup alarms or any other devices that typically emit banging, clanging, buzzing, or other annoying noises.

Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

NV-MM-4: All residential units located within 2,000 feet of construction of shaft sites will be sent a notice regarding the construction schedule of the Proposed Project. A sign, legible at a distance of 50 feet also will be posted at the construction shaft sites. All notices and the signs will indicate the dates and duration of construction activities, and will provide a telephone number where residents can inquire about the construction process and register complaints. All notices will be posted at least 10 days prior to the start of shaft site construction.

Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

NV-MM-6: An acoustical analysis will be conducted to determine the noise impact that dry and wet weather runoff URPs or air treatment facilities would have on nearby sensitive receptors. At a minimum, location and design of the URP or air treatment facility adjacent to noise-sensitive receptors will be such that the noisiest equipment will be located as far from the receptor as feasible. If necessary, noise reduction requirements (i.e., sound walls) will be provided to ensure that ambient noise levels at nearby sensitive receptors will not increase incrementally by 3 decibels or more (CNEL).

Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

The following measures will be implemented for all applicable wastewater components of the Recommended Alternative.

NV-MM-5: The City of Los Angeles will establish a community liaison program designed to provide for two-way communication between the community and the City of Los Angeles to resolve noise problems that might arise during project construction. The community liaison program will consist of:

- A 24-hour hotline to enable residents and community members to report noise problems. The hotline will be staffed and operated by persons authorized to coordinate with the construction contractor, the construction manager, the inspector, and the design group to resolve identified issues. A database will be developed to log complaints and to document the status of the reported incidents and activities/actions undertaken to address the complaints.
- The distribution of the construction schedule, and any modifications to it thereafter, to residents, property owners, and local businesses.
- Regular community meetings to report on the progress of the project to residents, property owners, and local businesses.

Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management



NV-MM-7: Similar to the Noise Control Plan, the contractor will prepare a vibration control plan to ensure that groundborne vibration does not exceed the applicable levels at locations along the NEIS II and GBIS alignments. This Vibration Control Plan will be based on making sure that construction activities (tunneling and tunnel lining) do not exceed “threshold” or “limiting” levels for groundborne noise and vibration. The threshold limits will minimize intrusion and annoyance from tunneling and will apply to sensitive receptors along the tunnel alignments. The threshold for nighttime construction is same as the equivalent groundborne noise impact threshold used in the impact analysis and the daytime threshold is the same as the groundborne vibration impact threshold uses in the impact analysis. The limiting values will help prevent minor cosmetic damage and will apply to all buildings. Table 3.13-37 summarizes the threshold and limiting values recommended for the NEIS II, GBIS, and VSLIS alignments. The levels will apply at a distance of 3 to 6 feet from the structure closest to the construction activity.

Operation	Threshold		Limiting (PPV)
	PPV	RMS ¹	
Daytime	0.025 in/sec	75 VdB	0.2 in/sec
Nighttime	0.01 in/sec	66 VdB ²	
Notes: ¹ Root mean squared velocity or noise level in decibels relative to 1 μin/sec (VdB). ² This is equivalent to a groundborne noise level of 45 dBA. Source: Los Angeles, 2000			

This plan will be reviewed and approved by the City of Los Angeles prior to construction. Possible methods to achieve these levels are:

- Use rubber pads or other vibration-insulating material beneath rails to absorb and minimize vibration before it is transmitted into the soil and propagated to the sensitive receptors.
- Use new or like-new rail and muck cars as well as require routine inspections and maintenance of the mucking equipment.
- Locate track crossovers in areas not directly beneath or close to residences or other sensitive uses.

Modify and/or reschedule construction activities if threshold limits are reached in vibration monitoring zones.

Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management



NV-MM-8: The City of Los Angeles will conduct a preconstruction survey to document the condition of buildings (existence of cracks and other damage) within the estimated impact zone distances prior to construction of the NEIS II, GBIS, and VSLIS alignments. The impact distances are 85 feet from the center of the tunnel alignment for NEIS II and 100 feet from the center of the GBIS alignment. If the VSLIS alignment is constructed by tunneling, a groundborne vibration study will be conducted prior to construction of the VSLIS alignment to determine the impact distance. The study will be used by the City of Los Angeles to conduct the preconstruction survey.

Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management



NV-MM-9: The City of Los Angeles will monitor vibration at various structures located within 85 feet of the selected alignment for NEIS II and 100 feet for GBIS to check whether levels exceed either the threshold or limiting vibration values. If the VSLIS alignment is constructed by tunneling, a groundborne vibration study will be conducted prior to construction of the VSLIS alignment to determine the impact distance. The study will be used by the City of Los Angeles to monitor vibration at various structures located within this impact distance.

As part of this monitoring effort, a community information program also will be developed. This program will be implemented during the construction process and will include methods to inform residents about potentially intrusive groundborne noise and vibration and the expected duration of those effects. If vibration exceeds the threshold values, the contractor will be required to take one or more of the following steps to modify the construction procedures and reduce the vibration intrusion:

- Construction schedule restrictions in residential areas. Limit muck train operations in residential areas to between 7:00 a.m. and 9:00 p.m.
- Speed restrictions. Although not always uniform, levels of groundborne vibration are generally proportional to the speed of the muck trains. Therefore, as train speeds increase or decrease, the levels of groundborne vibration will increase or decrease correspondingly. A speed reduction of about 30 to 50 percent usually is required to significantly reduce groundborne vibration levels. It would be difficult to monitor speed limits in the tunnel. Consequently, it would not be practical to monitor trains speed without placing automated equipment inside the tunnel. Also, because fully loaded muck trains typically operate at a maximum speed of 20 mph, speed reductions sufficient to control groundborne vibration might not be practical.
- Track and wheel maintenance. Muck train wheels and rails in poor condition will result in higher vibration levels. The City of Los Angeles will inspect the muck car wheels and tracks, and if necessary, require the contractor to replace or repair the equipment of concern.

The contractor will be required to immediately cease construction if the limiting vibration level is exceeded because building damage could result. The contractor will be allowed to continue after appropriate steps have been taken to keep vibration levels below the limiting values.

Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

3.9 Recreation Mitigation

The following measures will be implemented for all applicable components of the Recommended Alternative.

REC-MM-4: Dry and wet weather runoff URPs will not be placed on recreational resources or facilities or in parking areas serving recreational facilities.	
Implementation Responsibility:	City Design Staff – Department of Recreation and Parks – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

The following measures will be implemented for all applicable wastewater components of the Recommended Alternative.

REC-MM-1: For the Tillman Wastewater Storage component, the City of Los Angeles temporarily or permanently will relocate the existing cricket field to a location in the Sepulveda Dam Recreation Area before construction, as approved by the Department of Recreation and Parks.	
Implementation Responsibility:	City Design Staff – Department of Recreation and Parks – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

REC-MM-2: This mitigation measure will be implemented for the shaft sites proposed for the Crystal Springs picnic grounds, the Pecan Grove picnic area; the maintenance hole structures on the golf course; and the drop structure at Weddington Park.

The Bureau of Engineering will coordinate with the City of Los Angeles Department of Recreation and Parks, the City of Burbank (as applicable), and/or recreational facility operators to obtain input on the design of NEIS II and GBIS to minimize construction impacts to affected recreational facilities (i.e., shaft-site footprints, locations of accessory structures, and temporary separation walls), and to coordinate and make improvements to other recreational resources in the same service areas as those resources that would be affected by construction.

Implementation Responsibility:	City Design Staff – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

REC-MM-3: For the NEIS II, GBIS, and VSLIS components, ATFs at recreational sites will be coordinated with the City of Los Angeles Department of Recreation and Parks such that the location least affects the recreational resource.

Implementation Responsibility:	City Design Staff – Department of Recreation and Parks – Contractor
Monitoring Phase:	Design – Construction
Monitoring Action or Vehicle:	Contract Specifications – Field Inspections
Enforcement Responsibility:	BOE Staff – Contract Administration
Monitoring Responsibility:	BOE Management – Construction Management

3.10 Transportation and Traffic Mitigation

The following measures will be implemented for all applicable components of the Recommended Alternative.

TRA-MM-1: For each construction site, a Construction Traffic Management Plan will be prepared and submitted to LADOT for review and approval prior to the start of any construction work. This plan will include such elements as the designation of haul routes for construction-related trucks, the location of access to the construction site, any driveway turning movement restrictions, temporary traffic-control devices or flagmen, travel time restrictions for construction-related traffic to avoid peak travel periods on selected roadways, and designated staging and parking areas for workers and equipment. Where construction would occur within a public street right-of-way, the following mitigation measures also would apply.

Implementation Responsibility:	City Design Staff - LADOT - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

TRA-MM-2: A project-level construction work site Traffic Control Plan will be prepared for each construction site and submitted to LADOT for review and approval prior to the start of any construction work. This plan will include such elements as the location of any lane closures, restricted hours during which lane closures would not be allowed, local traffic detours (where reasonable alternate routes exist), protective devices and traffic controls (such as barricades, cones, flagmen, lights, warning beacons, temporary left-turn restrictions, temporary traffic signals, warning signs), access to abutting properties, and provisions to maintain emergency access through construction work areas.

Implementation Responsibility:	City Design Staff - LADOT - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

TRA-MM-3: Fully use available street space to minimize lane reductions on affected streets, including eliminating on-street parking where necessary. Implement left-turn restrictions as appropriate on restriped street segments to facilitate the movement of through traffic. Eliminate travel lanes only when absolutely necessary.

Implementation Responsibility:	City Design Staff - LADOT - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management



TRA-MM-4: Provide alternative pedestrian and bicycle access routes where existing sidewalks, crosswalks, or bike lanes would be affected.	
Implementation Responsibility:	City Design Staff - LADOT - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

TRA-MM-5: Provide advance notice to any affected residents, businesses, and property owners in the vicinity of each construction site, and, where existing property access would be reduced, identify alternative means of access.	
Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

TRA-MM-6: Coordinate with emergency service providers (police, fire, ambulance, and paramedic services) to provide advance notice of any lane closures, construction hours, or changes to local access and to identify alternative routes where appropriate.	
Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

TRA-MM-7: Coordinate with public transit providers (MTA, LADOT Commuter Express, and Glendale Bee Line) to provide advance notice of any lane closures, construction hours, and, where necessary, to identify sites for temporary bus stops within a reasonable walking distance of any displaced bus stops.	
Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management



TRA-MM-9: The significant loss of parking in the Los Angeles Zoo parking lot that could occur if the Los Angeles Zoo Shaft Site were used (approximately 225 spaces near the entrance to the Los Angeles Zoo) would be mitigated fully by the selection of the Pecan Grove Shaft Site, the Observatory Annex Shaft Site, or the Brazil Street Shaft Site. If the Los Angeles Zoo Shaft Site is used, reconfiguring (restriping) the Los Angeles Zoo parking lot more efficiently could be undertaken to offset some of this loss; however, recovering enough parking spaces to fully mitigate this impact does not appear possible. If the Observatory Annex Shaft Site were selected, many or all of the 50 overflow parking spaces that would be lost in this area appear to be recoverable elsewhere in the vicinity by reconfiguring the Los Angeles Zoo parking lot. No mitigation measures have been identified for the adverse (but not significant) loss of parking that would occur if the Pecan Grove Shaft Site were selected.

If the onsite parking supplies and areas available for temporary parking at the treatment plants are not sufficient to accommodate the temporary parking demand from construction crews, identifying offsite locations for temporary parking would be necessary. This is not anticipated to be necessary at Hyperion, but it might be desirable for operational reasons. If so, the use of peripheral parking lots at LAX with shuttle service should be considered (maximum 100 spaces). Onsite at Tillman, space appears to be available to accommodate a maximum estimated number of 50 construction worker vehicles; if this is insufficient, other areas within the Sepulveda Dam Recreation Area could be used with shuttle service. In the vicinity of LAG, space appears to be available to accommodate the maximum estimated number of 40 construction worker vehicles; if this is insufficient, the use of available space in the adjacent North Atwater Park, where a Los Angeles Recreation and Parks maintenance yard is also located, should be considered.

The adverse parking impact at 10928 West Riverside Drive that potentially could occur at the East Valley Relief Sewer (EVRS) near Vineland Avenue with the GBIS alignment could be mitigated by locating this drop structure within the Caltrans easement or by providing the existing user with a functionally similar parcel for use as offsite parking. The adverse parking impacts identified for other specific locations cannot be lessened. Provision of replacement parking in off-street facilities acquired for this purpose could lessen these adverse impacts, but the impacts occur in built-up areas where suitable property is not available. As mitigation for the potential temporary loss of off-street beach parking in the vicinity of construction sites that might be selected for the Dry Weather Runoff - Low-Flow Diversions, it is recommended that other beach parking facilities within a reasonable walking distance be identified. As mitigation for the potential permanent loss of off-street beach parking in the vicinity of sites that might be selected for the Wet Weather Runoff - Urban Treatment Plants, it is recommended that other beach parking facilities within a reasonable walking distance be identified or additional beach parking constructed.

Implementation Responsibility:	City Design Staff - Caltrans - Department of Recreation and Parks - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management



The following measures will be implemented for all applicable wastewater components of the Recommended Alternative.

TRA-MM-10: As mitigation for the permanent loss of three surface parking spaces and an onsite area used for equipment staging and storage at LAG, a functionally equivalent area will be provided elsewhere on the LAG site.

Implementation Responsibility:	City Design Staff - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

TRA-MM-11: If the Travel Town and/or Barham shaft site is used for construction of the GBIS alignment and the nearby LADWP SLRC Storage Replacement Project were constructed concurrently, the construction work site Traffic Control Plan associated with the Travel Town Shaft Site, the Barham Shaft Site, and the SLRC Storage Replacement Project shall include the establishment of haul routes and restrictions to avoid potential adverse cumulative construction traffic impacts from concurrent construction of these related projects. Although LADOT does not consider construction traffic to be significant, LADOT shall review and revise all three of the traffic control plans, while considering the concurrent nature of construction of these related projects, to avoid substantial adverse cumulative construction traffic impacts. As appropriate, LADOT shall apply measures and restrictions equally to GBIS and the SLRC Storage Replacement Project (if construction is concurrent), as applicable.

Implementation Responsibility:	City Design Staff - LADOT - Contractor
Monitoring Phase:	Design - Construction
Monitoring Action or Vehicle:	Contract Specifications - Field Inspections
Enforcement Responsibility:	BOE Staff - Contract Administration
Monitoring Responsibility:	BOE Management - Construction Management

4.0 Voluntary Measures

In addition to the above mitigation measures, the following voluntary measures will be implemented by the City of Los Angeles Department of Public Works as part of the staff recommended GBIS Alignment, as described in Section 1.5.2.2 of the Final EIR. In an effort to be responsive to the City of Burbank and to others who commented on the GBIS alignments analyzed in the Draft EIR, the City of Los Angeles met with the City Burbank. One of the results of the meetings was the City of Los Angeles including additional voluntary improvement measures that the City of Los Angeles will implement to address issues raised by the City of Burbank and other members of the public. These voluntary improvement measures, which are incorporated into the Final EIR (Section 1.5.2.2), address traffic, noise, and vibration.

- Maintenance Hole Structures. The City will attempt to eliminate the placement of maintenance hole structures within the City of Burbank, including along Pass Avenue.
- Tunneling Construction Sites. No tunneling construction sites would occur within the City of Burbank, unless a construction emergency situation requires such construction (no such construction emergencies are anticipated).
- Minimize or Prevent Surface Construction. Minimize, if not avoid, surface construction activities for GBIS in the City of Burbank, including along Pass Avenue.
- Implement Additional Measures. Implement additional voluntary measures to reduce potential impacts from traffic, noise, and vibration, based on recent experience constructing other City of Los Angeles sewer tunneling projects, including:
 - Traffic: With no maintenance hole structures in the City of Burbank, haul trucks from construction would be a potential source of project traffic. Traffic Control Plans will be prepared and approved and would include restricted hours, travel time restrictions for construction-related traffic to avoid peak travel periods, local traffic detours, protective devices and traffic controls, and provisions to maintain emergency access through construction work areas. In addition, haul routes to and from the construction shaft sites and freeway access ramps would be included in the Traffic Control Plans for the shaft sites. Furthermore, haul routes would be established to minimize travel through residential areas, including traffic associated with the construction of maintenance holes near the City of Burbank.
 - Noise: Require the contractor to prepare a Noise Control Plan and also require (in construction contracts) that all construction equipment be equipped with mufflers and other suitable noise-attenuation devices.
 - Vibration: Experience with the recently constructed NEIS line, which compares closely in depth and ground types to GBIS, was positive. Vibrations related to NEIS tunneling operations were not significant. Vibration charts generated by monitoring devices along the NEIS alignment indicated that vibrations due to normal surface vehicular traffic exceeded vibrations generated by tunneling operations. Measures used in the recent NEIS construction would be applied to GBIS, including requiring the contractor to prepare a Vibration Control Plan to ensure that groundborne vibration does not exceed the applicable levels at locations along any Pass Avenue alignment. The Vibration Control Plan would include the use of rubber pads (or ties)

or other vibration-insulating materials beneath rails to absorb or dampen vibrations, using new or like-new rail and muck cars, and ensuring that rails are aligned and have minimal seams.

The Bureau of Engineering will be responsible for implementing the voluntary measures during the design and construction phases of the staff recommended GBIS Alignment.