2 PROJECT DESCRIPTION

2.1 INTRODUCTION

The overall proposed expansion project is to construct, install, operate, and maintain a fiber optic telecommunications network over several linear routes within California. This document identifies and assesses the environmental effects of all foreseeable construction, maintenance, and operation activities. Three project segments or routes can be defined for environmental analysis:

- Northern California Interconnection Projects
- Los Angeles to Ontario Longhaul Route
- Ontario to San Diego Longhaul Route

A detailed description of each of the proposed routes is provided in Chapter 3, "Project Route Descriptions." Broadwing proposes to construct almost all of the fiber optic cable system within existing disturbed rights-of-way (e.g., road, railroad, or utility corridors). A small part of the system will be installed outside these already disturbed rights-of-way, such as regenerator and OP-AMP stations and small portions of the fiber optic cable routes. Broadwing has prioritized its preferred installation methods and routes for fiber optic cable in part to avoid and minimize environmental impacts. The level of environmental disturbance is anticipated to be approximately equivalent to the upgrading of distribution facilities by local telephone or utility companies or to activities for street and railroad maintenance. As such, activities related to this expansion project are expected to have a very small (i.e., less-than-significant) overall impact on the environment.

2.2 CONSTRUCTION AND OPERATION OVERVIEW

Fiber optic cable resembles a traditional copper conductor telephone cable in outward appearance. Instead of copper conductors, however, fiber optic cables contain multiple strands of glass fiber used to transmit pulses of highly concentrated light. The glass fibers are protected by various internal cable components, including buffer tubes, Mylar tape, an inner polyethylene sheath, a steel shield, and a waterproof outer polyethylene sheath. The total outside diameter of the cable is approximately 1.1 inches. The cable is completely inert and emits no electrical current, sound, or chemical.

The fiber optic cable is encased within a conduit. The proposed conduit, or duct, is extruded from high-density polyethylene (HDPE). Broadwing is proposing to install one or more 1.9-inch HDPE conduits, depending upon the project route. One conduit will accommodate the current fiber optic cable and Broadwing or other carriers will use the additional conduits in the future. Particularly in highly urbanized areas, some jurisdictions may require the installation of multiple conduits, ranging from 15 to 45 or more. The HDPE conduits will be installed at a nominal depth of 42 inches from ground level to the top of the duct.

A continuous ribbon of buried cable warning tape will be placed 12 inches above and parallel to the conduit. The warning tape is imprinted with a warning message at 2-foot intervals. This tape serves as a final warning to excavators that fiber optic cable is buried below. The tape will be a 6-inch-wide, 6-ply, co-polymer, high-density tape that is impervious to soil acid, alkali, or other natural soil agents.

Typically manholes and/or handholes will be installed at locations where access to the conduit or cable is necessary for cable installation, splicing, testing, storage of "slack" or excess cable, maintenance, restoration, or wherever future access needs are anticipated. Manholes will be used in urban areas where asphalt or concrete is present. Manholes will be installed flush with the surface and are designed to support vehicular traffic. Constructed from fiber-reinforced plastic with a cast iron cover, the cylindrical manhole vaults have a height of 54 inches and a diameter of 42 inches. Depending on construction constraints, manholes will be placed approximately every 1,000 to 2,500 feet.

Handholes will be placed approximately every 10,000 to 20,000 feet in rural areas. Handholes are smaller than manholes, with dimensions of 43 inches by 60 inches and a height of 18 inches and are buried with 18 to 24 inches of cover. They are generally located close enough together to prevent the necessity for pull vaults or assist dig points. If pulling tension on the fiber cable exceeds 600 pounds, however, Broadwing may elect to dig an assist point. If excavation of an assist point is necessary, the average pit will be 18 inches wide, 72 inches in diameter, and 48 inches deep.

A shield isolation point (SIP) will be installed at each splice location where the splice case is contained in a buried handhole. The SIP provides workers with ready access to the metallic cable shield and grounding point without digging up the handhole or removing the splice case. The SIP consists of an aboveground pedestal (enclosure) measuring approximately 4-1/3 inches by 4-1/2 inches by 12 inches, one or more copper clad ground rods, and the necessary terminal and connectors to bond and ground the cable shield. SIPs will be installed as close as practical to the edge of the right-of-way.

Aboveground warning marker signs and posts will be installed along the routes at intervals ranging between 500 and 700 feet. These signs will provide visible evidence of the presence of a buried cable, identify the owner, and provide a telephone number for emergency notifications. Signposts will be installed securely, to a minimum depth of 4 feet, as close as practical to the edge of the right-of-way without impeding visibility. Marker poles or notices on existing poles will be placed in a given area when construction is complete for that area. In addition to the routine route marking locations, they will be placed at all highway, roadway, railroad, river, wash, and channel crossings; ~~and~~ at all points of directional change along the cable route; and at crossings of Metropolitan Water District of Southern California pipeline facilities and rights-of-way..

2.2.1 CONSTRUCTION METHODS

The proposed expansion project consists of the construction, installation, operation, and maintenance of new fiber optic communication systems and facilities. The following sections describe the construction process for installing and maintaining the proposed fiber optic facilities. The construction process includes conduit placement and fiber installation, using excavation or boring techniques, and construction of access vaults, safety features, and regenerator/OP-AMP stations.

CONDUIT PLACEMENT

Four methods may be used to install the conduit: direct burial using a rail plow or tractor, placement in an excavated trench, directional bores, and/or bridge attachments. Conduits are generally buried with at least 42 inches of cover, except when they are hung from a bridge within a steel pipe or when exceptional conditions (e.g., solid rock) are encountered. Total construction width is generally 10 feet for plowing and 14 feet for trenching. The maximum disturbance width is generally 25 feet, including the area of temporary construction disturbance.

Direct Burial By Rail Plow or Tractor

The preferred method of installing the conduit is to plow it in using a tractor (within public road or railroad right-of-way) or a rail plow (within railroad right-of-way). The plow method is the first priority because of its high production capabilities, minimal surface and subsurface disturbance, and ease of final cleanup. This method is most efficient in unpaved rights-of-way or on dirt or gravel road shoulders where few existing subsurface utilities cross the proposed plow line (see Figure 2.2-1).

The plow method of installation is accomplished by means of a rail plow or tractor capable of delivering at least 55,000 pounds of draw bar pull at 1.2 miles per hour. If required to ensure a smooth, continuous plowing operation, a pull tractor will be used in tandem with the plow unit to provide additional power. The plow tractor will be capable of extending and offsetting the load to maintain the required minimum depth and proper alignment under varied terrain conditions. The plowchute will be designed to allow the duct to pass through without binding or bending. The completed plow operation installs the duct into the ground, at the specified depth, in a narrow plow slot that self-closes behind the plow. Only minor compaction is required to restore the ground to its original density.

Rail plows operate at a distance of 3 to 15 feet from the side of the rail and pull a specialized single ripper that loosens the soil and parent material in a swath from 12 to 18 inches wide along the route alignment. The conduit is fed either from the rail plow or a tractor and laid directly at 42 inches of depth. There is no excavation of material, although soil is displaced and stirred. A compaction machine follows directly behind and returns the soil to a recognized standard measure of compaction. The running line may be pre-ripped if necessary to loosen the soil and identify the location of subsurface rock or other buried obstructions.

Because of the narrowness of the railroad right-of-way, the Metropolitan Transportation Authority (MTA), which owns and operates the railroad right-of-way along the proposed Los Angeles to Ontario Longhaul Route, supports installation of conduit and cable using a rail plow along the railroad right-of-way.

<u>Burial by Open Trench</u>

The trench method of installation is used when the working environment or other conditions preclude use of the plow method. The trench method is less efficient because of lower production capability (fewer feet of conduit installed per day) and greater compaction and cleanup requirements. The trench method is accomplished either by means of an excavator or by a “wheel” or “chain” trenching machine. The selection of the actual machine to be used is based on the environment in which the machine must work. All variations of the trenching operation require that a trench of sufficient width and depth be excavated so that conduits can be installed to the specified configuration and minimum cover. The conduits are placed in the bottom of the open trench by a separate operation and the excavation is backfilled and compacted to restore the ground to original condition and density.

The excavation method is best suited for segments that have narrow right-of-way, are heavily congested with existing substructures, or contain rock. For segments that have fewer obstructions or do not require careful probing, a trenching machine can be used. Trenching machines are capable of much greater productivity than an excavator and generally cut a cleaner trench. Paved areas will be saw cut so that paving material can be removed before trenching or excavating begins. In areas accessible to vehicular traffic, trenches will be protected with steel traffic plates to allow vehicles to cross before backfilling is complete.

When the material to be trenched is solid rock, a rock saw will be used to cut down approximately 3 feet. The conduit is laid in the bottom of the trench and at least 24 inches of cover is applied. The cover may be ground rock from the rock saw, gravel from an approved private source, or a slurry mixture of gravel and concrete to rapidly achieve needed compaction and protection over the conduit. Any excess trench spoils and excavated pavement materials will be removed with a backhoe or loader and trucked to an existing authorized site for disposal.

Installation by Directional Boring

The bore method of installation will be used when conduits must be placed underground without disturbance to the ground surface as required by the Draft Mitigation Monitoring Plan (see Appendix D) and when surface or subsurface conditions otherwise preclude plowing, excavating, or trenching. Other utilities, rail station platforms, railroad tracks, and many street intersections will be avoided by directionally boring beneath them. Concrete-lined storm water conveyance channels and streams supporting sensitive resources will also be crossed using directional boring or attachment to existing bridge structures, if permitted. Where these features will be bored, the depth of the bore will be as required by the agency involved at each location. For relatively short or simple bores, the drilling contractor often determines the appropriate bore depth based on professional experience and site-specific conditions. For longer or more complex bores, a geotechnical engineer is often asked to evaluate soil conditions and determine minimum bore depth. It is anticipated that bore depths will be at least 5 feet below the bottom of the concrete-lined channels; at least 8 feet beneath unlined drainage facilities, streams, and rivers with associated sensitive resources; 5 feet below railroad tracks; and 6 feet below paved streets and other structures (see Figure 2.2-2).

The directional drilling process is a relatively new construction technique. This process can accomplish bores of significant length and can control the location of the "boring head" with a high degree of accuracy. Directional boring is conducted with several types of horizontal drilling rigs, including trailer-mounted and larger, self-contained units. These rigs are capable of directing the boring tip of the drill and controlling it in both horizontal and vertical planes. A sensor placed behind the drill bit allows tracking of the depth and position of the drill head. This process uses an electronic locating device installed in the head of the drill and a companion locator to scan the ground surface and determine the actual location and depth of the drill. The "drill stem" is typically 2 to 3 inches in diameter. When a desired location and depth of the drill head is reached, the machine operator can stop the drill rotation and redirect the head to make any desired changes in depth or direction. Because of the high degree of control associated with this method, bores up to 1,000 horizontal feet can be accomplished accurately in good soil conditions. Additionally, because of the ability to manipulate the depth and direction of the drill, the drilling process can begin with a surface launch. Although this may eliminate the need for a bore pit, slump pits are still required for the containment and processing of drilling mud returns (as described below).

Areas to be avoided using directional boring will be delineated and work areas will be established at a standard setback distance from each side of the delineated avoidance area. One area will contain the drilling equipment and pilot hole and the other will contain the receiving hole where the drill bit emerges. For relatively short bores, the two work areas will measure approximately 100 feet by 50 feet. Larger equipment and a correspondingly larger work area (approximately 150 feet by 100 feet) are needed for longer bores. Locations of these work areas, where they fall outside the 25-foot construction right-of-way, will require completion of an environmental clearance authorization form (see Appendix H) and CPUC approval of a variance request (see form provided in Appendix D). Drilling rigs approach a proposed bore at an angle depending on the depth of bore required and the total length of the bore. In general, the deeper the bore and the longer the required depth that is to be maintained, the farther back the rig must be set. Bore pits (also known as tie-in pits) will be constructed with a backhoe within the work areas to allow the conduits to be spliced together at a depth of 48 inches. Bore pits typically will not exceed 5 feet deep by 8 feet long by 6 feet wide, although the length of the pit will vary depending on the angle of the bore.

For river, stream, and wetland crossings, the work areas will be located at least 25 feet from the bank or edge of the resource. However, most bores require at least a 50-foot setback for operational reasons. Buffers and other setbacks will be flagged in the field in response to site-specific conditions. Silt fences, straw bales, and other erosion control measures will be installed around these works areas, consistent with the Storm Water Pollution Prevention Plan (SWPPP) (see Appendix E). Any disturbances to drainage channel banks will require contouring of the bank disturbance to the original channel configuration.

Most directional bores will be done dry (as in the jack and bore method), although some may use water or drilling mud. Drilling muds used in directional boring are generally formulated by mixing approximately 50 pounds of bentonite to each 300 gallons of fresh water. The use of additives such as polymers is not anticipated. The dirt that is removed in the boring operation will be liquefied with the water and/or drilling mud and pulled back through the drill hole with the water/bentonite mixture. After accumulating in the entrance site, this liquefied mud and bentonite will be either pumped with a sump pump from the drilling pit to the filter on the drilling rig for recycling of the bentonite, or removed with a vacuum truck and then sent through the bentonite filter. The remaining mud will then be taken from the drill site in a watertight truck and disposed of at an existing authorized disposal site. Most of the bentonite used in the bore can be recovered and used again, minimizing site impacts.

At the entrance and exit sites for longer directional drilling operations using drilling muds (typically segments longer than 1,000 feet), sump pits will be excavated to contain and process drilling mud returns, including the dirt removed from the bore itself. The entrance site will be sized to accommodate 110 percent of the possible product from the drilling to accommodate an unexpected rainstorm, and typically will not exceed 5 feet deep by 8 feet long by 6 feet wide. Receiving pits are usually no more than 3 feet deep by 8 feet long by 2 feet wide. Depending on quality and moisture content, the dirt removed from the receiving pit will be either temporarily stockpiled away from the drilling site to be reused for rehabilitation of the pit or hauled to a private dumpsite. Excavated soils from sump pit construction may be temporarily placed around the pit to act as a berm for overflow protection and as a storm water diversion.

On average, bore rigs are 6 feet by 12 feet in size and are used in conjunction with an 8-foot by 24-foot water truck. In most bore rigs, the drill stem is stored on the rig; however, with extremely long bores, another 8-foot by 18-foot truck may be required to transport the extra drill stem.

Bridge Attachments

Although anticipated only minimally as part of the proposed expansion project, conduit may be attached aboveground to bridge structures (or placed within cells of new bridges) whenever boring is not feasible or economical and permission can be obtained from the regulatory agency and/or owner of the bridge. Burial of the conduit using directional boring reduces the chances of injury to the fiber cable and avoids problems in the future with bridge maintenance and bridge replacement. Bridge crossings may be necessary when underground utilities are already buried under the watercourse or when solid bedrock is encountered. Galvanized steel conduit will be used for a bridge crossing wherever conduit would be exposed. The conduit would come out of the ground in a steel pipe at the bridge abutment, be encased in steel across the bridge, and go back into the ground in a steel pipe on the other side. Because of the wide variety of bridge designs and structural differences, the location of the attachment and the attachment hardware would vary, based on specific design requirements. Generally, however, conduit would be located under the bridge deck, between the girders, to conceal and protect it as much as possible. Where existing conduit is available and suitable, an innerduct will be installed in preparation for the cable.

Installation of Fiber Optic Cable into Conduit

Fiber optic cable will be installed into conduit in a two-step operation. The first, preparatory step consists of confirming the continuity and condition of the conduit, and the installation of a pull rope into the conduit in preparation for cable installation. This step is accomplished by blowing a mandrel through the conduit using compressed air. This mandrel ensures that the conduit is not blocked, broken or collapsed, and serves as an installation tool for a lightweight string resembling a monofilament line. This lightweight pull string is then used to pull in a stronger pulling rope, which will be used as a winch line to pull in the actual fiber optic cable.

The second step of the pulling operation consists of the actual cable installation. The installation will be accomplished using a series of hydraulic pullers consisting of a main-line puller and sufficient intermediate assist pullers to ensure a smooth pulling operation within specified tension restrictions. Each main-line puller will be equipped with a tension limiter and a tension monitor to provide an accurate record of actual pulling tensions encountered for each conduit segment.

The cable is installed using the pulling rope placed during the preparatory step. One end of the pulling rope is attached to a main-line puller. The other end is attached to the fiber optic cable through a swivel to prevent the cable from twisting during the pulling operation. The main-line puller winches the pull rope onto a take-up spool, which in turn pulls the cable off the cable reel into the conduit. To the greatest extent possible, cable will be installed in full reel lengths with no intermediate splices.

Manholes and handholes are sized to accommodate pulling fiber through conduits. Therefore, for those routes that include pulling fiber through existing conduits (Northern California Interconnection Projects), it is not generally anticipated that these existing facilities will need to be enlarged. However, as described in Chapter 3, "Project Route Descriptions," the Northern California Interconnection Projects were analyzed using the conservative assumption that the entire route is new construction, which would include construction activities in and around existing manholes and handholes.

FACILITY OPERATION AND MAINTENANCE

Ground-disturbing activities associated with ongoing operation and maintenance of telecommunications projects are normally minor to nonexistent. Best management practices (BMPs) detailed in the SWPPP (see Appendix E) will be implemented to reduce or avoid unchecked runoff. In most emergency situations requiring immediate attention, such as a fiber optic cable cut, access to an area to inspect and repair damaged equipment will be by public roads.

CONSTRUCTION OF REGENERATOR/OP-AMP STATIONS

The signal transmitted on a fiber optic strand must be amplified (i.e., boosted) approximately every 40 miles and reconstructed, or "cleaned up," every 160 to 200 miles. A regenerator station houses the electrical equipment that reconstructs and boosts the optical signal. An OP-AMP station only boosts a signal. The outside elements of the regenerator/OP-AMP stations are identical and the only difference is the electronic equipment inside these facilities; thus the terms "regenerator station" and "OP-AMP station" are often used interchangeably. OP-AMP stations are the more frequently used facilities. Regenerator stations are required only for long, continuous routes (typically more than 200 miles between the beginning and ending points).

Broadwing plans to install two OP-AMP stations at approximately 40-mile intervals along the Ontario to San Diego Longhaul Route (see Figures 2.2-3 and 2.2-4). One OP-AMP station is proposed near Lake Elsinore in the community of Wildomar (Tranquil Lane site) and the other is proposed just south of the Riverside/San Diego County line in the community of Rainbow (Warder site). Both stations lie adjacent to the backbone fiber right-of-way. Connection of the backbone to the station will disturb less than 250 feet of ground during construction. The stations will include one 12-foot by 27-foot pre-cast concrete building, access road, driveway and parking areas, generator/fuel tank, fiber optic manholes or handholes, and perimeter fencing.

Each station will be contained within a 34-foot by 85-foot (2,890 square feet) fenced area. The unstaffed, locked facility will require periodic maintenance and is sized to provide space for operation and maintenance activities and secure parking for temporary vehicles. The OP-AMP stations will require commercial electrical power because each building comes from the manufacturer equipped with one or two heating, ventilation, and air conditioning (HVAC) units to maintain a steady temperature for the electronic equipment. Each station will also have an overhead security light and a small light over the door. Electrical power is currently available either on site or directly adjacent to the OP-AMP sites. Power lines will be extended to the OP-AMP station either suspended above ground or installed below ground, in accordance with standard construction codes and local jurisdictional requirements.

A diesel generator will be installed for emergency backup power. Because Broadwing's standard protocol is to provide backup power for a potential power outage lasting 5 days, a 1,000-gallon tank is proposed to supply fuel for the diesel generator (5 days @ 7.5 gallons per day = 840 gallons minimum). Fiber optic cable will be used for telephone service.

2.2.2 CONSTRUCTION SCHEDULE AND WORKFORCE

All permits and approvals must be in place before construction commences and will be provided to the CPUC. Construction segments and schedules may vary according to environmental constraints (i.e., biological, archaeological, seasonal work windows) and the completion of the permitting process. Construction of some segments of the project routes will be subject to various schedule windows so that potential disturbance of sensitive species can be avoided. Monitoring activities associated with construction will proceed as follows:

- Mark all sensitive resources, construction methods, and avoidance measures or mitigation measures on the construction drawings.
- Acquire permits and approvals from governing regulatory agencies.
- Prepare a traffic control plan, as required.
- Conduct pre-construction wildlife surveys in predetermined suitable habitat areas.
- Stake and flag resources as stipulated in the IS/MND and permits and from results of field surveys conducted for each project route.
- Prepare the rights-of-way and install sedimentation control measures where needed.
- Install conduit and fiber optic cable and construct associated facilities.
- Restore the rights-of-way, install erosion control measures, and apply seed and mulch as specified in the SWPPP (Appendix E) and reclamation plans.
- Monitor effectiveness of erosion control measures.
- Monitor success of mitigation consistent with the Draft MMP (see Appendix D) and permits.

Construction is anticipated to begin immediately following acquisition of permits. Broadwing may hire multiple contractors for each route, depending on the length of the route and how much time is available to install the conduit and cable and construct associated facilities after the completion of the CEQA and permitting processes and before the onset of the wet season. It is likely that several contractors, each with two or more subcontractors, will be used simultaneously on the longhaul routes. Special construction crews will work with the directional drilling operation and operate the rail plow or tractors. Table 2.2-1 shows typical construction progress for each type of construction technique employed.

Table 2.2-1 Typical Daily Construction Progress	
Installation Technique	**Typical Progress**
Rail plowing	2-4 miles per day
Direct plowing	1-2 miles per day
Trenching	½ mile per day
Rock or pavement cutting	1,000 feet per day
Directional boring	1 to 4 drill sites per day

The construction workforce is anticipated to consist of the following crews:

- Preparation crew – The preparation crews will prepare the rights-of-way for construction by placing temporary gates in fences (if any), clearing vegetation where necessary, and repairing erosion problems on existing roads to provide access for construction equipment, if necessary.
- Conduit and cable installation crew – The conduit and cable installation crews will install the conduit and cable using the construction methods discussed in this chapter.
- Cleanup crew – The cleanup crews will perform final cleanup of the rights-of-way by restoring pre-installation ground contours, installing erosion protection measures (e.g., erosion control blankets), and restoring affected stream channels, if necessary.
- Seeding crew – The seeding crews will apply seed and mulch where necessary.

Before any construction activity begins, the regional Underground Service Alert notification center will be contacted to notify owners of existing subsurface utilities of the impending activity. Construction will begin only after all existing substructures have been located and marked.

2.2.3 BROADWING'S CONSTRUCTION MANAGEMENT STRUCTURE

To provide the best potential for success of the expansion project, a proper management structure, adequate training of field personnel, an environmental awareness program, and the ability to respond to changing circumstances are critical. A field management structure has been established and a draft MMP has been prepared (see Appendix D) for overseeing the construction process. In addition, training classes for Broadwing's construction management and contractors will be held to cover issues such as environmental protection, safety, spill prevention and response, fire prevention and management, and proper management of storm water runoff (see "Environmental Training and Awareness" below for further information).

The field management structure established for the project route will include construction and environmental personnel such as the senior construction manager; spread supervisors; environmental manager; environmental inspectors; environmental resource coordinators; and biological and cultural/ archeological specialists. The roles and responsibilities of each onsite representative, as summarized below, will be clearly communicated and understood during the training program.

Senior Construction Manager. The senior construction manager is responsible for managing construction activities to ensure that all project facilities are completed according to project plans, schedules, and budgets. He or she has the overall responsibility for onsite decisions and the ability to halt construction operations in case of environmental noncompliance, emergencies, safety issues, or disputes with construction contractors. The senior construction manager will notify the environmental resource coordinator and, as necessary, the environmental manager of any proposed changes to project work so that appropriate variance requests and environmental reviews can take place. He or she will be in close contact with the spread supervisors on a daily basis regarding the progress of construction activities and any unanticipated construction or environmental issues. This manager will provide quality control inspection relevant to specific construction crafts and will serve as another set of eyes in the field on each spread.

Spread Supervisors. Each spread supervisor, assigned to an individual spread, will be onsite to oversee the individual construction crews and environmental inspectors within his or her spread. They will work with contractors to resolve field conflicts. Spread supervisors will report directly to the senior construction manager and will perform most of the administrative duties. They will communicate all information on construction activities related to compliance, safety, and administration on a daily basis. They will also report environmental issues to the environmental resource coordinator and, as necessary, the environmental manager.

Environmental Manager. The environmental manager will be responsible for the implementation and quality assurance of the environmental and archeological compliance program. This person will delegate duties to the environmental resource coordinator regarding environmental and archaeological issues. He or she will manage and support environmental field staff, negotiate and resolve any conflicts relevant to environmental compliance, review project documentation and technical plans, track approval of variance requests, update the construction plan as needed, and perform general troubleshooting on environmental compliance issues. The environmental manager will ensure that the environmental inspection team (comprising the environmental resource coordinator; environmental inspectors; and biological, cultural/archeological, and paleontological specialists) has adequate administrative and logistical support.

Environmental Resource Coordinator. The environmental resource coordinator will be responsible for day-to-day implementation of the environmental compliance program in the field. He or she will work closely with the environmental inspectors, biologists, archaeologists, agencies, environmental manager, and construction representatives to resolve conflicts and coordinate resource avoidance and protection. The environmental resource coordinator will inspect the construction site periodically (while maintaining contact with the environmental manager, senior construction manager, spread supervisors, and environmental inspectors) to help monitor implementation of resource protection measures. He or she will have the primary responsibility for submitting variance requests, in coordination with the environmental manager, and for ensuring that variances and construction plan updates are distributed in the field.

Environmental Inspectors. Environmental inspectors will ensure that all construction activities are performed in accordance with applicable mitigation requirements, permit conditions, and environmental specifications. The inspectors will act as liaisons between construction personnel and agency monitors. An inspector will be assigned to each construction crew to observe their work. If multiple crews work in the same area, one inspector may monitor more than one crew. Working under the direction of the environmental resource coordinator, inspectors will also work diligently to assess work area conditions ahead of construction and check implementation of erosion control measures. In every instance possible, the inspectors will provide advance notice to the construction supervisors and contractors regarding conditions and situations that require specific awareness and planning. They will also monitor directional drilling activities for rock fractures sometimes encountered during high-pressure boring operations conducted over long distances (known as “frac-outs”), loss of bentonite returns due to voids, and other potential environmental issues. They will be trained in environmental issues that may be encountered during construction and will have immediate access to qualified biologists, archaeologists, and paleontologists when necessary.

Biological and Archaeological Specialists. Qualified biologists and archaeologists will locate and stake in the field and mark on the construction drawings previously identified sensitive resources and identify the necessary protection methods for the contractor. Biologists and archaeologists will also be onsite during construction where their presence is needed, as required in this IS/MND, or as a condition of required permits. In addition, they will coordinate, as necessary, with monitors from the CPUC and any other appropriate agencies. Other resource monitors (i.e., Native American and paleontological monitors) will be available, as necessary and appropriate.

2.2.4 ROLE OF THE CPUC AND OTHER AGENCIES

The lead agency under CEQA, the CPUC, is responsible for overseeing this project to ensure that required mitigation measures are implemented properly. The CPUC will be responsible for ensuring compliance with the requirements in the MMP (see Appendix D). The CPUC has the definitive authority to stop any construction, operation, or maintenance activity associated with the proposed expansion project if an activity is determined to deviate from the approved project, as analyzed in this IS/MND, or the adopted mitigation measures. The CPUC may delegate duties and responsibilities for monitoring to other environmental monitors or consultants as deemed necessary.

As part of the quality assurance role, regulatory agencies will conduct oversight inspection and monitoring activities to the extent deemed necessary by the individual agencies. For example, the CDFG may oversee biological monitoring at stream crossings. Broadwing will coordinate directly with the CPUC and its designated monitors. Joint environmental and safety training sessions will be held. Broadwing will meet with CPUC monitors weekly and will communicate with them daily. CPUC monitors will be informed of construction activities and resource concerns on a daily basis. Monthly meetings will be held with Broadwing's environmental manager, environmental resource coordinator, and the CPUC team to address any noncompliance issues, the construction schedule, and ongoing issues or problems.

2.3 REGULATORY ENVIRONMENT

In addition to consideration under CEQA, the proposed expansion project may be subject to various federal, state, and local regulatory requirements that help to mitigate its potential effects on the environment. The permits of broadest application to the proposed project and their requirements are described briefly in Table 2.3-1 to provide a context for the remainder of this chapter. The proposed expansion project does not currently require acquisition of any federal permits. However, if currently unknown engineering constraints require construction within waters of the United States, several federal permits will be required, as described below. A complete route-specific list of permits and approvals that may be required for the proposed project is provided in Appendix B.

Table 2.3-1
Potential Permit or Consultation Requirements

Permit/Agreement	Agency	Jurisdiction/Purpose
FEDERAL AGENCIES		
Clean Water Act Section 404 Permit(Nationwide Permit No. 12)	U.S. Army Corps of Engineers	Authorizes discharge of fill into "waters of the United States," including wetlands, etc., if needed.
Clean Water Act Section 401 Certification	Applicable regional water quality control boards	Supports issuance of federal CWA Section 404 permit, if needed.
Federal Endangered Species Act (ESA) Consultation	U.S. Fish and Wildlife Service	Supports issuance of federal permits related to federally listed species, if needed.

Table 2.3-1 **Potential Permit or Consultation Requirements**		
Permit/Agreement	**Agency**	**Jurisdiction/Purpose**
Nation Historic Preservation Act Section 106 Compliance	Advisory Council on Historic Preservation	Supports issuance of federal permits related to cultural resources, if needed.
STATE AGENCIES		
State Endangered Species Act Consultation	California Department of Fish and Game (DFG)	Supports issuance of a State permit related to state listed species, if needed. ~~CEQA determination by State lead agency, including consistency with adopted Natural Communities Conservation Plans (NCCPs)~~
Cultural Resources Consultation	State Historic Preservation Office	Supports CEQA determination by State lead agency
State Dept. of Fish and Game Code Section 1603 Streambed Alteration Agreement	California Department of Fish and Game (DFG)	Authorizes alteration of streambeds, rivers, lakes, etc.
Clean Water Act Section 402 National Pollution Discharge Elimination System (NPDES) Permit	Applicable regional water quality control boards	Required if construction disturbance exceeds 5 acres
Authority to Construct/Operate	Several air quality management districts	Ensures air emission reduction and monitoring
Road Encroachment Permits	California Department of Transportation (Caltrans)	Construction in state rights-of-way
Right-of-Way Encroachment/Easements for Ingress-Egress	Metropolitan Water District of Southern California	Permit/agreement
LOCAL AGENCIES		
Encroachment Permits	Several municipalities and counties	Provides for temporary lane closures and construction activities in county and city rights-of-way.
Building and Grading Permits	Riverside and San Diego counties	Grading and construction of two proposed OP-AMP sites.
Rights-of-Way Agreements	Several municipalities and counties	Must be agreed upon and entered into prior to issuance of any local agency construction-related permit
Noise Permits	Several municipalities and counties	Ensures compliance with local noise ordinances
Natural Resource Permits	Several municipalities and counties	Ensures consistency with adopted NCCPs and other local regulations for protection of natural resources

2.4 BROADWING ENVIRONMENTAL COMMITMENTS

The following environmental commitments are integral parts of the proposed expansion project. Broadwing is responsible for these environmental commitments at Broadwing' s expense, unless otherwise specified.

2.4.1 GENERAL FEATURES

General features that would eliminate the impacts of this project on several resources, or reduce them to a less-than-significant level, depend on three basic capabilities of fiber optic conduit installation:

- its physical flexibility, including ability to shift laterally within the construction easement to avoid impacts;
- its utilization of directional drilling to go beneath sensitive resources, railroad tracks, roadways, and other utilities; and
- its ability, when necessary, to "stage" construction so that specific areas can remain undisturbed during certain periods.

AVOIDANCE OF SENSITIVE RESOURCES

For purposes of this project, sensitive resources are defined as those resources that can be easily damaged and/or call for care or caution in treatment, and are specifically addressed by federal, state, and local regulations (i.e., biological, water, and cultural resources). For the most part, sensitive resources will be avoided either by rerouting the cable and siting handholes, manholes, and OP-AMP stations away from the sensitive resource or boring the conduit and cable under the resource. Unlike pipelines, fiber optic cable conduits can be rerouted to the other side of the right-of-way if necessary to avoid a resource. The avoidance methods for each sensitive resource will be staked and flagged in the field and shown on the construction drawings for each project route. Specific setback distances and exclusion zones are discussed in Chapter 4, "Environmental Impacts and Mitigation Measures," as they pertain to each applicable resource area. The draft MMP (see Appendix D) includes a table providing specific setback/buffer areas and exclusion zone distances for each identified resource area.

Sensitive resources will be avoided through various means identified during the project design phase. However, avoidance measures will also be taken in the field during construction based on the results of pre-construction surveys or at the direction of construction inspectors. If required, the construction technique will be coordinated through a resource specialist (i.e., wildlife biologist, wetland ecologist, botanist, archaeologist, or paleontologist) familiar with the resource being avoided. Typical avoidance measures include minor modification of the project route around the sensitive resource within the disturbed right-of-way, boring under the resource, or possibly attaching the fiber optic cable to an existing bridge, if permitted.

The use of setbacks and directional drilling are the main techniques for protecting and avoiding disruption to sensitive biological, water, and cultural resources; public right-of-way crossings; railroad tracks and train station platforms; and utility crossings. Designated equipment setbacks adjacent to these resources and facilities will be flagged on the ground and directional drilling will be employed to avoid them. Drilling staging areas and other disturbances associated with directional drilling will be located outside of the identified setback areas.

Broadwing has conducted botanical, wildlife, wetland, riparian, archaeological, and paleontological studies to ensure that sensitive resources are identified and completely avoided or that any impacts on sensitive resources that cannot be avoided are reduced to less-than-significant levels. Most of the field studies necessary to support the engineering design have been completed. Refer to the "Biological Resources," "Cultural Resources," and "Hydrology and Water Quality" sections of Chapter 4, "Environmental Impacts and Mitigation Measures," for further details.

Biologists and archaeologists have worked closely with Broadwing's project engineers and resource agency staff to site the project route and associated facilities (e.g., OP-AMP stations) in areas where sensitive resources will be avoided. During the planning process, criteria were developed for siting OP-AMP stations and their access roads to ensure that potential sites are clear of sensitive biological and cultural resources before they are selected (see "Location of OP-AMP Stations" below). Compliance with the established criteria ensures that the appropriate biological and archaeological clearances have been documented, received, and approved by the CPUC before construction of the facilities begins.

STREAM/DRAINAGE CROSSINGS

All significant impacts will be avoided at sensitive drainages, including perennial stream crossings or streams that are flowing at the time of construction and have sensitive resources located at or downstream of the crossing. At all streams that provide important habitat, contribute significantly to water quality, or support aquatic species listed in the federal or state ESA or identified as sensitive, conduit and cable will be installed either by boring under the drainage or by attaching the fiber optic cable to bridges, where available and permitted. The avoidance methods for each sensitive resource will be shown on the construction drawings.

Guided or directional bore/drill machines operated at ground level will be used to bore under all sensitive stream crossings or other sensitive resources (see Figure 2.2-2). The bore will be initiated at the surface on one side of the stream or sensitive resource and return to the surface on the opposite side. Equipment for guided bores comes in various sizes and larger equipment can traverse distances exceeding 5,000 feet. For most bores under streams and other sensitive resources associated with the project, equipment capable of boring 500 to 1,000 feet will be adequate. Guided bores typically use bentonite, a fine, nontoxic clay that is mixed with water to provide the necessary lubricant and operating fluid for the drilling process. The mixture is injected into the drill under pressure and recirculated back to the surface, where it is filtered and reused.

Spill prevention countermeasures are contained in the draft SWPPP included in Appendix E. This plan is required under the National Pollutant Discharge Elimination System (NPDES) permit mandated by the regional water quality control boards (RWQCBs) for the longhaul project routes. The SWPPP is not applicable to the Northern California Interconnection Projects because none of the projects would disturb 5 or more acres. Spill prevention countermeasures have been developed for the longhaul project routes, as required, to prevent or minimize the risk of bentonite entering surface waters during directional boring. Although bentonite contamination seldom occurs, bentonite can reach the ground surface and enter surface waters if the bore encounters a rock fracture during high-pressure boring operations conducted over long distances (termed a "frac-out"). The risk of bentonite reaching the surface or surface waters is minimized because contractors typically use the smallest available boring equipment, which injects bentonite at lower pressures. The spill prevention countermeasures contained in Appendix E will ensure that potential adverse impacts on sensitive resources that cannot be completely avoided (i.e., those resulting from a void or frac-out) are reduced to less-than-significant levels. In addition, Section 1603 of the California Fish and Game Code requires a streambed alteration agreement from the CDFG before any action is taken that will divert or obstruct flow or alter the channel of designated drainages, rivers, streams, and lakes. Along with the SWPPP, the streambed alteration agreement will contain requirements for monitoring and reporting during construction.

In addition to observed spills, directional boring can result in a loss of bentonite returns due to voids. Even if no release to surface water is detected, such a loss of returns will require immediate notification of the CPUC monitor and consultation with the CDFG or other relevant permitting agency for that bore.

The project longhaul routes will cross numerous drainages and wetlands. For most of these areas, the conduit and cable will be installed by boring or bridge attachment, if permitted. However, if trenching is required in drainages, a technique that is commonly employed with telecommunications system installations called double trenching will be used. Double trenching is the process of removing a layer of topsoil over the trench and then trenching the subsoil. Once the conduit is installed in the trench, the subsoil is placed back in the trench and compacted and the topsoil is spread over the top.

During double trenching operations, topsoil-handling objectives are to remove, store, protect, and reapply the topsoil to facilitate revegetation. Topsoils are the surface soils that contain higher amounts of organic matter, as well as the soil seedbank, and generally exhibit more favorable textures and fewer salts or other potentially growth-limiting characteristics than subsoils.

At double trenching locations, the width and depth of topsoil removal will be determined depending on vegetation sensitivity, soil characteristics, slope, land use, potential safety hazards, and construction techniques. The actual depth will be determined by field personnel at the time of construction, in consultation with biologists and archaeologists where required. Generally, 6 to 12 inches of topsoil will be removed and stockpiled. The onsite biological and/or archaeological monitors will verify the appropriate depth of the topsoil to be removed.

Topsoil will be stockpiled separately from excavated subsoil and subsequently replaced with minimal handling. Topsoil will not be piled in a manner that increases its water content, although this is not expected to be an issue. No drains or ditches will be blocked by topsoil or subsoil stockpiles. Additional measures that will be implemented to protect topsoil include the following:

- Gaps will be left in topsoil piles where drainages, drains, ditches, livestock crossings, and farm machinery crossings are located.
- Topsoil will not be used as padding in the trench or for any other purpose as a construction material.
- Topsoil will be stored on the uphill side of the disturbance away from the subsoil pile.

Only small, nonsensitive drainages will be considered for trenching. No in-water work will occur in sensitive drainages (i.e., drainages supporting threatened or endangered species or having other important functions or values) that are flowing at the time of construction. After the conduit and cable are installed, the trench will be backfilled and the drainage channel will be recontoured to its pre-installation grade and bed conditions.

When a crossing is completed, the beds and banks of the drainage will be restored in a manner that allows vegetation to reestablish to its pre-installation conditions. Where necessary, a biodegradable erosion control blanket or riprap will be used to protect and stabilize stream banks. Riprap will be used only where existing stream channels consist of rock armoring and lack woody riparian vegetation. Erosion control blankets will be used on steep slopes or where the soils otherwise have a high erosion potential. The types and locations of these measures will be determined in the field by the spread supervisor with input by the appropriate construction inspector.

Trenching through drainages would require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers. Issuance of a Section 404 permit would also require certification from the applicable RWQCB under Clean Water Act Section 401. If trenching through drainages is proposed, Broadwing will ensure that drainages to be trenched receive proper clearance, approval, and permits from the CPUC, U.S. Army Corps of Engineers, RWQCB, and CDFG before construction begins.

WORK ZONES

Installation activities related to expansion of the fiber optic cable system will be confined to existing disturbed road and railroad rights-of-way. In the very few areas where facilities could be located outside these existing rights-of-way (i.e., private access roads and OP-AMP stations), the same variance request procedures (see Appendix D), environmental clearance processes, and mitigation measures will be implemented as within the right-of-way. In both instances, the maximum disturbance width of the construction area will typically be 25 feet for conduit and cable installation. Larger areas will be used for OP-AMP construction and directional bores, as described above.

Roads and bridges have permanent rights-of-way that vary in width. All excavation and grading activities associated with conduit and cable installation will be confined to the rights-of-way in these areas. In most cases, construction will take place within the permanent rights-of-way. Only minimal excavation or grading activities, such as for OP-AMP stations, will occur outside permanent rights-of-way; these activities will require CPUC approval through established variance request procedures. Operation outside the rights-of-way will not be allowed in any areas identified as supporting sensitive resources.

All construction-related traffic will be required to remain within the existing road rights-of-way. Construction traffic turnarounds will be restricted to the maximum disturbance width of the construction area (typically 25 feet from the edge of pavement) and will not be allowed in any areas identified as supporting sensitive resources. Sensitive resources will be staked and flagged before construction begins and identified on the construction drawings, as necessary and appropriate. Trained construction inspectors will monitor activities, with support from qualified biologists or archaeologists and supervision by the CPUC.

Broadwing has extensive past experience in keeping construction activities within this 25-foot disturbance zone alongside roadways, and this technique has been effective in avoiding sensitive resources adjacent to previously constructed fiber optic routes.

EROSION CONTROL

Erosion is the process of soil being displaced and transported by wind or water. Conduit and cable installation will disturb soil and vegetation, exposing sites to possible erosion. The hazard of erosion is increased by the presence of steep slopes, concentrated or channelized water flow, and high stream flows. This section summarizes the best management practices (BMPs) that will be undertaken in accordance with the California Code of Regulations and measures that will be implemented by Broadwing's contractors as specified in the Draft SWPPP included in Appendix E.

Erosion and sediment control measures are used to reduce both the amount of soil that is displaced from a land area and the rate of soil discharge. The following standard erosion and sediment control measures and practices will be used during and after construction to control accelerated soil erosion and sedimentation to less-than-significant levels:

- Minimize site disturbance.
- Perform initial cleanup.
- Compact subsurface backfill material.
- Leave topsoil in roughened condition, except in road shoulders.
- Install trench plugs.

- Perform seeding and mulching.
- Install erosion control blankets.
- Install silt fencing and straw bale dikes.
- Where necessary, construct water bars, install baffle boards, and armor drainage banks with riprap.
- Conduct periodic maintenance of erosion and sediment control measures.

These measures, described below, are implemented routinely in the construction industry and have been proven successful for erosion and sediment control on similar fiber optic cable system installations.

Minimize Site Disturbance. The most basic way to avoid erosion is to minimize site disturbance. Broadwing's contractors will be directed during the environmental training program (described in " Environmental Training and Awareness" below) to implement practices that minimize site disturbance so that impacts are avoided or reduced to less-than-significant levels. The contractors will be directed to:

- remove only the vegetation that is absolutely necessary to remove,
- avoid off-road vehicle use,
- avoid all sensitive resource areas,
- avoid excessive trips along the right-of-way or access or maintenance roads, and
- instruct all personnel about the concepts of storm water pollution prevention to ensure that they are conscious of how their actions affect the potential for erosion and sedimentation.

Broadwing's inspectors will be onsite during all construction activities and will reinforce the importance of confining all vehicular traffic to the existing right-of-way and maintenance and access roads.

Perform Initial Cleanup. Broadwing's contractors will be directed to perform initial site cleanup immediately following conduit and cable installation. Initial cleanup includes removing debris and spoils and restoring original contours. Initial cleanup performed as part of construction will contribute substantially to overall site stability make final cleanup easier by allowing the site to stabilize naturally following construction with little additional disturbance during final cleanup. A site that is not initially cleaned up is more susceptible to erosion.

Compact Subsurface Backfill Material. Uncompacted plow or trench furrows are susceptible to subsurface erosion through the migration of surface and subsurface water. Proper compaction of the subsurface material and plow furrows is necessary to help prevent surface and subsurface migration of water along the plow or trench furrow and prevent trench settlement.

Leave Topsoil in Roughened Condition. Reapplied topsoil will be left in roughened condition to facilitate the establishment of vegetation and reduce the potential for erosion.

Install Trench Plugs. A trench plug is a permanent mechanical erosion control measure consisting of soil-filled burlap bags placed in the excavated trench before backfilling. Trench plugs control erosion by stopping subsurface water flow. Trench plugs are placed in the trench at regular intervals along areas with steep slopes. The spacing of plugs is determined by slope grade, topography, and soil characteristics. Trench plugs will be installed as shown on the construction drawings.

Perform Seeding and Mulching. Seeding consists of sowing soil-stabilizing grasses on areas disturbed by construction activities (except cropland and areas surfaced with pavement or gravel). Vegetation promotes both erosion and sedimentation control. The root structure of vegetation holds soil in place, resisting erosion. Grasses slow the flow of surface water, allowing suspended soil particles to settle.

Mulch, typically consisting of wheat straw, is usually applied over the seed to protect the soil surface until the grasses become established.

Install Erosion Control Blankets. On steep slopes that are susceptible to erosion, erosion control blankets will be installed to hold seed and soil in place until vegetation is established. The onsite spread supervisor will determine where erosion control blankets are necessary.

Install Silt Fencing and Straw Bale Dikes. Silt fences and straw bale dikes will be installed, as needed, at the toe of slopes below disturbed areas to prevent sediment from reaching streams and wetlands. These barriers retain sediment while allowing water to seep through them. Straw bale dikes may also be installed around drop inlets and in small swales to prevent sediment from entering these areas.

Additional Measures

The following measures may be used, but will only be used rarely because Broadwing will avoid construction on steep slopes.

Construct Water Bars. A water bar is an earthen berm permanently placed along the ground across the disturbed area of construction. Water bars control erosion by slowing runoff rates and diverting runoff from the disturbed area.

Install Baffle Boards. A baffle board consists of pressure-treated 2-foot by 12-foot boards and 4-inch-diameter wooden posts. Baffle boards work like water bars but are used on slopes too steep for water bars to function. Baffle boards cannot be used on roads. Baffle board spacing is determined by slope grade, topography, and soil type. The contractor will install baffle boards as necessary during final cleanup.

Armor Drainage Banks with Riprap. Armoring drainage banks with riprap may be used on rare occasions. Riprap is a method of permanent erosion control used for slope stabilization, water energy dissipation, and armoring of stream banks. Riprap will be used only on stream banks where the existing channel consists of rock or in highly erodible drainages that lack woody riparian vegetation.

Permanent erosion control measures are likely in place along many existing rights-of-way as a result of previous facility construction. The effectiveness of these measures will be evaluated before construction begins. Any existing measures will be restored as required and left in place after installation of the fiber optic cable system is complete. Following construction activities, the superintendent will assess the right-of-way to determine where additional erosion control measures are necessary.

TRAFFIC CONTROL

The proposed expansion project may temporarily disrupt traffic during installations adjacent to or within traffic lanes. Broadwing will obtain road encroachment permits from various local and state agencies dictating required traffic control and will comply with all applicable conditions of approval. Traffic control measures, such as the placement of warning signs and the use of traffic control personnel when appropriate, will be implemented along with all other agency-dictated traffic control requirements.

As part of the construction mitigation strategy for the proposed expansion project, a traffic control plan will be developed and implemented to minimize the impacts of lane closures and any traffic flow disruptions. The traffic control plan will include the following, as needed:

- Identify all roadway locations where special construction techniques (e.g., directional drilling or night construction) would be used to minimize impacts on traffic flow.

- Develop circulation and detour plans to minimize impacts on local street circulation. This may include the use of signing and flagging to guide vehicles through or around construction zones.
- Schedule truck trips outside of peak morning and evening commute hours.
- Limit lane closures during peak hours to the extent possible.
- Use haul routes minimizing truck traffic on local roadways to the extent possible.
- Install traffic control devices as specified in the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones.
- Develop and implement access plans for highly sensitive land uses such as police and fire stations, transit stations, hospitals, and schools.

FIRE PREVENTION AND RESPONSE

A fire prevention and response plan has been developed and will be submitted to the appropriate regulatory agencies prior to construction (see Appendix F). The plan identifies the fire precaution and suppression measures that will be implemented and the parties responsible for fire prevention and response. Prevention and response measures, such as requirements to have firefighting water tanks on-site and extinguishers and shovels in vehicles, have been identified in the fire prevention and response plan.

2.4.2 SPECIFIC FEATURES

LOCATION OF OP-AMP STATIONS

Broadwing proposes to install two OP-AMP stations at approximately 40-mile intervals along the Ontario to San Diego Longhaul Route. One OP-AMP station is proposed near Lake Elsinore in the community of Wildomar (Tranquil Lane site) and the other is proposed just south of the Riverside/San Diego County line in the community of Rainbow (Warder site). Please refer to Chapter 3, "Project Route Descriptions," and Figures C-9h and C-9k in Appendix C for specific locations of the two proposed OP-AMP sites.

During the planning process, Broadwing developed the following criteria for siting OP-AMP stations and their access roads. OP-AMP stations will not be sited in areas that:

- have not been surveyed, documented, found to be clear of sensitive biological and cultural resources, and approved by the CPUC;
- are within a designated floodplain, unless absolutely necessary;
- are immediately adjacent (within approximately 10 feet) to water bodies, including wetlands, drainages, rivers, streams, or lakes, or within 250 feet of a vernal pool;
- are on sites with known contamination; or
- are in areas that are designated as scenic.

As part of the OP-AMP site selection process, qualified biologists and archaeologists have reviewed potential OP-AMP sites to ensure that no sensitive biological and cultural resources are present. If the two currently approved locations need to be modified because of unknown environmental factors or the inability to negotiate with a property owner or local jurisdictions, Broadwing will review alternate sites, fill out the environmental clearance compliance checklist contained in Appendix G, and submit it to the CPUC for review and approval. Alternate OP-AMP sites are anticipated to be constructed at a suitable distance from U.S. Army Corps of Engineers jurisdictional wetlands to eliminate the need for a Clean Water Act Section 404 permit and minimize the possibility of construction-related impacts on sensitive riparian species. If these criteria are not met or clearance cannot be granted as specified in the checklist, Broadwing will find another location that is acceptable to the CPUC, meets the criteria, and is environmentally clear, consistent with the checklist. No construction will occur until approval has been granted by the CPUC.

The two OP-AMP station sites proposed as part of the project (see Chapter 3, "Project Route Descriptions") have been analyzed in this IS/MND.

ACCESS ROADS

The project route will be reached by existing access roads, which includes all existing roads, dirt roads, two-tracks, and other actual rights-of-way. No new access roads will be created for fiber optic cable installation. Some existing roads in isolated areas may require minimal repairs to make them usable for construction; repair work will require approval through the CPUC variance process. After fiber optic cable installation is complete, access roads will be repaired, if necessary, to prevent future erosion.

After installation, access to the project route for maintenance will also be by existing access roads to the road or railroad rights-of-way. Activities following installation will consist mainly of implementing erosion control measures or repairing or replacing cable or conduit because of storm damage, landslides, or other emergencies.

Specific access roads will not be selected until the early stages of construction planning. Access roads will be selected following consultation with qualified biologists and archaeologists to ensure that sensitive environmental resources are avoided or adequately protected. Selection of access roads will be subject to CPUC environmental clearance and approval, in addition to procuring local permits and approvals prior to, during, and after construction.

EQUIPMENT STAGING AND FUELING

Staging areas for construction equipment, materials, fuels, lubricants, and solvents will be established along the project routes during construction to allow more efficient use and distribution of materials and equipment. No new staging areas will be established in undisturbed areas or on public lands. All staging areas will be located on private lands in existing contractor yards; existing commercial areas used for storing and maintaining equipment; previously cleared, graded, or paved areas; or level areas where grading and vegetation clearing are not required. Existing public and/or private roads will provide access between staging areas and the construction sites.

Where necessary, the construction contractor typically selects staging areas (and access routes to and from construction sites) before and/or during construction. This practice is consistent with construction methods used throughout California and the United States. To ensure that sensitive environmental resources are avoided or adequately protected, the locations of staging areas will be determined in consultation with qualified biologists and archaeologists before their selection and approval. Broadwing will fill out an environmental clearance compliance checklist (see Appendix G) for all staging areas, subject to approval by the CPUC. If the locational criteria are not met or clearance cannot be granted as specified in the checklist, Broadwing will find another location that is acceptable to the CPUC; meets the above criteria; and is ensured to be environmentally clear, consistent with the checklist. No establishment or use of staging areas will occur until approval has been granted by the CPUC.

To reduce the potential for contamination by spills, most refueling, storage, servicing, or maintenance of equipment will take place at least 100 feet from drainages or other sensitive environmental resources. If large stationary equipment (e.g., drill rigs) must be parked, refueled, or serviced near waterways, these activities shall be conducted in accordance with the approved SWPPP (see Appendix E). No refueling or servicing will be done without absorbent materials or drip pans underneath to contain spilled fuel. Any fluids drained from the machinery during servicing will be collected in leak-proof containers and taken to an appropriate disposal or recycling facility. If these activities result in damage to soil or accumulation of a product on the soil, the affected soil will be evaluated for appropriate treatment and disposed of accordingly. Under no circumstances will contaminated soils be added to a spoils pile.

Construction equipment will be refueled onsite by mobile refueling trucks. These trucks will be independently licensed and regulated to haul and dispense fuels. This licensing and regulation will ensure that the appropriate spill prevention techniques are implemented. Restrictions will be placed on all equipment refueling, servicing, and maintenance supplies and activities. All maintenance materials, oils, greases, lubricants, antifreeze, and similar materials will be stored off site in staging areas. If these materials are required during field operations, they will be placed in a designated area away from site activities and sensitive resources.

During construction, all vehicles and equipment required on site (except drill rigs) will be parked or stored within the 25-foot construction corridor and at least 100 feet away from rivers, streams, wetlands, known archaeological sites, and other sensitive resource areas. These sensitive resource areas will be identified on the ground and noted on U.S. Geological Survey 7.5-minute topographic maps and on the construction drawings, as appropriate. All wash-down activities will be conducted at least 100 feet away from sensitive environmental resources. For any proposed exceptions to these parking and fueling requirements, Broadwing will fill out and submit for CPUC approval a construction clearance authorization form (see Appendix H). No exceptions to the parking restrictions will occur until approval has been granted by the CPUC.

SITE RESTORATION AND USE

Right-of-way reclamation is the final step in the conduit and cable installation process. The short-term objectives of reclamation are to return the roadway to its pre-existing condition; control the potential for accelerated erosion and sedimentation; and minimize impacts on adjacent waters, land uses, and other sensitive resources. Properly executed construction practices and timely progress typically mitigate temporary and short-term construction impacts to less-than-significant levels. Long-term objectives include erosion and sedimentation control and reclamation of topography to conditions prevailing before installation of the conduit and cable. The reclamation effort will focus on the following objectives:

- reclamation of the right-of-way,
- reclamation of drainage crossings, and
- monitoring to ensure long-term success.

On completion of conduit and cable installation, all disturbed areas will be restored to their original contours and conditions. Disturbed areas that were previously vegetated will be reseeded in accordance with the approved SWPPP (see Appendix E). After conduit and initial cable installation, there will be no adverse effect on the ability of any local agency to carry out routine road and/or railroad maintenance activities. No vaults will be placed beneath railroad tracks or utility crossings. Broadwing will be responsible for correcting any project-related road surface damage for a year after construction and cable installation is complete. Broadwing will be responsible for correcting any damage from the operation and maintenance of the handhole vaults for the life of the conduit.

The operational life of the conduit is expected to exceed 20 years, and the conduit, associated facilities, and easements will be maintained during this time to ensure the reliability of the system and to prevent project-related erosion. If project-related erosion occurs, corrective action will be taken immediately to protect the conduits, easements, and surrounding lands.

ENVIRONMENTAL TRAINING AND AWARENESS

An important part of implementing the proposed expansion project is education through training and awareness programs. All levels of field management and construction personnel will be informed about and educated on environmental protection and the seriousness of noncompliance. Training will take place at the Broadwing construction level and at the contractor level. Appropriate personnel from the CPUC and other regulatory agencies will be invited to attend.

Broadwing's consultant team includes biologists and archaeologists, environmental inspectors, environmental resource coordinator, environmental manager, and construction managers and supervisors. Training seminars led by the environmental resource coordinator and qualified biologists and archaeologists will be held before construction to explain and educate construction supervisors and managers about resource issues. A typical agenda for the training seminars and pre-construction meetings includes:

- the need for and importance of resource avoidance and protection,
- resource mapping format and interpretation of construction drawings,
- resource protection staking methods,
- the construction process as it relates to required mitigation measures,
- roles and responsibilities,
- process and procedure for construction clearance authorization form, and
- project management structure and contacts.

All environmental inspectors will be required to complete an inspector training class. These classes will cover issues such as the environmental issues mentioned above, interpretation of resource mapping and construction drawings, roles and responsibilities, and site safety.

The contractor team will include the senior construction manager, spread supervisors, and contractors. Training and education will take place through several processes beginning with the pre-construction meetings and ending with training classes just before construction begins. Pre-construction meetings with the contractor will be held before construction begins for each project route. These meetings will be used as an opportunity to reinforce the need for and importance of compliance with environmental resource avoidance and protection measures.

The senior construction manager and supervisors, environmental inspectors, and the environmental coordinator will regularly conduct meetings with the contractors' superintendents and foremen to coordinate the construction and mitigation process. The contractors' foremen will be responsible for transmitting the information discussed in the pre-construction meetings for superintendents and foremen to the individual crewmembers through tailgate meetings in the field. These tailgate meetings will be attended by the environmental inspectors and environmental resource coordinator and will usually be held weekly to discuss safety issues. Environmental issues will also be included and discussed at these meetings.

To ensure that necessary personnel have been properly trained, Broadwing will submit an attendance list to the CPUC that identifies all participants that have completed the environmental awareness and training program and/or attended the tailgate meetings.

2.5 NO-PROJECT ALTERNATIVE

The No-Project Alternative is the circumstance under which the proposed fiber optic network is not expanded. The temporary impacts of constructing the network expansion will not occur. Because the proposed expansion project will not have significant effects that cannot be avoided or mitigated, selection of the No-Project Alternative will have no net environmental benefits.

The telecommunications market is constantly changing as new technology is introduced, and there are corresponding changes in regulations, supply, and demand. Given the increasing number of users of telecommunications services and the greater number of available devices (Internet, digital television, and video conferences), the demand for additional telecommunications capacity will continue to increase regardless of whether the proposed expansion project is implemented. However, any attempt to describe how that demand will manifest itself in environmental change under the No-Project Alternative would be largely speculative. For that reason, the following discussion is very general.

One result might be an increase in the already growing demand for wireless communications (e.g., cellular telephones, satellite communications, and microwave facilities), leading to an unknown number of additional wireless facilities such as cellular towers, earth-satellite antennae, and microwave towers. The lack of adequate fiber optic facilities could encourage the deployment of alternative telecommunications facilities that may result in effects on the environment. Unlike traditional, bulky copper cable systems, fiber optic cable systems rely on small cables with minimum visibility and require less maintenance excavation. Intercity fiber optic networks transport more bits of information than all other intercity telecommunications systems combined. Adequate, reliable, inexpensive intercity telecommunications capacity can reduce travel needs by providing video conferencing, replacing door-to-door shipment of documents, and encouraging telecommuting.

2.6 FUTURE PROJECTS

It is likely that Broadwing will continue to expand its California network facilities in the future. Future expansion will be guided by various technical, economic, and environmental considerations. Broadwing will apply for appropriate CEQA review and approval of all future projects when they are proposed and alternative routes have been defined at a level of specificity that is adequate for analysis.