

D.6 HYDROLOGY AND WATER QUALITY

Section D.6.1 provides a summary of the existing hydrology and water quality conditions present in the vicinity and along the alignment of SDG&E's proposed Silvergate Transmission Substation Project. Applicable regulations, plans, and standards are listed in *Section D.6.2*. Potential impacts and mitigation measures for the Proposed Project are presented in *Section D.6.3*; and alternatives are described and discussed in *Section D.6.4*. Mitigation monitoring, compliance, and reporting are discussed in *Section D.6.5*.

D.6.1 Environmental Setting for the Proposed Project

This section presents a discussion of surface water, drainage, flooding, water quality and groundwater resources in the project area. Baseline hydrologic conditions in the project area were obtained from studies prepared for the project, including SDG&E's PEA (March 2005), supporting documents contained in SDG&E Supplemental Application Nos. 1 and 2 (July and October 2005), and from maps, aerial photos and other relevant documents from local city, regional, county, and state water agencies. Site-specific data was also obtained from studies conducted on the Goodrich property by URS (November 17, 2005), Geocon (September 22, 2005), and Env America (October 13, 2005).

D.6.1.1 General Setting

The project study area is located within the San Diego Basin. Average annual rainfall within the project area ranges from 10 to 13 inches per year with 85 percent of all precipitation falling between November and March (Western Regional Climate Center 2003).

As shown in *Figure D.6-1*, the project study area is located within the Sweetwater, Pueblo San Diego, and San Diego watersheds. The hydrologic conditions surrounding the proposed Silvergate Substation site, Main Street Substation, and Old Town Substation are characteristic of highly urbanized areas with surface flows directed to and transported by municipal separate storm sewer systems. The proposed Silvergate Substation site and Main Street Substation are located on relatively flat land surrounded primarily by impervious surfaces (i.e. public roads, driveways, parking lots, and buildings). The project study area between the South Bay Power Plant and the Silvergate Substation site parallels the San Diego Bay along the Interstate 5 corridor and crosses the Sweetwater Marsh and Sweetwater River.

D.6.1.2 Surface Water

Rivers and Streams

As shown in *Figure D.6-1* and listed in *Table D.6-1*, the project study area from the South Bay Power Plant Switchyard to the Sweetwater River Area crosses drainages, tidal influx areas, including tidal and intertidal wetlands associated with the San Diego Bay. As listed in *Table D.6-1*, five waterbodies are crossed by the project alignment between the South Bay Power Plant switchyard and the Sweetwater River.

**TABLE D.6-1
Watersheds And Waterbodies Crossed By The Project**

Waterbody	Watershed	Proposed Crossing Method	Location
Silvergate and Main Street Substation			
None	Pueblo San Diego	N/A	N/A
Special Protection System			
None	Sweetwater	N/A	N/A
138 kV Undergrounding, Removal and Lattice Steel Bridge Structure Removal			
Telegraph Canyon Creek	Sweetwater	Horizontal Drill (jack and bore)	East side of South Bay Power Plant
Unnamed Drainage	Sweetwater	Horizontal Drill (jack and bore)	J Street
Unnamed Drainage	Sweetwater	Horizontal Drill (jack and bore)	E Street
Sweetwater Marsh	Sweetwater	Horizontal Directional Drill (HDD)	Approximately from D Street to Sweetwater River
Sweetwater River	Sweetwater	Removal of two of three existing 138 kV circuits spanning the River	Border of National City and Chula Vista

Source: SDG&E (2005d)

D.6.1.3 Groundwater

The project is located within the Sweetwater Valley Groundwater Basin which is part of the larger the San Diego River Valley Groundwater Basin. The flow and migration of groundwater in the project area is generally east to west. The San Diego Formation is thought to extend roughly north from the international border with Mexico to the San Diego River and Mission Bay, and west from approximately Interstate 805 (south of Interstate 8) to the San Diego Bay and the Pacific Ocean to the City of San Diego. The San Diego Formation is believed to be at least 1,000 feet thick. Most of this volume, however, cannot be drained without including land subsidence and/or eventually causing sea water intrusion (San Diego County Water Authority, 2003).

Figure D.6-1 Hydrologic Map

The proposed Silvergate Substation site is located approximately 500 feet from the San Diego Bay. Areas near the Bay typically have water levels at approximately 2 to 5 feet MSL (mean sea level) and may fluctuate with the tide. Site-specific studies within the limits of the proposed Silvergate Substation indicate groundwater depths of about 15 to 20 feet below the ground surface (URS, 2005a). Preliminary investigations in the study area for the 138 kV undergrounding portion of the project indicate groundwater depths between 5 and 14 feet below the existing grade (Geocon, 2005 and URS, 2005b).

The decommissioned Silvergate Power Plant, which currently occupies part of the proposed Silvergate Substation site, includes four cooling tunnels and associated cooling water forebays that were previously used during operation of the power plant. Upon decommissioning of the power plant, the cooling water forebays were left open to the San Diego Bay (SDG&E 2005d). The amount of water in the forebays is not known at this time and fluctuates considerably with the ebb and flow of the tide, however once the tunnels have been sealed off, it is feasible that the forebays could hold an estimated 2.2 million gallons of sea water.

D.6.1.4 Water Quality

Water quality refers to the effect of natural and human activities on the composition of water. Water quality is expressed in terms of measurable physical and chemical qualities that can be degraded by urban runoff, illicit discharges, and even planned water use. It is generally agreed that urban runoff transported by municipal storm water conveyance systems is one of the principal causes of water quality problems in most urban areas. Storm water that accumulates on impervious surfaces, such as parking lots, roof tops, and streets, drains directly and indirectly to waters of the United States.

Within the San Diego River watershed, concerns with water quality can be attributed to increased levels of coliform bacteria, total dissolved solids (TDS), nutrients, petroleum chemicals, toxics, and trash. The source of these contaminants is urban runoff, agricultural runoff, mining operations, sewage spills, and sand and gravel mining. The major water quality constituents of concern for the Sweetwater watershed are coliform bacterial, trace metals and other toxics whose source is predominantly from agricultural and urban runoff.

Under Section 303(d) of the CWA, the SWRCB is required to develop a list of water quality limited segments for jurisdictional waters of the United States. The waters on the list do not meet water quality standards, and therefore the RWQCB was required to establish priority rankings and develop action plans, called Total Maximum Daily Loads (TMDL), to improve water quality. The EPA approved the San Diego RWQCB's 303 (d) list of Water Quality Limited Segments in July 2003. The list includes pollutants causing impairment to receiving waters or, in

some cases, the condition leading to impairment. *Table D.6-2* below provides a summary of the 303 (d) list for waterbodies in the vicinity of the project.

TABLE D.6-2
303 (d) Listed Waterbodies

Waterbody	Location	Pollutant	Estimated Size Affected
San Diego Bay Shoreline	32 nd Street at San Diego Naval Station	Benthic community effects Sediment toxicity	103 acres
San Diego Bay Shoreline	Between Sampson Street and 28 th Street	Copper, mercury, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and Zinc	55 acres
San Diego Bay Shoreline	Chula Vista Marina	Bacteria indicators	0.41 miles

Source: San Diego RWQCB. 2002 CWA Section 303 (d) List of Water Quality Limited Segment. Approved by the USEPA July 2003.

Groundwater testing in the study area for the proposed 138 kV undergrounding indicates known and potential contaminants in the groundwater, including trichloroethene, other chlorinated volatile organic compounds, and hexavalent chromium (URS, 2005b). More recent studies conducted by SDG&E between J Street and G Street in Chula Vista detected chloroform, cis-1,2-dichloroethene, trans-1,2-dichloroethene, tetrachloroethane, and trichloroethene (Env America, 2005). Hexavalent chromium was also detected in this study area (see *Appendix 5*). Additional discussion on groundwater contaminants is provided in *Section D.9 Public Health and Safety* and *Section D.6.1.4 Water Quality*.

D.6.1.5 Floodplains

As illustrated in *Figure D.6-1*, the project study area crosses the 100-year flood zones of the Sweetwater River, Paradise Creek, and San Diego Bay as delineated by the Federal Emergency Management Agency (FEMA) as Flood Hazard Areas. The proposed Silvergate Substation site is not located within a 100-year flood zone.

D.6.1.6 Dam Failure Inundation Area

To assist local jurisdictions in developing evacuation plans for possible inundation areas below dams, the State Office of Emergency Services and the Department of Water Resources (DWR) have identified areas of potential inundation in the event of dam failures throughout California. These agencies have also estimated when flood waters would arrive at downstream locations should failure of a dam occur. Projected inundation limits are approximate and assume severe hypothetical failures, thus showing all potential flooded areas in the improbable occurrence of

failure. The underground alignment, Silvergate Substation, and Main Street Substation are within the inundation zone predicted for the Sweetwater Reservoir. The Sweetwater Reservoir is located approximately 11 miles east of the project area. If the Sweetwater Reservoir dam was to fail, water would flow westerly along the Sweetwater River channel to the San Diego Bay.

D.6.2 Applicable Regulations, Plans, and Standards

D.6.2.1 Federal

Federal Clean Water Act (CWA)

Increasing public awareness and concern for controlling water pollution led to enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the Clean Water Act (CWA). The Act established basic guidelines for regulating discharges of pollutants into the waters of the United States. The CWA requires that states adopt water quality standards to protect public health, enhance the quality of water resources, and ensure implementation of the CWA.

National Pollution Discharge Elimination System (NPDES)

The NPDES permit program, as authorized by Section 402 of the CWA, was established to control water pollution by regulating point sources that discharge pollutants into waters of the United States. In the state of California, the Environmental Protection Agency (EPA) has authorized the State Water Resource Control Board (SWRCB) permitting authority to implement the NPDES program. In general, the SWRCB issues two baseline general permits, one for industrial discharges and one for construction activities. The Phase II Rule that became final on December 8, 1999, expanded the existing NPDES program to address storm water dischargers from construction sites that disturb land equal to or greater than one acre.

Section 401 of the Clean Water Act

Section 401 of the CWA requires an applicant for a federal permit, such as the construction or operation of a facility that may result in the discharge of a pollutant, to obtain certification of those activities from the state in which the discharge originates. This process is known as the Water Quality Certification for the project. For projects in San Diego, the San Diego RWQCB issues Section 401 permits.

Section 404 of the Clean Water Act

Section 404 of the CWA established a permitting program to regulate the discharge of dredged or filled material into waters of the United States. The definition of waters of the United States includes wetlands adjacent to national waters. This permitting program is administered by the ACOE and enforced by the EPA.

Section 10 of the River and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the ACOE for the construction of any structure in or over navigable waters of the United States or obstruction or alteration in a navigable water. Structure or work outside the limits defined for navigable waters of the U.S. requires a Section 10 permit if the structure or work affects the course, location, condition, or capacity of the waterbody. Navigable waters are defined as waters that are subject to the ebb and flow of the tide.

D.6.2.2 State

Streambed Alteration Agreement

Sections 1601 through 1603 of the California Fish and Game Code requires an agreement between the Department of Fish and Game and a public agency proposing to substantially divert or obstruct the natural flow or effect changes to the bed, channel, or bank of any river, stream, or lake. The agreement is designed to protect the fish and wildlife values of a river, lake, or stream.

Porter Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act of 1967, Water Code section 13000 et seq., requires the State Water Resources control Board (SWRCB) and the nine RWQCBs to adopt water quality criteria to protect State waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The criteria for the project area are contained in the water quality control plan for the San Diego Basin.

State Water Resource Control Board

The SWRCB is responsible for issuing storm water permits in accordance with the NPDES program. For projects disturbing one or more acres of land, the applicant must file a Notice of Intent (NOI) for coverage under the General Permit for Storm Water Discharges Associated with

Construction Activity (General Permit) and prepare a Storm Water Pollution Prevention Plan (SWPPP) that specifies Best Management Practices (BMPs) to prevent pollutants from contacting storm water and procedures to control erosion and sedimentation. The SWRCB also provides coverage for dewatering uncontaminated water from underground utility vaults during routine operation and maintenance activities through General Permit CAG990002 (Order No. 2001-11).

Regional Water Quality Control Board

San Diego County falls within the jurisdiction of the Region 9 RWQCB. Each RWQCB is responsible for water quality control planning within their region, often in the form of a basin plan. The RWQCB is also responsible for implementing the provisions of the General Permit, including reviewing SWPPPs and monitoring reports, conducting compliance inspections, and taking enforcement actions. In addition, the San Diego RWQCB issues two general NPDES permits for groundwater discharges, one for groundwater discharges to the San Diego Bay or tributaries to San Diego Bay (Order No. 2000-90) and one for groundwater discharges to surface waters other than the San Diego Bay (Order No. 2001-96). Coverage under either permit requires submittal of an application to the RWQCB at least 60 days prior to discharge (Caltrans, 2001).

D.6.2.3 Regional and Local

Water Quality Control Plan for the San Diego Basin (Basin Plan)

The Basin Plan for the San Diego Basin is administered by the RWQCB. The Basin Plan is the master policy document that contains descriptions of the legal, technical, and programmatic bases of water quality regulation in the San Diego region. The plan describes beneficial uses of water in the San Diego region, water quality objectives, implementation procedures, and water quality plans and policies (RWQCB, 2003).

Municipal Storm Water Permit

The City of San Diego, City of Chula Vista, County of San Diego, Port of San Diego, and 16 other cities in the region were issued a NPDES Municipal Storm Water Permit on February 21, 2001 by the San Diego RWQCB. The permit requires the development and implementation of BMPs in development planning and construction of private and public development projects. Development projects are also required to include BMPs to reduce pollutant discharges from the project site in the permanent design.

San Diego Municipal Code (SDMC) §43.03

The City's storm water ordinance was enacted in 1993 to make it unlawful for any person to discharge non-storm water into the City's storm water conveyance system.

D.6.3 Environmental Impacts and Mitigation Measures for the Proposed Project

D.6.3.1 Definition and Use of Significance Criteria

The following significance criteria are based on the CEQA Checklist in Appendix G to the CEQA Guidelines. Water resources impacts would be considered significant if the project:

- Violates any water quality standards or waste discharge requirements;
- Substantially depletes groundwater supplies in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted);
- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river in a manner that would result in substantial erosion or siltation on or offsite;
- Substantially alters the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increasing the rate or amount of surface runoff in a manner that would result in flooding on or offsite;
- Creates or contributes runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Otherwise substantially degrades water quality;
- Places within a 100-year flood hazard area structures that would impede or redirect flood flows;
- Exposes people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or
- Results in or is subject to inundation by seiche, tsunami, or mudflow.

D.6.3.2 Applicant Proposed Measures

Table D.6-3 presents APMs proposed by SDG&E to reduce impacts to hydrology and water quality.

TABLE D.6-3
Applicant Proposed Measures – Hydrology And Water Quality

APM NO.	DESCRIPTION
5	In areas where ground disturbance is substantial or where recontouring is required (e.g., marshaling yards, tower sites, spur roads from existing access roads), surface restoration would occur as required by the governmental agency having jurisdiction. The method of restoration normally would consist of returning disturbed areas back to their original contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches for erosion control. Erosion would be minimized on access roads and other locations primarily with water bars. The water bars would be constructed using mounds of soil shaped to direct the flow of runoff and prevent erosion. Soil spoils created during ground disturbance or recontouring shall be disposed of only on previously disturbed areas, or used immediately to fill eroded areas. However, material for filling in eroded areas in roads or road ruts should never be obtained from the sides of the road that contain habitat without the approval of the on-site biological resource monitor. Cleared vegetation would be hauled off-site to a permitted disposal location. To limit impact to existing vegetation, appropriately sized equipment (e.g., bulldozers, scrapers, backhoes, bucket-loaders, etc.) would be used during all ground disturbance and recontouring activities.
6	Potential hydrologic impacts would be minimized through the use of BMPs such as water bars, silt fences, staked straw bales, and mulching and seeding of all disturbed areas. These measures will be designed to minimize ponding, eliminate flood hazards, and avoid erosion and siltation into any creeks, streams, rivers, or bodies of water.
7	Prior to construction, all SDG&E, contractor, and subcontractor project personnel would receive training regarding the appropriate work practices necessary to effectively implement the Protocols and to comply with the applicable environmental laws and regulations, including, without limitation, hazardous materials spill prevention and response measures, erosion control, dust suppression, and appropriate wildlife avoidance, impact minimization procedures, and SWPPP BMPs. To assist in this effort, the training would address: federal, state, local, and tribal laws regarding antiquities, fossils, plants, and wildlife, including collection and removal; the importance of these resources and the purpose and necessity of protecting them; and methods for protecting sensitive cultural, paleontological, and ecological resources.
11	In the construction and operation of the project, SDG&E would comply with all applicable environmental laws and regulations where not otherwise pre-empted by the CPUC, including, without limitation, those regulating and protecting air quality, water quality, wildlife and its habitat, and cultural resources.
15	Hazardous materials would not be disposed of or released onto the ground, the underlying groundwater, or any surface water. SDG&E will implement its BMP 2-05 (Hazardous Materials/Waste Management) to manage and control hazardous materials and wastes and will implement its BMP 204 (Solid Waste Management) to control solid waste.
30	Hazardous substance management, handling, storage, disposal, and emergency response procedures would be prepared and implemented as a part of the project-specific SWPPP.
31	Hazardous materials spill kits would be maintained on-site for small spills.
36	SDG&E's Water Quality Construction Best Management Practices Manual would be utilized during project construction as appropriate.
37	To the extent feasible, where the construction of access roads would disturb sensitive features, the route of the access road would be adjusted to avoid such impacts. Examples of sensitive features include, without limitation, cultural sites, identified habitats of endangered species, and streambeds. As another alternative,

TABLE D.6-3
Applicant Proposed Measures – Hydrology And Water Quality

APM NO.	DESCRIPTION
	<p>construction and maintenance traffic would use existing roads or cross-country access routes (including the ROW), which avoid impacts to the sensitive features. To minimize ground disturbance, construction traffic routes must be clearly marked with temporary markers, such as easily visible flagging. Construction routes, or other means of avoidance, must be approved by the authorized agency or landowner before use. When it is not feasible to avoid constructing access roads in sensitive habitats during the nesting/breeding season, SDG&E would perform up to three site pre-activity surveys, if necessary, to determine the presence or absence of nesting/breeding endangered or threatened species, or species of special concern, in those sensitive habitats. SDG&E would submit results of those surveys to the USFWS and CDFG in accordance with its NCCP and if Project Protocols and Project Mitigation Measures do not adequately address impacts consult on any additional reasonable and feasible mitigation measures for potential impacts prior to access road construction. However, these pre-activity surveys would not replace the need for SDG&E to perform detailed on-the-ground surveys as required by other project protocols as appropriate. Where it is not feasible for access roads to avoid streambed crossings in steep canyons, such crossings would be built at right angles to the streambeds. Where such crossings cannot be made at right angles, SDG&E would limit roads constructed parallel to streambeds, to a maximum length of 500 feet at any one transmission line crossing location. Such parallel roads would be constructed in a manner that minimizes potential adverse impacts on “waters of the U.S.” Streambed crossings or roads constructed parallel to streambeds would require review and approval of necessary permits from the Corps, CDFG, and RWQCB. When it is not feasible to avoid cultural sites, SDG&E would consult with the appropriate federal and State Historic Preservation Officer (SHPO) and local (indigenous Native American tribes) cultural resource agencies and specialists to either develop alternative construction techniques to avoid cultural resources or develop appropriate mitigation measures. Appropriate mitigation measures may include actions such as removal and cataloging and/or removal and relocation.</p>
39	<p>In areas designated as sensitive by SDG&E or the resource agencies, to the extent feasible structures and access roads would be designed to avoid sensitive and/or to reduce visual contrast. These areas of sensitive features include but are not limited to high- value wildlife habitats and cultural sites, and/or to allow conductors to clearly span the features, within limits of standard tower or pole design (also see Protocol 48 for avoidance of sensitive water resource features). If the sensitive features cannot be completely avoided, poles and access roads would be placed to minimize the disturbance to the extent feasible. When it is not feasible to avoid constructing poles or access roads in high-value wildlife habitats, SDG&E would perform up to three site surveys, if necessary, to determine presence or absence of endangered species in those sensitive habitats. SDG&E would submit results of those surveys to the USFWS and CDFG in accordance with its NCCP and if Project Protocols and Project Mitigation Measures do not adequately address impacts consult on any additional mitigation measures for potential impacts, prior to constructing poles or access roads. However, these site surveys would not replace the need for SDG&E to perform detailed on-the-ground surveys as required by other project protocols as appropriate. Where it is not feasible for access roads to avoid sensitive water resource features, such as streambed crossings, such crossings would be built at right angles to the streambeds. Where such crossings cannot be made at right angles, roads constructed parallel to streambeds would be limited to a maximum length of 500 feet at any one transmission line crossing location. Such parallel roads would be constructed in a manner that minimizes potential adverse impacts on “waters of the U.S.” Streambed crossings or roads constructed parallel to streambeds would require review and approval of necessary permits from the Corps, CDFG, and RWQCB. When it is not feasible for poles or access roads to avoid cultural sites, SDG&E would consult with the appropriate federal, state SHPO and local (indigenous Native American tribes) cultural resource agencies and specialists to either modify the project or develop alternative construction techniques to avoid cultural resources or develop appropriate mitigation measures. Appropriate mitigation measures may include actions such as data recovery studies, cultural resource removal and cataloging, and/or cultural resource removal and relocation.</p>

TABLE D.6-3
Applicant Proposed Measures – Hydrology And Water Quality

APM NO.	DESCRIPTION
51	A SWPPP will be prepared for the Project. Implementation of the SWPPP would help stabilize soil in graded areas and waterways and reduce erosion and sedimentation. The SWPPP would designate BMPs that would be implemented during construction activities. Erosion control efforts, such as hay bales, water bars, covers, sediment fences, sensitive area access restrictions (e.g., flagging), vehicle mats in wet areas, and retention/settlement ponds, would be installed before extensive soil clearing and grading begins. Mulching, seeding, or other suitable stabilization measures would be used to protect exposed areas during construction activities. Revegetation plans, the design and location of retention ponds and grading plans would be submitted to the CDFG and Corps for review in the event of construction within Waters of the U.S. or bed or bank of a lake, river or stream.
53	To minimize mud and dust from being transported onto paved roadway surfaces, SDG&E will implement its BMP 1-07 (Tracking Controls).

D.6.3.3 Silvergate Substation

Impact H-1: Water Quality Degradation from Erosion and Sedimentation during Construction

Construction of the proposed Silvergate Substation would require excavation of existing foundations and grading to provide level pad sites to support the construction of new foundations. Grading activities would include conventional cut and fill techniques and would result in the movement of approximately 10,000 cubic yards of earthen material within the substation boundaries. The erosion potential for exposed soils within the substation during construction would be relatively low considering the slope of the site would be limited to an approximate one percent down gradient.

Even with slight relief, soil detachment, runoff, and subsequent sedimentation are possible. Similarly, wind erosion and sedimentation resulting from mud tracked onto roadways could occur. Sedimentation is considered a pollutant and can have adverse impacts to water quality resulting from increases in turbidity, nutrient loads, and aquatic habitat degradation.

SDG&E has proposed APMs 5, 6, 7, 11, 36, 51, and 53 to reduce erosion and control sedimentation. These measures require implementation of a Storm Water Pollution Prevention Plan (SWPPP) that would include best management practices (BMPs) to minimize erosion and restrict sediment transport within the substation limits. In addition, these measures require project personnel to be trained on implementation of the SWPPP and SDG&E's Water Quality Construction Best Management Practices Manual. Implementation of these APMs would protect

water quality in the project area due to erosion from construction activities and therefore, this impact is considered less than significant (Class III) and no further mitigation is required.

Impact H-2: Degradation of Water Quality Through Spill of Potentially Harmful Materials Used in Construction

Accidental spills or release of potentially hazardous materials commonly used during construction could enter and pollute surface waters or groundwater. Hazardous materials anticipated to be used during construction of the proposed Silvergate Substation include diesel fuel, gasoline, motor oil, hydraulic fluid, antifreeze, transmission fluid, grease, cement, paints, and solvents. The primary receiving water for runoff from the substation site is the San Diego Bay located approximately 500 feet to the west. Runoff from the site containing deleterious material could enter nearby drop-inlet structures and be transported to the bay via the municipal storm water conveyance system. The potential for contaminants to infiltrate into groundwater of the Pueblo San Diego Groundwater basin could also occur.

SDG&E has proposed APMs 7, 15, 30, and 31 to reduce the potential for an inadvertent release and provide guidelines for containing and cleaning up spills in the event that a hazardous material is released to the ground. APM 15 requires implementation of Best Management Procedures (BMPs) for handling and storing hazardous materials, including secondary containment for hazardous materials stored at construction sites. In addition, APM 31 requires spill kits on-site for cleaning up small spills. Implementation of these APMs would protect both surface and groundwater water quality in the project area from accidental spills of hazardous materials occurring during construction. Therefore, this impact is considered less than significant (Class III) and no further mitigation is required.

Impact H-3: Impacts to Surface Waters

As depicted on *Figure D.6.1*, there are no streams, creeks, wetlands, or other water resources within the proposed Silvergate Substation site limits. Therefore, there would be no direct impacts to surface waters. The four cooling tunnels and associated forebays located on the west side of the existing Silvergate Power Plant would be closed off to the Bay and sealed prior to the start of demolition.

Impact H-4: Increased Runoff from New Impervious Areas and Alteration of Existing Drainage Patterns

Construction of the proposed Silvergate Substation would likely result in a decrease in impervious surfaces since the existing Silvergate Power Plant would be removed and replaced with permeable fill material. It is anticipated that following the completion of construction, the volume of runoff leaving the site would be less than the existing conditions. Impacts associated with new impervious surfaces would be negligible when compared to the existing conditions and therefore would be considered less than significant (Class III). No additional mitigation is required.

Final grade of the proposed Silvergate Substation would include a one percent gradient that would drain runoff to the southwestern corner of the site where it would enter an inlet structure. As mentioned above, the volume of runoff would be less than existing conditions and the drainage pattern of the site would not be significantly altered (Class III).

Impact H-5: Groundwater Disturbance and Water Quality Degradation Through Project-Related Excavation

Construction of the proposed Silvergate Substation would require excavation for installation of foundations and footings that would support the new substation equipment, including 230 kV and 69 kV bays, transformers, and two 69 kV capacitor banks. Preliminary investigations indicate that groundwater levels at the midpoint of the proposed substation site are approximately 20 feet below the ground surface, which is below the planned depth for foundations and footings. Groundwater is not anticipated to be encountered at the substation site; however, tidal fluctuations and localized variations in precipitation could result in shallower or perched groundwater. Potentially significant impacts could occur to nearby water resources if sediment laden water is discharged during excavation activities. Mitigation Measures H-5a and H-5b would reduce impacts to a less than significant level if dewatering is required (Class II).

Demolition of the existing Silvergate Power Plant would require dewatering the cooling system which includes the forebays. Because the forebays are subject to tidal flows, the volume of water requiring discharge will vary depending on time of day and may be approximately 2.2 million gallons. The water quality of the water in the forebays is assumed to be consistent with that in the Bay since the forebays are currently open. Dewatering large volumes of water could potentially result in significant impacts to receiving waters resulting from scour and degradation of water quality. Implementation of APMs 11 and 36 and Mitigation Measures H-5a and H-5b

would ensure that impacts associated with dewatering the Silvergate Power Plant equipment would be mitigated to a less than significant level (Class II).

Mitigation Measure for Impact H-5, Groundwater Disturbance

H-5a SDG&E and its contractors shall comply with all local, state, and federal regulations pertaining to storm water and non-storm water discharges.

- H-5b**
- 1) Prior to construction, SDG&E shall consult with the San Diego Regional Water Quality Control Board to determine if an individual discharge permit is required for dewatering at any of the project sites anticipated to encounter groundwater. A copy of the permit or a waiver from the RWQCB, if required, shall be provided to the CPUC prior to dewatering.
 - 2) In addition, SDG&E shall submit a typical dewatering drawing that shall be implemented during dewatering activities. The drawing shall include: the location of pumps within secondary containment; fuel storage areas; anticipated discharge point; scour protection measures; intake hose screening; and monitoring procedures to ensure that hazardous materials spills are addressed in a timely manner and discharge hoses are frequently inspected leaks.

Impact H-6: Encroachment into a Floodplain or Watercourse by Permanent Project Features

The proposed Silvergate Substation and appurtenance facilities would be placed outside the 100-year floodplain and associated water courses and therefore, there is no risk of exposing structures to flooding hazards or increase in flooding hazards.

Impact H-7: Construction in a Potential Dam Inundation Area

The unlikely event of a dam failure could result in a dam-inundation floodplain and could cause severe flooding and damage to structures located within the inundation zone. The proposed Silvergate Substation could be affected by a dam failure. However, since the risk of dam inundation is considered low, and resulting adverse environmental consequences low, this impact would be considered less than significant (Class III).

Impact H-8: Operation and Maintenance Impacts to Surface Water and Groundwater Quality

Operations and maintenance of the proposed Silvergate Substation would entail periodic ground checks and routine repairs of the transformers, bays, and associated hardware. Substation equipment would be accessed on paved or gravel roads within the walls of the yard and no impacts to surface water would occur. Section 40, part 112 of the Code of Federal Regulations (CFR) requires certain facilities to prepare a Spill Prevention, Control, and Countermeasure (SPCC) Plan to prevent oil discharges from reaching navigable waters of the U.S. The program is administered by the EPA. Implementation of a SPCC plan during the operation and maintenance phase of the project, as provided for by Mitigation Measure H-8, would ensure that impacts to groundwater quality would be less than significant (Class II).

Mitigation Measure for Impact H-8, Groundwater Quality during Operation

H-8 SDG&E shall prepare a Spill Prevention, Control, and Countermeasure (SPCC) Plan in accordance with CFR Section 40, part 112 for the Silvergate Substation. A copy of the plan shall be submitted to the CPUC prior to energization.

D.6.3.4 Main Street Substation Dismantling

Impact H-1: Water Quality Degradation from Erosion and Sedimentation during Construction

Limited ground disturbance and minor wind erosion may occur during dismantling of the Main Street Substation. Existing circuits, transformer banks, capacitor banks, and control shelter would be removed from the 1.2 acre site, which would result in some ground disturbance. The existing substation yard consists of flat terrain covered by gravel. Therefore the erosion potential would be considered low during construction. Sediment transport from runoff, wind, and movement by vehicles and equipment would be minimized by implementation of proposed APMs 5, 6, 7, 11, 36, 51, and 53 which require preparation of a SWPPP and use of BMPs to contain sediment within the site limits. Given the proposed APMs, impacts to water quality from dismantling of the Main Street Substation would be less than significant and no additional mitigation is required (Class III).

Impact H-2: Degradation of Water Quality Through Spill of Potentially Harmful Materials Used in Construction

Removal of the existing equipment at the Main Street Substation could result in an inadvertent release of oil during the dismantling process which could enter nearby storm drains if not properly contained. APMs 7, 15, 30, and 31 would minimize the potential for an inadvertent release and provide guidelines for containing and cleaning up spills in the event that a hazardous material is released to the ground from vehicles or equipment. Implementation of these APMs would reduce potential impacts to a less than significant level (Class III).

Impact H-3: Impacts to Surface Waters

There are no surface waters present within the Main Street Substation limits. Therefore, there would be no direct impact to surface waters as a result of the dismantling of the Main Street Substation and no mitigation is required (Class III).

Impact H-4: Increased Runoff from New Impervious Areas and Alteration of Existing Drainage Patterns

The existing Main Street Substation is on a 1.2 acre lot consisting of a pervious gravel surface and impervious foundations that support substation equipment and related hardware. Following the dismantling of the substation components, including the foundations, the entire lot would appear as an empty paved lot. Because the Proposed Project would not be introducing new impervious areas to the Main Street Substation and would not alter existing drainage patterns, no impacts associated with increased runoff would occur.

Impact H-5: Groundwater Disturbance and Water Quality Degradation Through Project-Related Excavation

Construction activities associated with the dismantling of the Main Street Substation would primarily occur to above ground structures and no impacts to groundwater are anticipated. Removal of existing foundations may require limited subterranean work. However, based on the groundwater depths observed at the Silvergate Substation site, which are below the bottom elevation or the existing foundation, groundwater intrusion is unlikely for the proposed work at the Main Street Substation and therefore impacts to groundwater disturbance and water quality would be less than significant (Class III).

Impacts H-6 (encroachment into a floodplain), H-7 (dam inundation zones), and H-8 (operation and maintenance) would not apply to the Main Street Substation since the project proposes to remove all existing structures on the site and does involve construction of any new facilities.

D.6.3.5 Special Protection Systems

Installation of a Special Protection System would involve the addition of communication equipment and new hardware to the South Bay Substation and other related substations in the area. This component of the project would not require any additional grading and would be similar to common operation and maintenance procedures. Impacts H-1 (soil erosion and sedimentation), H-3 (surface waters), H-4 (impervious surfaces), H-5 (groundwater), H-6 (encroachment into a floodplain), H-7 (dam inundation zones), and H-8 (operation and maintenance) would not apply since no ground disturbance is anticipated and communication equipment would be installed on existing facilities. Impact H-2, degradation of water quality through spill of potentially harmful material used in construction, could potentially occur during the upgrade process with use of toxic products, such as grease, oils, paints, and solvents, however, implementation of proposed APMs 7, 11, 15, 30, and 31 would ensure impacts are less than significant (Class III).

D.6.3.6 138 kV Circuit Removal and Undergrounding

Underground construction of the proposed 138 kV circuit would require excavation of a trench to accommodate a three feet wide by six feet deep duct bank. The actual dimensions of the trench are dependent on the soil type and trench wall configuration required to meet OSHA standards. Soil excavated from the trench would be temporarily stockpiled for removal (i.e. hauled to a disposal site) or used as backfill material following installation of the duct bank. Since the concrete duct bank would displace much of the open trench, there would likely be excess native trench spoil after the backfill has been brought to finish grade. Therefore, some trench spoil would require transportation to an offsite facility. Similarly, engineered fill may be imported and used in lieu of native spoil backfill to provide a more stable trench in urban areas. In this case, most or all of the trench spoil would be hauled offsite.

Access to project areas would be achieved through use of existing dirt access roads and public roadways. No new roads would be required to construct the underground component.

The Sweetwater Marsh area would be crossed using HDD techniques, which would install a pipe approximately 70 feet below the marsh surface. The 138 kV circuit would be installed within the pipe following completion of the drill. The HDD operation would require temporary workspace on each side of the marsh measuring 150 feet by 250 feet (see *Figure B-18*) to stockpile

equipment, parking, and storage of drilling mud and detergent, and would likely require some grading to provide a level work area. In addition, a 3,100 foot by 150 foot temporary workspace within SDG&E's ROW would be required on the south side of the drill to string and weld the pullback pipe. Minor ground disturbance may also occur within the temporary workspace for the pullback pipe.

Impact H-1: Water Quality Degradation from Erosion and Sedimentation during Construction

Exposed soils from grading and trenching activities could erode and be transported to nearby water resources. Sedimentation to wetlands, drainages, creeks, and streams crossed by or adjacent to the project area could have adverse affects on water quality. The erosion potential along the underground route would be considered low to moderate since the majority of the terrain is flat and many areas are paved. Wind erosion and mud tracked onto roadways could occur in all areas, particularly where spoil stockpiling takes place. However, APMs 5, 6, 7, 11, 36, 37, 51, and 53 would minimize erosion and control sediment transport through the use of BMPs. The SWPPP prepared for the project would include measures for containing sediment transport within the ROW limits, protecting storm drains and other water resources, controlling dust, and minimizing mud tracked onto roadways. Additionally, mitigation measure H-1 would ensure that impacts to water quality from erosion and sedimentation during underground construction would be less than significant (Class II).

Mitigation Measure for Impact H-1, Erosion and Sedimentation

H-1a Spoil stockpiles shall be stored in upland areas as far away from storm drains, waterbodies, and wetlands as practical. Where the natural topography does not provide a physical barrier between spoil stockpiles and water resources, stockpiles shall be stored behind a sediment barrier. In addition, if spoil stockpiles are stored on the ROW for greater than 48 hours or if precipitation is anticipated, they shall be covered with plastic or otherwise stabilized (i.e. tackifiers, mulch, or detention).

Impact H-2: Degradation of Water Quality Through Spill of Potentially Harmful Materials Used in Construction

The potential for an inadvertent release of a hazardous materials during construction of the underground 138 kV circuit would be similar to that described for the construction of the Silvergate Substation (refer to *Section D.6.3.3*). Accidental spills or disposal of potentially harmful materials used during construction could wash into and pollute surface waters or

groundwater. Materials that could potentially contaminate the construction area from a spill or leak include oils, grease, hydraulic fluid, transmission fluid, coolant, paints, solvents, cement, gasoline, and diesel fuel. The HDD would also require the use of non-toxic bentonite clay and detergent which is discussed in more detail below for Impact H-3, Impacts to Surface Waters.

SDG&E has proposed APMs 7, 15, 30 and 31 to reduce impacts during construction due to accidental spills of hazardous materials. These APMs specifically require the use of BMPs such as proper disposal of hazardous materials and development of and adherence to a Hazardous Substance Control and Emergency Response Plan for quick and safe cleanup of accidental spills occurring during construction. In addition, Mitigation Measure H-2 provides specific requirements for work near the Sweetwater Marsh. Implementation of the APMs and mitigation measure would protect both surface and groundwater water quality in the project area from accidental spills of hazardous materials occurring during construction and reduce impacts to less than significant (Class II).

Mitigation Measure for Impact H-2, Hazardous Materials Spill

H-2 No refueling of equipment or storage of hazardous materials shall occur within 100 feet of the Sweetwater Marsh. Vehicles and motorized equipment shall not be parked overnight within the boundaries of the marsh, unless explicitly approved by the Sweetwater Marsh National Refuge Manger and the Environmental Monitor and precautionary measures, such as secondary containment, are implemented. In addition, equipment working within the Sweetwater Marsh boundaries shall be equipped with a spill kit.

The potential exists for uncovering known and unanticipated contaminated soils along the 138 kV undergrounding segment. Impacts associated with previously contaminated soils and groundwater are discussed in more detail in *Section D.10, Public Health and Safety*.

Impact H-3: Impacts to Surface Waters

As shown in *Figure D.6.1* and *Table D.6.1*, the 138 kV circuit removal and undergrounding component of the project crosses five waterbodies. Direct impacts to each waterbody would be avoided by boring below or spanning on existing structures.

Telegraph Canyon Creek and Unnamed Drainage

Telegraph Canyon Creek and the unnamed drainage at J Street are cement lined channels located on the east side of the South Bay Power Plant facility. Bore pits measuring approximately 40

feet wide, 80 feet long, and 15 feet deep would be established on both sides of the channel. The bore pits would be set back to avoid disturbance to the associate riparian and wetland areas. The conduit would be encased beneath the creek using horizontal drilling techniques (jack and bore).

Unnamed Drainage

The unnamed drainage near E Street is located on the west side of Bay Boulevard, south of E street. The drainage is an unlined channel with associated riparian and wetland areas and would be crossed using the horizontal boring techniques described above.

Sweetwater Marsh

The 138 kV circuit removal and undergrounding route crosses approximately 2,900 feet of the Sweetwater Marsh within the Sweetwater Marsh National Wildlife Refuge. Horizontal directional drilling (HDD) would be used to drill below the marsh surface (up to 70 feet below the surface) in order to avoid direct impacts to the resource area. Two 36-inch, 2,990-foot HDDs would be performed within SDG&E's ROW to accommodate two new underground circuits. Following completion of each drill, a steel or high density polyethylene pipe (HDPE) would be pulled back through the hole. HDD requires the use of bentonite, a naturally occurring clay, and non-toxic detergents (together with water make up the drilling fluid or drilling mud) to keep the hole walls from collapsing and carry drill cuttings back to a return pit. The drilling mud also provides lubrication for the drill head. It is possible for drilling mud to reach the earth's surface through cracks in bedrock or highly permeable soil horizons in the substrate's profile. This process is known as a "frac-out" and is often visible as a plume in a waterbody or on land in the vicinity of the drill. Operators of HDDs can identify frac-outs by a reduction in returns or a drop in drilling mud pressure. An inadvertent release of drilling mud (frac-out) during the HDD of the Sweetwater Marsh could result in sedimentation and turbidity to nearby water resources. APMs 5 and 6, which require implementation of a SWPPP and use of BMPs to avoid sedimentation into creeks and streams, and APM 36 (BMP 3-01) which provides guidelines for dewatering are intended to protect water resources during construction. Impacts to surface waters would be reduced to a less than significant level through implementation of the proposed APMs and mitigation measures H-3a, H-3b and H-5b (Class II).

Sweetwater River

Two of the three 138 kV circuits currently spanning the Sweetwater River would be removed during project construction. The conductor would be detached from the insulators, removed from the project area, and disposed of or recycled as appropriate.

Each of the proposed crossing methods described above are intended to avoid direct impacts to surface waters. Spanning or drilling beneath the waterbodies would ensure that the bed and banks of creeks and drainages are not disturbed. Horizontal boring (jack and bore) would generate large volumes of spoil during excavation of the bore pits and may require continuous dewatering if the bottom of the bore pit is below the water table.

Mitigation Measure for Impact H-3, Impacts to Surface Waters

H-3a Creek and drainage crossings shall be conducted in a manner that does not result in a sediment laden discharge or hazardous materials release to the waterbody. The following measures shall be implemented during horizontal boring (jack and bore) operations:

- 1) Site preparation shall begin no more than 10 days prior to initiating horizontal bores to reduce the time soils are exposed adjacent to creeks and drainages.
- 2) Trench and/or bore pit spoil shall be stored a minimum of 25 feet from the top of bank or wetland/riparian boundary for Telegraph Creek and the two Unnamed Drainages. Spoil shall be stored behind a sediment barrier and covered with plastic or otherwise stabilized (i.e. tackifiers, mulch, or detention).
- 3) Portable pumps and stationary equipment located within 100 feet of a water resource (i.e. wetland/riparian boundary, creeks, drainages) shall be placed within secondary containment with adequate capacity to contain a spill (i.e. a pump with 10 gallon fuel or oil capacity should be placed in secondary containment capable of holding 15 gallons). A spill kit shall be maintained onsite at all times.
- 4) Immediately following backfill of the bore pits, disturbed soils shall be seeded and stabilized to prevent erosion and temporary sediment barriers left in place until restoration is deemed successful.

H-3b SDG&E shall prepare a Horizontal Directional Drill Contingency Plan to address procedures for containing an inadvertent release of drilling fluid (frac-out). The plan shall contain specific measures for monitoring frac-outs, containing drilling mud, and notifying agency personnel. The plan shall also discuss spoil stockpile management, hazardous materials storage and spill clean-up, site-specific erosion and sediment control, and housekeeping procedures as described in the SWPPP.

Impact H-4: Increased Runoff from New Impervious Areas and Alteration of Existing Drainage Patterns

Undergrounding the 138 kV cable would involve excavating a trench and installing a duct bank measuring approximately 3 feet wide by 6 feet deep several feet below the ground surface. Upon completion, the trench would be backfilled and restored to pre-construction conditions and drainage patterns would be restored to their original grade and contour. Approximately 7 vaults would be installed along the underground alignment for future maintenance needs (refer to *Section B* for a description of the vaults). Each vault would have an impervious manhole cover to access the vaults. Therefore, where vaults are located in areas that were previously permeable, there would be a slight increase in impervious surfaces. However, this increase would be considered negligible and a less than significant impact (Class III). No additional mitigation would be required.

Impact H-5: Groundwater Disturbance and Water Quality Degradation Through Project-Related Excavation

Trenching activities for the underground 138 kV circuit would require excavating a ditch a minimum of 3 feet wide by 6 feet deep. Additionally, bore pits used for horizontal drilling beneath Telegraph Canyon Creek and the two Unnamed Drainages would require excavation to depths near 15 feet below the ground surface. Recent groundwater depth studies indicate that groundwater levels along the 138 kV undergrounding route range from five to 14 feet below the existing grade (Geocon 2005 and URS 2005b). Trenching activities below the water table could result in potentially significant impacts to groundwater. In areas known to contain contaminated groundwater, the potential exists for construction activities to facilitate mobilization of contaminants from areas of high concentration to areas of low concentration (See *Section D.9.1* for known contaminated sites in the study area). Mobilization of hazardous substances from areas of known contamination to areas previously not contaminated resulting from construction would be considered a significant impact. In addition, permanent facilities located below the groundwater table could alter groundwater flows and result in mobilization of existing contaminants that differ from historic conditions. Substantially altering historic groundwater and contaminant migration patterns would be considered a significant impact.

Mitigation Measures H-5a and H-5b would ensure the groundwater discharges are in accordance with regulations governed by the RWQCB and would reduce dewatering impacts to a less than significant level (Class II). Implementation of Mitigation Measure H-5c in conjunction with Mitigation Measures HAZ-2a, HAZ-2b, HAZ-2d and HAZ-3b (see *Section D.9, Public Health and Safety*) would ensure that impacts to changes in groundwater flow patterns or migration of

existing contaminants through project-related excavation would be less than significant (Class II).

Mitigation Measure for Impact H-5, Groundwater Disturbance and Water Quality Degradation Through Project-Related Excavation

H-5c For the underground trenching construction, SDG&E shall ensure treatment in compliance with NPDES dewatering permit to be issued by the RWQCB. Where necessary, a dewatering treatment system shall be employed to remove contaminants. For instance, for treatment of volatile organic compounds such as TCE, the system may employ at least two beds of GAC in series in addition to physical processes used to reduce suspended solids. Additionally, the dewatering pumping shall be coordinated in a way to not alter the natural migration pathway of plumes traversing the trench alignment from up gradient to down gradient. Methods such as beginning dewatering pumping from the areas of highest concentration as the trench approaches and before dewatering along the active section of the trench could be used to alter plume migration and maintain dewatering pumping from the high concentration areas until the section of active dewatering is well beyond the high concentration areas.

Movement of shallow groundwater could be potentially disrupted by HDD and jack and bore construction and placement of the proposed duct bank with associated effects to downstream subsurface or surface flows. These impacts would be associated with proposed stream and Sweetwater Marsh crossings and projected groundwater occurrence in these areas. However, placement of the underground cable and associated duct bank through HDD and jack and bore construction are expected to have a less than significant impact requiring no mitigation (Class III) to altering groundwater flow. The proposed duct bank would measure between three feet by three feet to three feet by six feet and on average be placed approximately four to six feet below the surface except in areas where horizontal directional drilling is proposed (Sweetwater Marsh) where depths would average approximately 70 feet below the surface. These depths are considered sufficient to preclude impacts to groundwater flow in smaller streams and channels due to associated alluvium depths. That is, streams and channels with alluvial depths of less than 20 feet will generally not be affected as the duct bank would be located largely outside of the aquifer. Streams with alluvial depths exceeding 20 feet would be likely to accommodate the proposed three feet by three to six-foot duct bank without impacts to groundwater movement.

Impact H-6: Encroachment into a Floodplain or Watercourse by Permanent Project Features

The proposed 138 kV underground cable alignment would cross the FEMA 100-year flood zone of the Sweetwater River and Paradise Creek. As proposed, the applicant would bore below the

watercourses crossed by the underground cable and install a 36-inch steel or HDPE casing for the proposed cable. As discussed under Impact H-3, less than significant impacts (Class III) to local surface water hydrology and drainage are anticipated due to proposed trenching, horizontal boring or HDD. However, exposure of the underground cable to floodway hazards primarily scour (damage done by a powerful current of water) is considered a potentially significant impact. Implementation of Mitigation Measure H-6 would ensure proper burial of the proposed cable and therefore scour impacts due to floodplain or watercourse hazards would be mitigated to less than significant (Class II).

Mitigation Measure for Impact H-6, Encroachment into a Floodplain or Watercourse by Permanent Project Features

H-6 A scour analysis shall be completed by a qualified engineer during the design phase to determine potential cable washout dangers commonly associated with major flood events for all floodplain or watercourses crossed by the underground cable.

Impact H-7: Construction in a Potential Dam Inundation Area

Since the underground cable would be encased below ground in a concrete duct bank, impacts resulting from a dam failure would not likely result in adverse consequences and would be less than significant (Class III).

Impact H-8: Operation and Maintenance Impacts to Surface Water and Groundwater Quality

Operations and maintenance of the underground cable would involve routine inspection and periodic service at each vault. Access to vaults would be via existing access routes as no new roads are proposed as part of the project. Utility vaults can accumulate groundwater over time which requires dewatering. Dewatering utility vaults could potentially impact nearby surface waters if the discharge is sediment laden or came in contact with soluble pollutants within the vault. Additionally, if the discharge is not controlled, scour, flooding, and/or erosion could occur at the discharge point. However, the SWRCB has issued General Permit CAG990002, Order No. 2001-11-DWQ to provide permit coverage for dewatering utility vaults under the NPDES program. Implementation of BMP 3-06, which provides guidelines for complying with the permit, would ensure that impacts to surface waters during the operation and maintenance phase of the project are less than significant (Class III).

D.6.3.7 Removal of Lattice Steel Bridge Structures

Impact H-1: Water Quality Degradation from Erosion and Sedimentation during Construction

Removal of 18 existing lattice steel bridge structures would involve dismantling the structures in-place using cranes and boom trucks positioned within SDG&E's ROW. Once the towers have been dismantled, the components would be hauled offsite using trucks or lifted and flown to a nearby staging area with helicopters. Access to each structure would be via existing access roads or by foot where vehicle access has not been established. The estimated workspace required to remove each structure is 300 feet by 150 feet and would be limited to pre-disturbed areas, when feasible.

Erosion and subsequent sedimentation could occur during ground disturbing activities as a result of exposed soils to wind and water erosion. Soils eroded from existing work areas could be deposited in the Sweetwater Marsh since the work areas are located within or adjacent to the marsh. However, the majority of the work would occur on existing, disturbed work areas, therefore the increase in erosion potential would be considered low. Heavy use of dirt access routes by vehicles and equipment would likely increase fugitive dust and mud tracked onto roadways. APMs 5, 6, 7, 11, 36, 51, and 53, as proposed by SDG&E, would minimize erosion and control sedimentation. Implementation of these measures and mitigation measure H-1b would ensure that impacts associated with erosion and sedimentation during removal of the lattice steel bridge structures would be less than significant (Class III).

Mitigation Measure for Impact H-1, Erosion and Sedimentation during Construction

H-1b Lattice steel bridge structure removal within the Sweetwater Marsh shall be limited to existing access roads and previously disturbed work areas to the greatest extent possible. If work must occur outside a previously disturbed work area, the proposed workspace shall be staked in the field and reviewed by the Environmental Monitor prior to use. Appropriate erosion and sediment control, as determined by the Environmental Monitor, shall be installed prior to expanding any work area within the marsh. Additional workspace shall be limited to upland areas only, unless otherwise permitted by Section 404 and 401 of the Clean Water Act and the Sweetwater Marsh National Wildlife Refuge.

Impact H-2: Degradation of Water Quality Through Spill of Potentially Harmful Materials Used in Construction

The removal of lattice steel bridge structures would utilize equipment similar to that discussed for the Silvergate Substation and 138 kV undergrounding and therefore similar impacts to water quality from a hazardous materials spill would be anticipated. As previously discussed, APMs 7, 15, 30, and 31 would minimize the potential for an inadvertent release and provide guidelines for containing and cleaning up spills in the event that a hazardous material is released to the ground from vehicles or equipment. Implementation of Mitigation Measure H-2 would ensure impacts are reduced to a less than significant level (Class II).

Impact H-3: Impacts to Surface Waters

Direct impacts to surface waters would not occur during the removal process for the lattice steel bridge structures since work would be limited to upland areas. Tidal flows would be avoided by using existing, elevated access roads and pad sites or by utilizing helicopter to transport dismantled lattice steel bridge structures. Indirect impacts to surface waters could occur as a result of erosion and subsequent sediment deposition, however, APMs and mitigation measure H-1 have been proposed to ensure indirect impacts to surface waters during removal of the lattice steel bridge structures are less than significant (Class II).

Impact H-4: Increased Runoff from New Impervious Areas and Alteration of Existing Drainage Patterns

Removal of the steel lattice bridge structures would not result in a measurable change in impervious surfaces. The total impervious area within the ROW limits may slightly decrease as a result of foundation removal or partial foundation removal (i.e. cut below the ground surface), however, the decrease would be considered negligible. Nonetheless, a decrease in impervious surfaces would be considered a beneficial impact (Class IV).

Impact H-5: Groundwater Disturbance and Water Quality Degradation Through Project-Related Excavation

Construction activities associated with the removal of the steel lattice bridge structures would occur to above ground structure and therefore would not impact groundwater. Removal of the foundations would require some excavation, but it is anticipated that this process would only occur near the surface and would not encroach groundwater.

Impacts H-6 (encroachment into a floodplain), H-7 (dam inundation zones), and H-8 (operation and maintenance) would not apply to steel lattice bridge structure removal since this component of the project proposes to remove all existing structures on the site and does involve construction of any new facilities.

D.6.4 Project Alternatives

D.6.4.1 Gas Insulated Substation Technology

Environmental Setting

Section D.6.1 describes the hydrology and water quality setting for the proposed Silvergate Substation site and surrounding areas. SDG&E's GIS Technology alternative would occur in the same hydrologic area and location as the proposed Silvergate Substation, therefore, the existing hydrological conditions would be the same as described in *Section D.6.1*.

Environmental Impacts and Mitigation Measures

This alternative would use GIS technology for the 230 kV switchyard which would be associated with the proposed Silvergate Substation. All other project components as described for the Proposed Project would remain the same. Under this alternative, use of GIS equipment would result in an approximate 3.7 acre footprint within the same location as the Proposed Project.

Impacts to hydrology and water quality resulting from construction and operation of the GIS alternative would be the same as impacts anticipated from the proposed Silvergate Substation component of the Proposed Project (refer to *Section D.6.3*). Therefore, all of the APMs and mitigation measures described in *Section D.6.3* would apply to the GIS alternative.

Comparison to the Proposed Project

This alternative would result in a smaller overall footprint than the Proposed Project. The GIS Alternative would require approximately 3.7 acres for construction and operation of the substation, whereas the Proposed Project (air-insulated substation) would require approximately 5.0 acres. Potential impacts to water quality from erosion and sedimentation during construction (Impact H-1) would be similar to the Proposed Project and mitigated with the APMs (Class III) and mitigation measures (Class II) described in *Section 6.3*. All other impacts associated with the Proposed Project would be the same and apply to the GIS alternative.

D.6.4.2 Alternative to Open Trench Methods- Use of Horizontal Directional Drilling

Environmental Setting

Section D.6.1 describes the hydrology and water quality setting for the 138 kV Circuit Removal and Undergrounding component. The use of HDD as an alternative to open trench methods would occur in the same area as the 138 kV undergrounding, therefore the existing hydrologic conditions would be the same as described in *Section D.6.1*.

Environmental Impacts and Mitigation Measures

This alternative would utilize conventional HDD technology to install the 138 kV circuit from J Street to G Street instead of open trench methods proposed by the project. The length of the directional drill would measure approximately 5,600 feet and require temporary additional workspaces measuring 150 feet wide by 200 feet long at each end of the drill (refer to *Section D.6.3.6* for additional detail on HDD methodology). However, depending on the site-specific conditions, multiple shorter drills may be required to achieve 5,600 feet. In that case, additional work space would be required at each entry and exit hole.

Erosion and subsequent sedimentation could occur from the temporary additional workspaces required for the HDD that could have adverse impacts to nearby water resources (Impact H-1) and the use of stationary equipment for prolonged periods would increase the potential for an inadvertent release of hazardous materials (Impact H-2). However, APMs 5, 6, 7, 11, 36, 37, 51, and 53 would minimize erosion and control sediment transport through the use of BMPs and preparation of a SWPPP (Class III). The Alternative to Open Trench Methods alternative would not directly affect any surface waters (Impact H-3), however, the potential for a frac-out beyond the ROW limits does exist. Impacts resulting from a frac-out would be reduced to a less than significant level through implementation of mitigation measure H-3b (Class II).

HDD between J Street and G Street would have no impact on impervious surfaces (Impact H-4), since all work areas used for the HDD would be restored to pre-construction conditions and no additional above ground facilities would be required. Impacts to groundwater (Impact H-5) would be minimal as a result of HDD, however, contaminated soil and groundwater does exist in the vicinity that could be exposed at the entry and exit holes for the drill. Exposure of contaminated soil and ground water for this alternative is discussed in more detail in *Section D.9.4.2, Public Health and Safety*.

Impacts H-6 to H-8 would not apply to the use of HDD since the 138 kV circuit would be placed below the ground surface which would preclude impacts from flooding. Future operation and maintenance, such as repair or replacement of a 138 kV cable, would occur at vaults located on either side of the HDD section and would not result in significant impacts to surface or groundwater quality.

Comparison to the Proposed Project

Impacts to hydrology and water quality (Impacts H-1 through H-4) resulting from the use of HDD construction as an alternative to open trench methods are anticipated to be similar to the Proposed Project. While the HDD would eliminate approximately 5,600 feet of trenching it would require the use of at least two 150 foot by 200 foot temporary additional workspaces that would be exposed to wind and water erosion for a greater period of time. This alternative would require less overall land disturbance, but since the trenching of the Proposed Project would occur primarily through paved lots, there would be little difference between the amount of exposed soil using HDD when compared to the Proposed Project. Therefore any change in impacts to surface water quality resulting from implementation of this alternative would be considered negligible.

Since the HDD would eliminate approximately 5,600 feet of trenching between J Street and G Street, the potential for encountering contaminated soils and groundwater water could decrease, assuming that staging areas and the drill path can be located to avoid existing contamination. Similarly, dewatering between J Street and G Street would not be expected. However, any changes in impacts to groundwater disturbance and water quality (Impact H-5) resulting from implementing this alternative would be considered negligible given Mitigation Measures H-5c and HAZ-2 and HAZ-3 for the Proposed Project and that HDD would only replace the segment from J Street to G Street.

Impacts resulting from flooding (Impact H-6) would be mitigated to less than significant by implementation of Mitigation Measure H-6 in the same manner as the Proposed Project (Class II). Impacts related to dam inundation (Impact H-7) and maintenance and operation (Impact H-8) would be the same as the Proposed Project, which were determined to be less than significant requiring no mitigation (Class III).

D.6.4.3 Environmental Impacts of the No Project Alternative

Under the No Project Alternative, none of the facilities associated with the Project or alternatives evaluated in this EIR would be constructed by SDG&E and, therefore, none of the impacts in this section would occur. However, under the No Project Alternative, SDG&E could be forced to rebuild a portion of the South Bay Substation or upgrade the existing Main Street Substation.

Either upgrade would result in direct or indirect impacts to water quality from construction and operation. These impacts would be expected to be similar to those described in *Section D.6.3.3* for the proposed Silvergate Substation. However, overall impacts would be reduced when compared to the Proposed Project due to the elimination of demolition activities associated with the Silvergate Substation, undergrounding of the 138 kV from the South Bay Power Plant to the Sweetwater River, removal of 18 lattice bridge structures, and associated construction-related impacts to hydrology and water quality.

D.6.5 Mitigation Monitoring, Compliance and Reporting Table

Table D.6-4 shows the mitigation monitoring, compliance, and reporting program for hydrology and water quality. The CPUC shall be responsible for ensuring compliance with the provisions of the monitoring program. In addition, the RWQCB may elect to enforce mitigation measures under their jurisdiction at any point during the project. The Agency mitigation measures (MMs) as well as the APMs that SDG&E has made part of the Silvergate Transmission Substation Project are listed. *Table D.6-4* indicates whether the measure is applicant-proposed or agency-recommended. As indicated in *Table D.6-4*, the APMs are provided in shaded text and agency mitigation measures are provided in non-shaded text.

**TABLE D.6-4
Mitigation Monitoring Program – Hydrology And Water Quality**

No.	Impact	MM	APM #s	Mitigation Measure/Applicant Proposed Measure	Implementation Actions	Monitoring Requirements and Effectiveness Criteria	Timing of Action and Location
H-1	Soil erosion, water quality degradation and sedimentation from construction activity and access roads		5, 6, 7, 11, 36, and 53	See Table D.6-3 for description of APMs.	SDG&E to implement measures as defined and incorporate commitments into construction contracts.	CPUC to ensure that commitments have been incorporated into construction contracts. CPUC to inspect periodically to ensure minimization of disturbance and erosion.	Prior to and during construction in all work areas.
			51	See Table D.6-3 for description of APM.		CPUC to verify and ensure RWQCB approval, and require SDG&E to submit NPDES permit and SWPPP to the CPUC thereby minimizing water quality impacts. CPUC to review final design plans and verify CDFG, RWQCB and ACOE requirements have been met and inspect periodically to ensure minimization of disturbance and erosion.	Prior to and during construction in all work areas.
		H-1a		Spoil stockpiles shall be stored in upland areas as far away from storm drains, waterbodies, and wetlands as practical. Where the natural topography does not provide a physical barrier between spoil stockpiles and water resources, stockpiles shall be stored behind a sediment barrier. In addition, if spoil stockpiles are stored on the ROW for greater than 48 hours or if precipitation is anticipated, they shall be covered with plastic or	SDG&E to implement measure as defined and incorporate into construction contracts.	CPUC to ensure that commitments have been incorporated into construction contracts. CPUC to inspect periodically to ensure minimization of disturbance and erosion.	Prior to and during construction, primarily within work areas associated with underground construction.

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**TABLE D.6-4
Mitigation Monitoring Program – Hydrology And Water Quality**

No.	Impact	MM	APM #s	Mitigation Measure/Applicant Proposed Measure	Implementation Actions	Monitoring Requirements and Effectiveness Criteria	Timing of Action and Location
				otherwise stabilized (i.e., tackifiers, mulch, or detention).			
		H-1b		Lattice steel bridge structure removal within the Sweetwater Marsh shall be limited to existing access roads and previously disturbed work areas to the greatest extent possible. If work must occur outside a previously disturbed work area, the proposed workspace shall be staked in the field and reviewed by the Environmental Monitor prior to use. Appropriate erosion and sediment control, as determined by the Environmental Monitor, shall be installed prior to expanding any work area within the marsh. Additional workspace shall be limited to upland areas only, unless otherwise permitted by Section 404 and 401 of the Clean Water Act and the Sweetwater Marsh National Wildlife Refuge.	SDG&E to implement measures as defined and incorporate into construction contracts.	CPUC to ensure that commitments have been incorporated into construction contracts. CPUC to inspect periodically to ensure minimization of disturbance and erosion.	Prior to and during construction within and adjacent to Sweetwater Marsh.

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**TABLE D.6-4
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No.	Impact	MM	APM #s	Mitigation Measure/Applicant Proposed Measure	Implementation Actions	Monitoring Requirements and Effectiveness Criteria	Timing of Action and Location
H-2	Degradation of water quality through spill of potentially harmful materials used in construction		APMs 7, 15, 30, 31 and BMP 2-05	See Table D.6-3 for description of APMs.	SDG&E to implement measure as defined and incorporate commitments into construction contracts.	CPUC to ensure that commitments have been incorporated into construction contracts. CPUC to inspect periodically to ensure minimization of accidental release, containing and properly disposing of hazardous materials. CPUC to verify approval from San Diego County thereby minimizing the risk of accidental release, containing and properly disposing of hazardous materials.	Prior to and During construction in all work areas.
		H-2		No refueling of equipment or storage of hazardous materials shall occur within 100 feet of the Sweetwater Marsh. Vehicles and motorized equipment shall not be parked overnight within the boundaries of the marsh, unless explicitly approved by the Sweetwater Marsh National Refuge Manger and the Environmental Monitor and precautionary measures, such as secondary containment, are implemented. In addition, equipment working within the Sweetwater Marsh boundaries shall be equipped with a spill kit.	SDG&E to implement measure as defined and incorporate commitments into construction contracts.	CPUC to ensure that commitments have been incorporated into construction contracts. CPUC to inspect periodically to ensure minimization of disturbance and erosion.	Prior to and during construction, primarily within work areas associated with underground construction.
H-3	Impacts for surface water	H-3a		Creek and drainage crossings shall be conducted in a manner that does not result in a sediment	SDG&E to implement measure as defined and incorporate commitments into construction	CPUC to ensure that commitments have been incorporated into construction	Prior to and during construction in all work areas associated with

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**TABLE D.6-4
Mitigation Monitoring Program – Hydrology And Water Quality**

No.	Impact	MM	APM #s	Mitigation Measure/Applicant Proposed Measure	Implementation Actions	Monitoring Requirements and Effectiveness Criteria	Timing of Action and Location
				<p>laden discharge or hazardous materials release to the waterbody. The following measures shall be implemented during horizontal boring (jack and bore) operations:</p> <ol style="list-style-type: none"> 1) Site preparation shall begin no more than 10 days prior to initiating horizontal bores to reduce the time soils are exposed adjacent to creeks and drainages. 2) Trench and/or bore pit spoil shall be stored a minimum of 25 feet from the top of bank or wetland/riparian boundary for Telegraph Creek and the two Unnamed Drainages. Spoil shall be stored behind a sediment barrier and covered with plastic or otherwise stabilized (i.e. tackifiers, mulch, or detention). 3) Portable pumps and stationary equipment located within 100 feet of a water resource (i.e. wetland/riparian boundary, creeks, drainages) shall be placed within secondary containment with adequate capacity to contain a spill (i.e. a pump with 10 gallon fuel or oil capacity should be 	<p>contracts.</p>	<p>contracts. CPUC to verify RWQCB and County approval of dewatering activities thereby minimizing the potential for water quality degradation through project-related excavation.</p>	<p>creek and drainage crossings.</p>

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Mitigation Monitoring Program – Hydrology And Water Quality**

No.	Impact	MM	APM #s	Mitigation Measure/Applicant Proposed Measure	Implementation Actions	Monitoring Requirements and Effectiveness Criteria	Timing of Action and Location
				<p>placed in secondary containment capable of holding 15 gallons). A spill kit shall be maintained onsite at all times.</p> <p>4) Immediately following backfill of the bore pits, disturbed soils shall be seeded and stabilized to prevent erosion and temporary sediment barriers left in place until restoration is deemed successful.</p>			
		H-3b		<p>SDG&E shall prepare a Horizontal Directional Drill Contingency Plan to address procedures for containing an inadvertent release of drilling fluid (frac-out). The plan shall contain specific measures for monitoring frac-outs, containing drilling mud, and notifying agency personnel. The plan shall also discuss spoil stockpile management, hazardous materials storage and spill clean-up, site-specific erosion and sediment control, and housekeeping procedures as described in the SWPPP.</p>	<p>SDG&E to implement measures as defined and incorporate commitments into construction contracts.</p>	<p>CPUC to ensure that commitments have been incorporated into construction contracts. CPUC to verify approval from RWQCB to ensure protection of water quality.</p>	<p>Prior to and during construction in all areas proposed for horizontal boring or horizontal directional drilling.</p>
		HAZ-2a, HAZ-2b, HAZ-3b	5, 6, 36	<p>See Table D. 6-2 for APM description. See Section D.9, Public Health and Safety for description of HAZ-2a, HAZ-2b and HAZ-3.</p>			

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Mitigation Monitoring Program – Hydrology And Water Quality**

No.	Impact	MM	APM #s	Mitigation Measure/Applicant Proposed Measure	Implementation Actions	Monitoring Requirements and Effectiveness Criteria	Timing of Action and Location
H-5	Groundwater Disturbance and Water Quality Degradation Through Project-Related Excavation	H-5a		SDG&E and its contractors shall comply with all local, state, and federal regulations pertaining to storm water and non-storm water discharges.	SDG&E to implement measures as defined and incorporate commitments into construction contracts.	CPUC to ensure that commitments have been incorporated into construction contracts. CPUC to inspect periodically to ensure minimization of disturbance and erosion.	Prior to and during construction for all work areas requiring dewatering.
		H-5b		<ol style="list-style-type: none"> 1) Prior to construction, SDG&E shall consult with the San Diego Regional Water Quality Control Board to determine if an individual discharge permit is required for dewatering at any of the project sites anticipated to encounter groundwater. A copy of the permit or a waiver from the RWQCB, if required, shall be provided to the CPUC prior to dewatering. 2) In addition, SDG&E shall submit a typical dewatering drawing that shall be implemented during dewatering activities. The drawing shall include: the location of pumps within secondary containment; fuel storage areas; anticipated discharge point; scour protection measures; intake hose screening; and monitoring procedures to ensure that hazardous materials spills are addressed 	SDG&E to implement measures as defined and incorporate commitments into construction contracts.	CPUC to ensure that commitments have been incorporated into construction contracts. CPUC to inspect periodically to ensure minimization of disturbance and erosion.	Prior to and during construction for all work areas requiring dewatering.

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Mitigation Monitoring Program – Hydrology And Water Quality**

No.	Impact	MM	APM #s	Mitigation Measure/Applicant Proposed Measure	Implementation Actions	Monitoring Requirements and Effectiveness Criteria	Timing of Action and Location
				in a timely manner and discharges hoses are frequently inspected leaks.			
		H-5c		For the underground trenching construction, SDG&E shall ensure treatment in compliance with NPDES dewatering permit to be issued by the RWQCB. Where necessary, a dewatering treatment system shall be employed to remove contaminants. For instance, for treatment of volatile organic compounds such as TCE, the system may employ at least two beds of GAC in series in addition to physical processes used to reduce suspended solids. Additionally, the dewatering pumping shall be coordinated in a way to not alter the natural migration pathway of plumes traversing the trench alignment from up gradient to down gradient. Methods such as beginning dewatering pumping from the areas of highest concentration as the trench approaches and before dewatering along the active section of the trench could be used to alter plume migration and maintain dewatering pumping from the high concentration areas until the section of active	SDG&E to implement measures as defined and incorporate commitments into construction contracts.	CPUC to ensure that commitments have been incorporated into construction contracts. CPUC to inspect periodically to ensure minimization of disturbance and erosion.	Prior to and during construction in work areas requiring dewatering associated with underground trenching.

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Mitigation Monitoring Program – Hydrology And Water Quality**

No.	Impact	MM	APM #s	Mitigation Measure/Applicant Proposed Measure	Implementation Actions	Monitoring Requirements and Effectiveness Criteria	Timing of Action and Location
				dewatering is well beyond the high concentration areas.			
H-6	Encroachment into a floodplain or watercourse by permanent project features	H-6a		A scour analysis shall be completed during the design phase to determine potential cable washout dangers commonly associated with major flood events for all floodplain or water courses crossed by the underground cable. A report of the analysis shall be submitted to the CPUC for review and approval at least 60 days prior to construction.	SDG&E to implement measures as defined.	CPUC to review and approve engineering analysis thereby minimizing scour and erosion.	Prior to construction in locations where the proposed cable will cross below or pass adjacent to streams and water courses.
H-8	Operation and Maintenance Impacts to Surface Water and Groundwater Quality	H-8		SDG&E shall prepare a Spill Prevention, Control, and Countermeasure (SPCC) Plan in accordance with CFR Section 40, part 112 for the Silvergate Substation. A copy of the plan shall be submitted to the CPUC prior to energization.	SDG&E to implement measures as defined.	CPUC to ensure that SPCC Plan has been prepared.	During operation of the new Silvergate Substation.

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