2. City of Piedmont
Moraga Avenue

Oakland to Walnut Creek Portion

Right of way surface: City streets, asphalt with concrete curb

Construction within the City of Piedmont has been completed under the terms and conditions of an existing encroachment permit. Construction was completely within the street portion of the city right of way. Early construction was due to city plans to repave Moraga Avenue.

3. City of Oakland
Moraga Avenue

Oakland to Walnut Creek Portion

Right of way surface: City streets, asphalt with concrete curb

This area is primarily suburban. Single and multi-family homes and intermittent commercial establishments exist in the area.

The trenching method will be employed in this area. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight. Virtually, all activity will be within the street portion of the city right of way.

Traffic control procedures will be in accordance with city requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

4. City of Oakland
Moraga Avenue-Thornhill Drive-Mountain Boulevard

Oakland to Walnut Creek Portion

Right of way surface: City streets, asphalt with concrete curb

This area is primarily suburban. Single and multi-family homes and intermittent commercial establishments exist in the area. Currently, detailed fiber optic route maps are not available for this portion of the project. Please note that a vicinity map has been provided illustrating the route.

The trenching method will be employed in this area. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight. Virtually, all activity will be within the street portion of the city right of way.

Traffic control procedures will be in accordance with city requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

5. City of Oakland
Snake Road-Shepard Canyon Road

Oakland to Walnut Creek Portion

Right of way surface: City streets, asphalt with concrete curb, easterly portion is asphalt with dirt and gravel shoulder

This area is primarily suburban. Single and multi-family homes and intermittent commercial establishments exist in the area.

The trenching method will be employed in this area. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight.

It should be noted that periodically installation will be off of the road surface. In these areas, the trenching method will be exactly the same except for the cut and replacement of asphalt. The trench will be located in the

shoulder of the road no more than 4 feet from the edge of pavement. The surface involvement will be approximately 5 feet outside of the trench line.

Traffic control procedures will be in accordance with city requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

6. Contra Costa County
Pinehurst Road-Canyon Road

Oakland to Walnut Creek Portion

Right of way surface: Asphalt with dirt and gravel shoulder

This area is primarily rural. The setting includes oak forests, rolling hills and open fields.

The trenching method will be employed in this area. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight.

It should be noted that periodically installation will be off of the road surface. In these areas, the trenching method will be exactly the same except for the cut and replacement of asphalt. The trench will be located in the shoulder of the road no more than 3 feet from the edge of pavement. The surface involvement will be approximately 5 feet outside of the trench line.

Traffic control procedures will be in accordance with county requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

7. City of Moraga
Canyon Road-Moraga Road-St. Marys Road

Right of way surface: City streets, asphalt with concrete curb, westerly portion is asphalt with dirt and gravel shoulder

Oakland to Walnut Creek Portion

This area is primarily a residential setting. Custom designed and standard tract housing exist in the area.

The trenching method will be employed in this area. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight.

It should be noted that periodically installation will be off of the road surface. In these areas, the trenching method will be exactly the same except for the cut and replacement of asphalt. The trench will be located in the shoulder of the road no more than 6 feet from the edge of pavement. The surface involvement will be approximately 5 feet outside of the trench line.

Construction in this area will also include one bridge attachment over a dry creek bed. A bridge attachment is accomplished by installing expandable lead anchors in the structure of the bridge and bolting brackets to the anchors. Four inch galvanized steel conduit is then attached to the brackets. This conduit will house three innerducts in order to preserve the integrity of the system.

Traffic control procedures will be in accordance with city requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

8. City of Lafayette
St. Marys Road-Glenside Drive-Reliez Station Road-Olympic Boulevard

Oakland to Walnut Creek Portion

Right of way surface: City streets, asphalt with concrete curb

This area is primarily a residential setting. Custom designed and standard tract housing exist in the area. The area also accommodates small strip centers and commercial applications.

The trenching method will be employed in this area. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a

trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight.

It should be noted that periodically installation will be off of the road surface. In these areas, the trenching method will be exactly the same except for the cut and replacement of asphalt. The trench will be located in the shoulder of the road no more than 7 feet from the edge of pavement. The surface involvement will be approximately 5 feet outside of the trench line.

Construction in this area will also include three bridge attachments. A bridge attachment is accomplished by installing expandable lead anchors in the structure of the bridge and bolting brackets to the anchors. Four inch galvanized steel conduit is then attached to the brackets. This conduit will house three innerducts in order to preserve the integrity of the system.

Traffic control procedures will be in accordance with city requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

9. Contra Costa County
Olympic Boulevard

Oakland to Walnut Creek Portion

Right of way surface: Asphalt with concrete curb

This area is primarily a residential setting. Custom designed and standard tract housing exist in the area. The area also accommodates small strip centers and commercial applications.

The trenching method will be employed in this area. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight.

It should be noted that periodically installation will be off of the road surface. In these areas, the trenching

method will be exactly the same except for the cut and replacement of asphalt. The trench will be located in the shoulder of the road no more than 4 feet from the edge of pavement. The surface involvement will be approximately 5 feet outside of the trench line.

Construction in this area will also include one bridge attachment over Las Trampas Creek. A bridge attachment is accomplished by installing expandable lead anchors in the structure of the bridge and bolting brackets to the anchors. Four inch galvanized steel conduit is then attached to the brackets. This conduit will house three innerducts in order to preserve the integrity of the system.

Traffic control procedures will be in accordance with county requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

10. City of Walnut Creek
Olympic Boulevard-California Boulevard-Civic Drive-Locust Street-USS POP Facility-California Boulevard-Newell Avenue-Main Street

Oakland to Walnut Creek Portion
Walnut Creek to Stockton Portion
Right of way surface: City streets, asphalt with concrete curb

This is an urban and suburban area that includes a wide variety of commercial applications.

The trenching method will be employed in this area. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight. Virtually, all activity will be within the street portion of the city right of way.

Construction in this area will also include one bridge attachment over Las Trampas Creek. A bridge attachment is accomplished by installing expandable lead anchors in the structure of the bridge and bolting brackets to the anchors. Four inch galvanized steel conduit is then attached to the brackets. This conduit will house three innerducts in order to preserve the integrity of the

system.

Traffic control procedures will be in accordance with city requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

11. Contra Costa County
Danville Boulevard

Walnut Creek to Stockton Portion

Right of way surface: Concrete with asphalt overlay, dirt and gravel shoulder

This is a major thoroughfare between Walnut Creek and Danville. The area is predominantly residential.

The trenching method will be employed in this area. Because Danville Boulevard has a concrete base, overlayed with asphalt, a 6' rock saw will be required toprepare the trench. The asphalt and concrete will be saw-cut in two locations approximately 12" apart. A backhoe will remove the concrete and asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and a concrete and asphalt cap will then be installed. No trench will remain open overnight. Virtually, all activity will be within the street portion of the county right of way.

Traffic control procedures will be in accordance with county requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

12. City of Danville
Danville Boulevard-El Portal Avenue-La Gonda Way-El Cerro Boulevard-Diablo Road-Vista Grande-Camino Tassajara

Walnut Creek to Stockton Portion

Right of way surface: City streets, asphalt with concrete curb, easterly portion is asphalt with dirt and gravel shoulder

This area is primarily a residential setting. Custom designed and standard tract housing exist in the area. The area also accommodates small strip centers and commercial applications.

The trenching method will be employed in this area. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight.

It should be noted that periodically installation will be off of the road surface. In these areas, the trenching method will be exactly the same except for the cut and replacement of asphalt. The trench will be located in the shoulder of the road no more than 4 feet from the edge of pavement. The surface involvement will be approximately 5 feet outside of the trench line.

Construction in this area will also include two bridge attachments. A bridge attachment is accomplished by installing expandable lead anchors in the structure of the bridge and bolting brackets to the anchors. Four inch galvanized steel conduit is then attached to the brackets. This conduit will house three innerducts in order to preserve the integrity of the system.

Construction through this area will also require four bores to be performed. A bore is a necessary construction technique used to cross a roadway where it is required that the road surface not be disturbed. A bore is performed by excavating a pit on each side of the roadway to be crossed and then pushing steel casing under the roadway from pit to pit. Since the majority of the surface is undisturbed, only restoration of the pit areas is necessary.

Traffic control procedures will be in accordance with city requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

13. Contra Costa County
Camino Tassajara-Highland Road

Walnut Creek to Stockton Portion

Right of way surface: Asphalt roads, dirt and gravel shoulder

This area is residential and rural. The topography is rolling hills and fields.

The trenching method will be employed in this area. The majority of the trenching will be in the shoulder of the road approximately 6 feet from the edge of pavement. In necessary areas, construction may be further off the pavement. A backhoe will excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material and compacted. The surface involvement will be approximately 5 feet outside of the trench line. No trench will remain open overnight.

Construction in this area will also include one bridge attachment. A bridge attachment is accomplished by installing expandable lead anchors in the structure of the bridge and bolting brackets to the anchors. Four inch galvanized steel conduit is then attached to the brackets. This conduit will house three innerducts in order to preserve the integrity of the system.

Construction through this area will also require four bores to be performed. A bore is a necessary construction technique used to cross a roadway where it is required that the road surface not be disturbed. A bore is performed by excavating a pit on each side of the roadway to be crossed and then pushing steel casing under the roadway from pit to pit. Since the majority of the surface is undisturbed, only restoration of the pit areas is necessary.

Traffic control procedures will be in accordance with county requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

14. Alameda County
Highland Road-Manning Road

Walnut Creek to Stockton Portion

Right of way surface: Asphalt roads, dirt and gravel shoulder

This area is rural. The topography is rolling hills and fields.

The trenching method will be employed in this area. The majority of the trenching will be in the shoulder of the road approximately 4 feet from the edge of pavement. A backhoe will excavate a trench approximately 12" in

width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material and compacted. The surface involvement will be approximately 5 feet outside of the trench line. No trench will remain open overnight.

Construction in this area will also include one bridge attachment. A bridge attachment is accomplished by installing expandable lead anchors in the structure of the bridge and bolting brackets to the anchors. Four inch galvanized steel conduit is then attached to the brackets. This conduit will house three innerducts in order to preserve the integrity of the system.

Construction through this area will also require one bore to be performed. A bore is a necessary construction technique used to cross a roadway where it is required that the road surface not be disturbed. A bore is performed by excavating a pit on each side of the roadway to be crossed and then pushing steel casing under the roadway from pit to pit. Since the majority of the surface is undisturbed, only restoration of the pit areas is necessary.

Traffic control procedures will be in accordance with county requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

15. Contra Costa County
Manning Road

Walnut Creek to Stockton Portion

Right of way surface: Asphalt roads, dirt and gravel shoulder

This area is rural. The topography is rolling hills and fields.

The trenching method will be employed in this area. The majority of the trenching will be in the shoulder of the road approximately 4 feet from the edge of pavement. A backhoe will excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material and compacted. The surface involvement will be approximately 5 feet outside of the trench line. No trench will remain open

overnight.

Construction through this area will also require one bore to be performed. A bore is a necessary construction technique used to cross a roadway where it is required that the road surface not be disturbed. A bore is performed by excavating a pit on each side of the roadway to be crossed and then pushing steel casing under the roadway from pit to pit. Since the majority of the surface is undisturbed, only restoration of the pit areas is necessary.

Traffic control procedures will be in accordance with county requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

16. Alameda County
Manning Road-North Livermore Avenue-May School Road-Dagnino Road-Raymond Road-Ames Road-Dalton Avenue-Vasco Road

Walnut Creek to Stockton Portion

Right of way surface: Asphalt roads, dirt and gravel shoulder

This area is rural. The topography is rolling hills and fields. Horse farms and fenced pasture is the predominant land use.

The trenching method will be employed in this area. The majority of the trenching will be in the shoulder of the road approximately 4 feet 6 from the edge of pavement. A backhoe will excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material and compacted. The surface involvement will be approximately 5 feet outside of the trench line.

In some areas, trenching in the surface of the roadway will be necessary. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight.

Construction through this area will also require four bores to be performed. A bore is a necessary construction technique used to cross a roadway where it is required that the road surface not be disturbed. A bore is performed by excavating a pit on each side of the roadway to be crossed and then pushing steel casing under the roadway from pit to pit. Since the majority of the surface is undisturbed, only restoration of the pit areas is necessary.

Traffic control procedures will be in accordance with county requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

17. Contra Costa County
Vasco Road-Camino Diablo Road-Holway Road-Byron Highway-State Highway 4

Walnut Creek to Stockton Portion

Right of way surface: Asphalt roads, dirt and gravel shoulder

This area is rural. The topography is rolling hills and fields. The area is exclusively agricultural from Byron to the East.

The trenching method will be primarily employed up to State Highway 4. The majority of the trenching will be in the shoulder of the road approximately 4 feet 6 from the edge of pavement. A backhoe will excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material and compacted. The surface involvement will be approximately 5 feet outside of the trench line.

In some areas, trenching in the surface of the roadway will be necessary. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight.

Construction along Route 4 will primarily employ the

cable plow method (direct bury). Cable plowing is accomplished by the use of a tractor mounted plowing device. This machine creates an opening in the soil, places the cable with its protective duct at the specified depth, and closes the soil in one continuous action. The opening created by the plow disturbs an area approximately 6" to 12" wide. which is compacted immediately behind the plow. The surface involvement will be approximately 5 feet outside of the running line.

Construction through this area will also require nine bores to be performed. A bore is a necessary construction technique used to cross a roadway or railway where it is required that the surface not be disturbed. A bore is performed by excavating a pit on each side of the surface to be crossed and then pushing steel casing under the roadway from pit to pit. Since the majority of the surface is undisturbed, only restoration of the pit areas is necessary.

In addition to the above mentioned bores, one directional bore to cross the Old River will be performed. Two bore pits will be excavated on either side of the river. A 4" pipe will be bored approximately 15' under the river bed. Boring equipment will include a pump, pipe trailer, tank truck and surveying trailer.

Construction in this area will also include four bridge attachments. A bridge attachment is accomplished by installing expandable lead anchors in the structure of the bridge and bolting brackets to the anchors. Four inch galvanized steel conduit is then attached to the brackets. This conduit will house three innerducts in order to preserve the integrity of the system.

Traffic control procedures will be in accordance with county requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

18. San Joaquin County
Private Lands-State Highway 4

Walnut Creek to Stockton Portion

Right of way surface: Asphalt roads, dirt and gravel shoulder
Flat, cultivated fields

This area is exclusively agricultural. The cable will be located primarily across private lands from the Old River to Trapper Road and then along State Highway 4 to

Stockton.

Construction along the private lands and most of State Highway 4 will primarily employ the cable plow method (direct bury). Cable plowing is accomplished by the use of a tractor mounted plowing device. This machine creates an opening in the soil, places the cable with its protective duct at the specified depth, and closes the soil in one continuous action. The opening created by the plow disturbs an area approximately 6" to 12" wide. which is compacted immediately behind the plow. The surface involvement will be approximately 5 feet outside of the running line.

The trenching method will be employed along State Highway 4 near Stockton. The majority of the trenching will be in the shoulder of the road approximately 4 feet 6 from the edge of pavement. A backhoe will excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material and compacted. The surface involvement will be approximately 5 feet outside of the trench line.

In some areas, trenching in the surface of the roadway will be necessary. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight.

Construction through this area will also require fifteen bores to be performed. A bore is a necessary construction technique used to cross a roadway or railway where it is required that the surface not be disturbed. A bore is performed by excavating a pit on each side of the surface to be crossed and then pushing steel casing under the roadway from pit to pit. Since the majority of the surface is undisturbed, only restoration of the pit areas is necessary.

In addition to the above mentioned bores, two directional bore to cross the Middle River and the San Joaquin River will be performed. Two bore pits will be excavated on either side of the river. A 4" pipe will be bored approximately 15' under the river bed. Boring equipment will include a pump, pipe trailer, tank truck and

surveying trailer.

Traffic control procedures will be in accordance with county requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

19. City of Stockton
State Highway 4-Stockton Street-Anderson Street-Aurora Street-Main Street-Sierra Nevada Street-University Avenue-West Lane-Alpine Avenue-Coronado Avenue-Stockton TOC

Walnut Creek to Stockton Portion

Right of way surface: Asphalt roads, dirt and gravel shoulder
Asphalt city streets with concrete curb

This area is primarily residential with intermittent commercial applications.

The trenching method will be employed in this area. The asphalt will be saw-cut in two locations approximately 12" apart. A backhoe will remove the asphalt and excavate a trench approximately 12" in width and 48" in depth. Three plastic conduits with a concrete encasement will be placed in the trench to contain and protect the cable. The trench will then be backfilled with the removed material, compacted and an asphalt cap will then be installed. No trench will remain open overnight.

Construction in this area will also include one bridge attachment. A bridge attachment is accomplished by installing expandable lead anchors in the structure of the bridge and bolting brackets to the anchors. Four inch galvanized steel conduit is then attached to the brackets. This conduit will house three innerducts in order to preserve the integrity of the system.

Construction through this area will also require ten bores to be performed. A bore is a necessary construction technique used to cross a roadway where it is required that the road surface not be disturbed. A bore is performed by excavating a pit on each side of the roadway to be crossed and then pushing steel casing under the roadway from pit to pit. Since the majority of the surface is undisturbed, only restoration of the pit areas is necessary.

Traffic control procedures will be in accordance with

city requirements. Additionally, US Sprint will comply with the State of California, Manual of Traffic Controls for Construction and Maintenance Work Zones in all areas.

DAMES & MOORE - PROFESSIONAL LIMITED PARTNERSHIP
9300 TECH CENTER DRIVE, SUITE 100, SACRAMENTO, CALIFORNIA 95826 (916) 364-8628

January 15, 1991

Job No. 14865-007-001

Mr. Brian Jordan KSOPKC031
US Sprint Communications Company
9350 Metcalf
Overland Park, KS 66212

Letter Report
Slope Stability Assessment
Fiber Optic Cable Project
Lafayette, California

Dear Mr. Jordan:

This letter presents the results of Dames & Moore's assessment of slope stability along the planned fiber optic cable route through the City of Lafayette. We understand that the State Lands Commission asked US Sprint to undertake an initial slope stability assessment of the route through Lafayette, California in response to concerns raised by the City of Lafayette.

The planned fiber optic cable will serve as a backup trunk line connecting US Sprint facilities in Oakland and Stockton California. The conduit for the line consists of three two-inch-diameter PVC conduits with widely spaced access manholes. The conduit is placed in a trench about 12 to 18 inches wide and 3 to 5 feet deep. We understand that, if needed, US Sprint conforms conduit bedding material and trench backfill placement and compaction criteria to satisfy local requirements.

From Moraga, the planned route through Lafayette is north on St. Mary's Road to Glenside Drive, to Reliez Station Road and then east on Olympic Boulevard to the eastern city limits of Lafayette. Following the route as described, the cable location is consistently just to the right of the paved portion of the roadway. The length of each segment of the route in Lafayette is approximately:

Segment	Length (miles)
St. Mary's Road	1.6
Glenside Drive	0.6
Reliez Station Road	0.6
Olympic Boulevard	0.4

GRP003.051

The purpose of our assessment was to provide the geologic and slope stability information requested by the State Lands Commission. Our slope stability assessment included the following:

- Reviewed the cable route maps provided by US Sprint and available published geologic maps, including interpretations of landsliding;
- Discussed a recent water main failure and road repair at approximately Station 22+00 on Reliez Station Road with East Bay Municipal Utility District (EBMUD) engineers;
- Discussed slope stability along the planned route with Mr. Mark Lander, City Engineer for the City of Lafayette;
- Made a visual assessment of the route with respect to slope stability; and
- Prepared this letter summarizing our findings and conclusions.

GEOLOGY

Based on available geologic maps, the route through Lafayette is underlain by Pliocene sedimentary rocks of the Contra Costa group, which includes the Orinda and Mulholland formations. These materials are typically sandstones, siltstones, and claystones with occasional conglomerates, which generally weather to clayey and silty soils. Some outcrops of conglomerate were visible along Reliez Station Road; however, the road cuts in most areas expose clayey and silty colluvial soils, weathered from the underlying rock.

Area of Water Main Failure on Reliez Station Road

The northbound lane at about Station 22+00 on Reliez Station Road has been repaved over a length less than about 100 feet. The new pavement is constructed on an embankment which slopes down at a inclination of about 2 horizontal to 1 vertical and is about 30 to 40 feet in total height. Mr. Lander expressed concern that this and the remainder of Reliez Station Road may be unstable and therefore subject to future landsliding.

EBMUD personnel said that based on laboratory testing of the broken pipe they had concluded that the water main break was due to corrosion and not due to landsliding. They also said that the area disturbed by water escaping from the broken main was reconstructed using compacted 1-1/2-inch-maximum-size aggregate base material.

A Dames & Moore engineering geologist and geotechnical engineer observed the surface conditions in the vicinity of the repaired water main on January 9, 1991. At the time of our visit there, there were no signs of landslide movement in the roadway at or on either side of the repaired area. The slopes on either side of the roadway in this area appeared to be stable, except for some surface creep and shallow sloughing.

Slope Stability Along the Route

Landsliding can occur wherever there are steep cut and fill slopes along the proposed route. However, it is our opinion that the likelihood of large landslides occurring is very low. Relatively small landslides may occur during periods of heavy rainfall along the banks of Las Trampas Creek due to undercutting by stream action. The creek is deeply incised and in some locations comes close to St. Mary's Road and Glenside Drive. During periods of high flow, some undercutting of the slope between the roadway and the creek may occur which can result in slope movement.

Two such landslides occurred on St. Mary's Road in 1982, at approximately Stations 91+50 and 103+50. In both instances only a portion of the southbound lane was affected, and the landslides were repaired so that future landslide movement at these locations is unlikely. Also, the fiber optic cable is planned to be on the east side of St. Mary's Road at a relatively large distance from the previous landslide areas.

A minor crack was observed in the soil along St. Mary's Road north of the Las Trampas Creek bridge. The crack starts a few feet from the bridge and runs adjacent to the east guard rail for about thirty feet. It is about 1/4-inch wide with no vertical offset. At this location, Las Trampas Creek is on the east side of St. Mary's Road. The roadway is about 20 feet higher than the creek bed, and there is a two horizontal to one vertical slope from the roadway down to the creek. The vertical extent and significance of this feature is unknown; however, if feasible, it would be prudent to locate the cable on the west side of St. Mary's Road for approximately 100 feet north of the bridge.

Conclusions

Based on the results of our assessment, we conclude that installation of the fiber optic cable using the planned route through the City of Lafayette is feasible from a geologic/slope stability standpoint.

As described above, the cable conduit will be installed in a narrow three-to-five-foot-deep trench along the edge of the roadway. It is also our understanding that the trench is backfilled daily so that the time it is left open is short. In our opinion, the effect of the cable on slope stability along the proposed route is negligible.

oOo

We trust that this letter provides the information needed regarding slope stability along the planned fiber optic cable route through the City of Lafayette. Please call if you have any questions.

Sincerely,

DAMES & MOORE

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CALENDAR PAGE 90
MINUTE PAGE 431
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BIOLOGICAL AND CULTURAL RESOURCES
US SPRINT FIBER OPTIC CABLE
STOCKTON, CALIFORNIA

1 AUGUST 1990
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14365-007/R1.T

BIOLOGICAL AND CULTURAL RESOURCES
US SPRINT FIBER OPTIC CABLE
STOCKTON, CALIFORNIA

August 1, 1990

Prepared for:
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Burlingame, California

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14865-007/RFT

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

US Sprint has proposed to construct a fiber optic cable between Oakland and Stockton. The cable will be buried within existing dirt or paved road beds or shoulders for its entire length, except at stream or river crossings where it will either be attached to a bridge in a conduit, or will be placed under the watercourse using a directional boring procedure. Three rivers will be bored along the route: Old, Middle, and San Joaquin rivers (Figure 1).

The above three rivers are under the jurisdiction of the State Land Commission (SLC). US Sprint has applied for a right-of-way grant from SLC at these crossings. During the review of the application, SLC has requested additional information from US Sprint in order to conduct a CEQA review of the entire project. This report provides specific environmental information concerning biological and cultural resources along a 2-mile-long portion of the route west of Stockton. SLC has requested this information because this is the only portion of the route that traverses private property, rather than a state highway right-of-way.

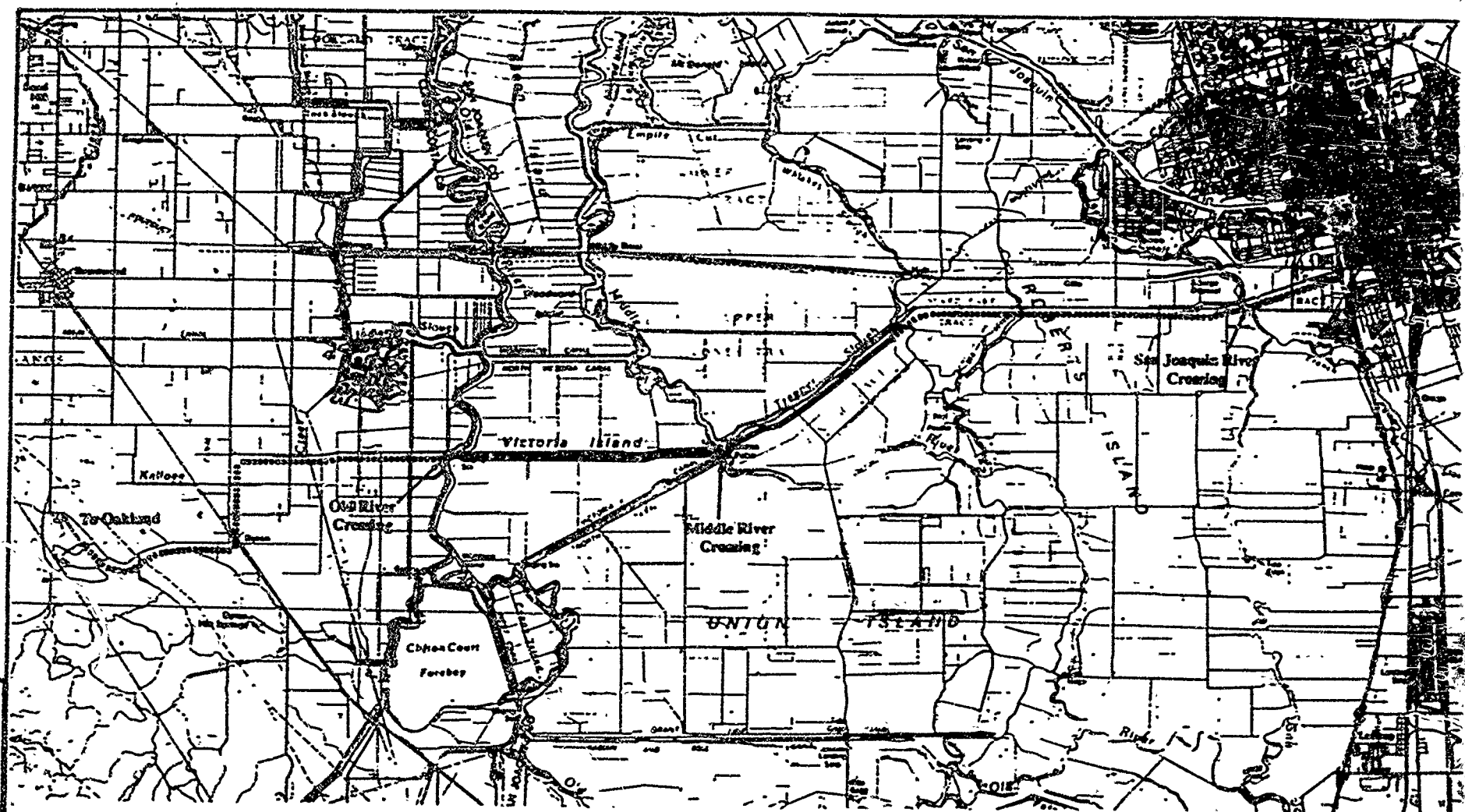


FIGURE 1

US Sprint
Fiber Optic Cable Route
Near Stockton

CALENDAR PAGE 96
MINUTE PAGE 437

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The cable route traverses private property easements just west of Stockton, at two locations: (1) on either side of the San Joaquin River crossing; and (2) between Bacon Island Road and the Old River (Figure 1). The cable route is located parallel to and about 50 feet from the south side of State Route 4. The proposed fiber optic cable will be placed in existing dirt roads except where irrigation ditches cross the roads. Irrigation canals and ditches area located adjacent and parallel to the dirt roads where the cable will be placed, between the dirt roads and State Route 4. There are three river crossings: Old, Middle, and San Joaquin rivers (Figure 1).

2.2 CONSTRUCTION METHODS

For most of its length, the ½ inch diameter cable will be placed in the bed of existing dirt farm roads using a "plowing" technique described below. The cable will be buried to a minimum depth of 42 inches. The cable will be placed beneath existing culverts in the road by trenching. Where the cable traverses irrigation or drainage ditches adjacent to agricultural fields, it will be placed below the ditch either by trenching (if no water is present) or by boring (if water is present).

The principal means of burial will be "plowing" with a cable plow. The plowing operation involves two bulldozers and a number of support vehicles (typically three) such as pick up trucks and crew vans. The first bulldozer will pull a ripping bar designed to slit the soil in a trench 3- to 4 inches wide and 42-inches deep. The soil will not be removed from this trench but a small amount will be displaced as the cable is pulled through. A second bulldozer with the cable plow and cable will follow the ripper. The plow will lay the cable in the pre-ripped trench, again without removing any soil other than that which is displaced. Vertical mixing of the soil will be minimized, as neither the ripping bar nor the plow will move appreciably in a vertical direction. The cable will be installed by plowing through the all dirt roads on private property, which is the majority of the route.

A second method of burial is simple trenching. A rubber-tired trencher would be used to excavate the trench through dry drainage crossings or where the terrain is too irregular for the bulldozer and plow. A trench is dug which will provide 60 inches of cover as opposed to the normal 42 inches of cover. The cable will be installed in protective pipe which is encased in concrete. This extra protection is taken to avoid damage if the crossing is subject to clean-out operations. The trench will be excavated just prior to installation of the cable, and it will be back-filled the same day.

Trenching will also be used where the cable must be placed underneath culverts or at other obstacles (such as pipes or other utility lines). Culverts will either remain in place or be replaced with new culverts, as per property owner's approval. A backhoe will be used to trench on either side of the culvert, then the cable will be hand pulled underneath the culvert through the trench made by the backhoe.

Roads, streets, and canals and ditches where water is present will be bored under using a conventional bore. For drainages, boring activity is planned so as to avoid disturbance of bank areas and to insure stability of canal walls. The bore is generally made at a depth of 60 inches below the bottom of the borrow ditch. Galvanized pipe is placed, and the cable is pulled through the conduit. The beginning of the bore will utilize a bore pit about 20' x 5' in size for placement of the boring equipment, and will be located within the existing roadway. The end of the bore will utilize a 4' x 4' pit for receiving the cable line. Galvanized pipe is placed, and the cable is pulled through the conduit.

A directional bore will be used at the three major river crossings. It will be placed in a conduit that will be installed about 15 feet under the river bed using a mechanical bore. Two bore holes will be established on either side of the watercourses, more than 100 feet from existing levees. The bore hole will be about 4 inches in diameter. A permanent 18" x 5' x 3' access box will be installed at each end for maintenance. The bore hole locations for the three crossings are on level, previously disturbed land. A temporary pit, with an area approximately 200 feet by 200 feet will be required at the begin bore location for the boring equipment, including a bore, pump, pipe trailer, tank truck, and surveying trailer.

3.0 BIOLOGICAL RESOURCES

Biological resources at the river crossings and on private property easements for the fiber optic cable project are described in the following sub-sections. Data presented below are based on a review of pertinent literature, including a review of the California Natural Diversity Data Base (CNDDB, 1990), and field surveys of all areas of potential surface disturbance conducted on 30 April and 16 July 1990. Biological resources were evaluated by Ms. Melinda Trask, staff biologist for Dames & Moore. A US Sprint engineer was present to locate the river crossing impact areas during the April field survey. The objective of the field surveys was to identify any potentially sensitive biological resource that could be affected by the proposed project.

3.1 BIOLOGICAL RESOURCES ALONG PRIVATE PROPERTY EASEMENTS

Private property easements surveyed in July are shown on Figures 2a through 2c. Because the cable route is located within agricultural land, there is no native upland habitat within the project area. Upland areas contain dirt roads, agricultural fields or graded, ruderal habitats. Wetlands are restricted to the inside portions of the levees of rivers, and along the banks and bottoms of irrigation canals and ditches. Wetland habitats in the project area consist of degraded freshwater marsh in the man-made ditches and canals, and riparian woodland/freshwater marsh in the rivers.

3.1.1 Vegetation Types

There are four main vegetation types in the project area: ruderal, ornamental, freshwater marsh, and riparian. Placement of the cable will disturb only ruderal vegetation, and freshwater marsh vegetation in man-made ditches. Plant species observed along the cable route are listed on Table 1.

The ruderal vegetation type is dominated by introduced, weedy herbs and grasses which invade disturbed areas. Ruderal vegetation is commonly found along roadsides and in areas with severe human-caused disturbance. Ruderal vegetation lines both paved and dirt roadways and the upper edges of the drainage ditches in the project area, intergrading with freshwater marsh vegetation in the man-made ditches.

The ornamental vegetation type consists of landscaped plants, most of which are non-native. It includes trees located along State Route 4 and other trees and shrubs planted at some of the developments in the area. Common ornamental trees in the project area include eucalyptus, cottonwood, walnut, pine, fig, and ash.

The freshwater marsh vegetation type occurs along perennial and intermittent drainages and ponds which have soils that are permanently saturated with freshwater. It is dominated by emergent, perennial monocots and submerged aquatic plants (only in deeper water). The

irrigation ditches in the project area are often disturbed by maintenance, therefore they contain high proportions of weedy ruderal plant species.

A 40-foot-wide continuous drainage canal is located adjacent to the cable route between Middle and Old rivers, which contained slow moving water 1 to 3 feet deep during the July field survey (Figures 2b and 2c). The channel contained a dense cover of perennial monocots such as bulrush, stinging nettle and water smartweed along the banks, as well as submerged aquatic plants such as floating seedbox, western water-milfoil and water-cress within the channel bottom. Many narrower, discontinuous, more weedy ditches are located adjacent to the cable route from about 1000 feet west of Bacon Island Road to about 2000 feet east of Middle River (Figure 2b). These ditches are generally choked with cattails, willow weed, common reed and prickly lettuce.

The riparian woodland/freshwater vegetation type occurs along the inside of levees of rivers, sloughs and canals which contain permanent water. It is dominated by an open cover of broadleaved winter-deciduous trees and herbaceous pants. Herbaceous monocots (such as bulrush) dominate the edges of the water, while the trees and shrubs dominate the upper banks.

3.1.2 Animal Habitat and Species

The quality and amount of wildlife habitat in the project area are severely disturbed due to agricultural activities. Aquatic habitat is more abundant because of the many rivers and canals; however, the water quality is poor also due to agricultural activities. The man-made ditches in the project area that are routinely maintained generally contain little or no aquatic life. The three main types of wildlife habitats in the project area include ruderal, freshwater marsh, and riparian.

Ruderal habitats include areas dominated by ruderal vegetation, agricultural fields, urbanized areas, and other developed areas. The abundance and diversity of wildlife in these areas are very low because of the lack of food and undisturbed cover. Wildlife species that inhabit ruderal areas have become acclimated to human-caused disturbance conditions. The following wildlife species were observed in ruderal habitats during the July field survey: American crow, turkey vulture, mockingbird, killdeer, barn swallow, red shouldered blackbird and ground squirrel.

Freshwater marshes often provide an abundance of food and cover for many wildlife species, especially waterfowl. Most of the marsh land in the project area has been filled and channelized for agriculture and only limited amounts of marsh habitats remain, lining the canals and sloughs in the area. The following wildlife species were observed in freshwater marsh habitats during the July field survey: killdeer, great blue heron and bullfrog.

Riparian habitats provide food, shelter, nesting sites and refuge for even more wildlife species, including aquatic species. Sparse riparian habitat is located along the inner levees of the major rivers in the area. The following wildlife species may also occur in riparian habitats in the project area: great egret, ducks, red-tailed hawk, American kestrel, mourning dove, wrens, blackbirds, opossum, Botta's pocket gopher, muskrat, racoon, striped skunk, Pacific tree frog, western fence lizard, common kingsnake, aquatic garter snake, and gopher snake (Dames & Moore, 1989).

3.2 BIOLOGICAL RESOURCES AT RIVER CROSSINGS

All three crossings occur in agricultural areas. The rivers have major levees on either side. Adjacent land uses consist of actively cultivated agricultural fields. Man-made features also include farm roads and drainage ditches between the levees and fields.

All bore locations occur on the outer edge of an existing levee. These areas are not plowed, but are heavily disturbed by periodic weed control. The areas to be affected by the boring operations represent ruderal areas dominated by annual weeds (see Table 1).

A degraded wetland area is located near the bore entry location on the west side of Middle River (Figure 2b). This area is apparently periodically flooded by overflow during periods of irrigation in the adjacent agricultural fields. It is dominated by the above listed ruderal plant species and also contains high proportions of smartweed, (Polygonum punctatum), a hydrophytic plant species. Because of its highly degraded condition, this wetland area is not expected to support typical freshwater marsh wildlife species on a regular basis.

No wetlands are present in the remainder of the areas to be disturbed by the boring operation. Wetlands are restricted to the inner edges of the levees. In addition, no endangered or threatened plant or wildlife species are known or expected at the bore locations due to the absence of native habitat and periodic disturbance during agricultural activities.

3.3 SENSITIVE SPECIES

Sensitive plants and animals consist of federal- and state- listed species (USFWS, 1989a; CDFG, 1989,1990) federal candidates for listing (USFWS, 1989b, 1990), plant species considered rare by the California Native Plant Society (CNPS)(Smith and Berg, 1988) and state wildlife species of special concern (Remsen, 1978; Williams, 1986). No sensitive plant or animal species are known or likely to occur along the proposed cable route. This conclusion is based upon a review of the California Natural Diversity Data Base (CNDDB, 1990), the CNPS inventory of rare and endangered vascular plants of California (Smith and Berg, 1988), and previous environmental documents (Dames & Moore, 1989).

The following sensitive plant species are known from the San Joaquin Delta region: Delta tule pea (Lathyrus jepsoni ssp. jepsoni), California hibiscus (Hibiscus californicus), Ferris' bird's-beak (Cordylanthus palmatus), caper-fruited tropidocarpum (Tropidocarpum capparideum), and Mason's lilaeopsis (Lilaeopsis masonii). Each of these is a freshwater marsh species. Marsh areas which may be disturbed by the proposed project were surveyed in July, and no evidence of any of the above listed species was observed. Furthermore, there is no suitable undisturbed freshwater marsh habitat for these species within any of the ditches adjacent to the proposed cable route.

The following sensitive animal species are known from the San Joaquin Delta region: Swainson's hawk, bald eagle, Cooper's hawk, peregrine falcon, burrowing owl, and tricolored blackbird. Swainson's hawk is the only species recorded from the project area, located along the east side of the San Joaquin River, about 2 miles south of the proposed cable route. Neither Swainson's hawk nor any of the above listed species is expected to regularly utilize the proposed cable route due to a lack of suitable habitat features.

3.4 POTENTIAL IMPACTS

Impacts to biological resources on private property easement and at the river bore locations would be minor. Impacts would be temporary in nature and include the potential removal of vegetation and wildlife habitat at ditch crossings, as well as offsite disturbance to wildlife from construction equipment noise in the project area. The latter is not considered significant because construction activities area not expected to create a higher level of disturbance than the existing agricultural activities.

Eight irrigation and drainage ditches will be traversed by the cable, as shown on Figures 2b and 2c. These ditches will only be trenched if they are dry during the construction period. If water is present in the ditches, then the cable will bored underneath the channel, not disturbing any of the wetland vegetation. Disturbance to these ditches, either by trenching or boring, would not be considered significant because: (1) the ditches are man-made, dominated by weedy species, and subject to periodic disturbance by maintenance activities; (2) the ditches are small in size and adjacent to roads and croplands, thereby limiting their wildlife habitat value; and (3) impacts will be temporary, localized, and reversible. No sensitive plants or wildlife species would be affected by the placement of the cable along the existing road and across the ditches described above.

The open water and wetlands within the Old, Middle and San Joaquin rivers will not be disturbed during construction because the cable will be bored beneath the river. No wetlands are present at the bore locations for the Old and San Joaquin Rivers. A small (60' x 100') degraded wetland is located at the west end of the bore location at the Middle River. At this time, US Sprint plans to bore beneath this low-lying area and an adjacent irrigation ditch due

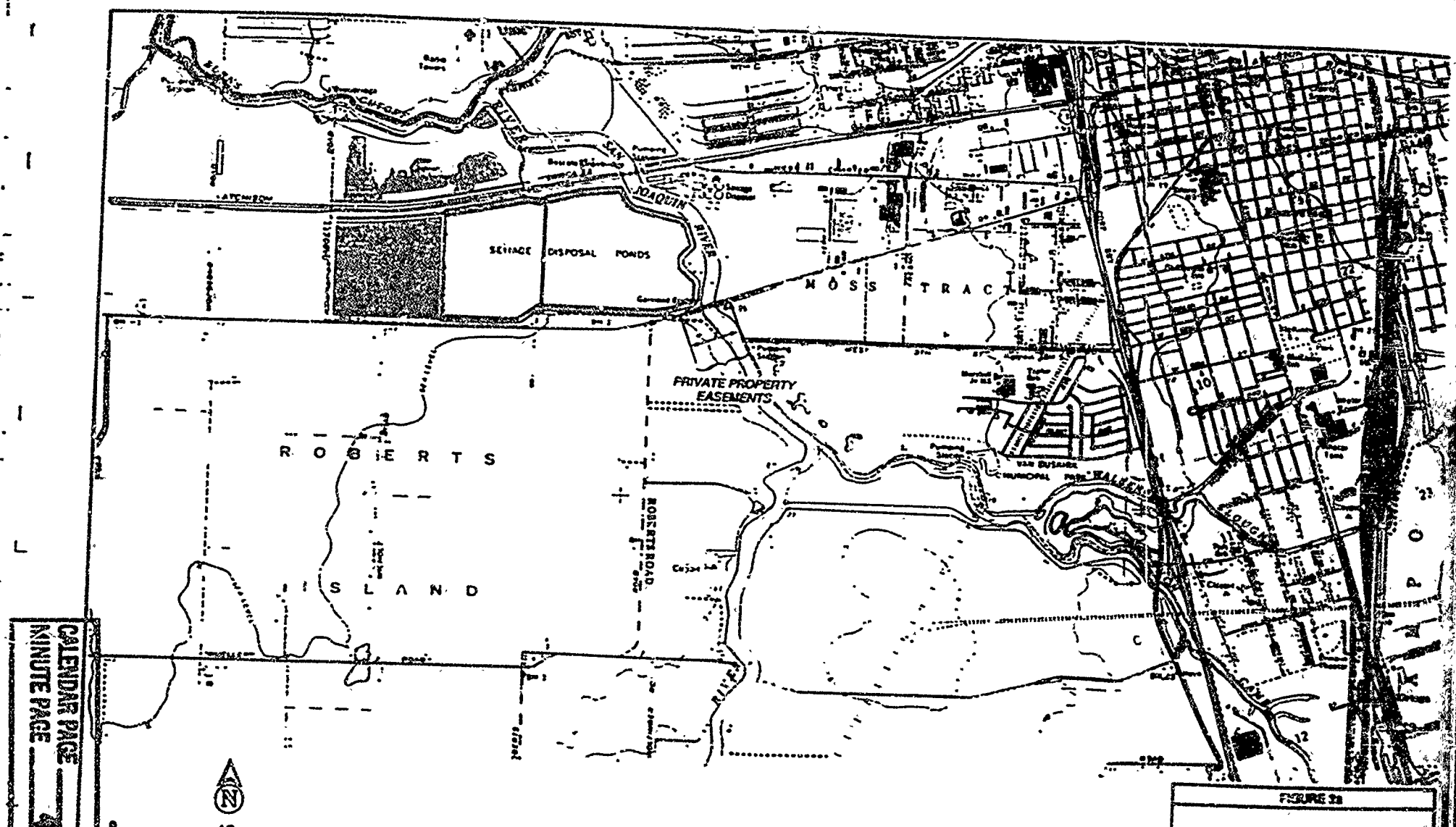
to soggy soils. If the area were completely dry at the time of construction, the cable would be placed by trenching. This would result in the temporary removal of 200 to 300 square feet of smartweed vegetation. This is not considered a significant impact because: (1) the wetland area is degraded and subject to periodic disturbance by agricultural activity; (2) the area to be disturbed is negligible and has very little habitat value; and (3) the area of disturbance is expected to recover quickly.

Installation of the fiber optic cable at the river crossings and at irrigation ditch crossings is authorized under the Corps of Engineers Nationwide Permit #12 (33 CFR 330.5a) which applies to utility lines. US Sprint has received written verification from the Corps that a Nationwide Permit would apply to this project.

3.5 RECOMMENDATIONS

The amount of disturbance to irrigation and drainage ditches with vegetation should be minimized during trenching, if possible. Encroachment or disturbance upon the ditches or canals located adjacent and parallel to the proposed cable route should be avoided. Construction vehicles should travel and park only on existing roads and disturbed land.

Impacts to the irrigation ditch and degraded wetland west of Middle River should be avoided or minimized, if possible. Avoidance can be accomplished by extending the directional bore to a point just west of the ditch, within the existing dirt road. To avoid the wetland area, the bore entrance location should be switched to the east side of Middle River.



CALENDAR PAGE
MINUTE PAGE
4255
104

FIGURE 2a

Detailed US Sprint Fiber Optic Cable Map Along Private Property Easements

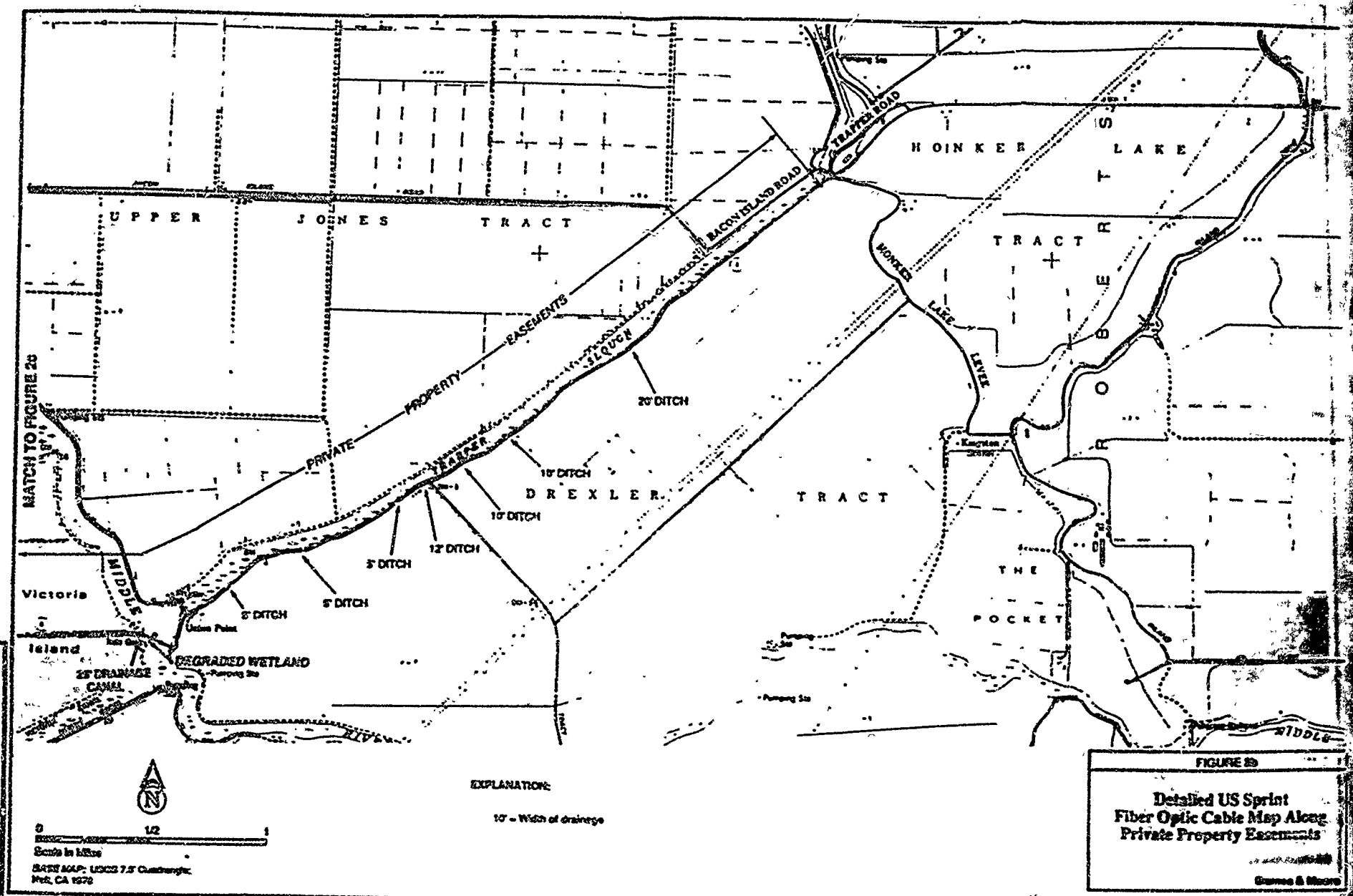
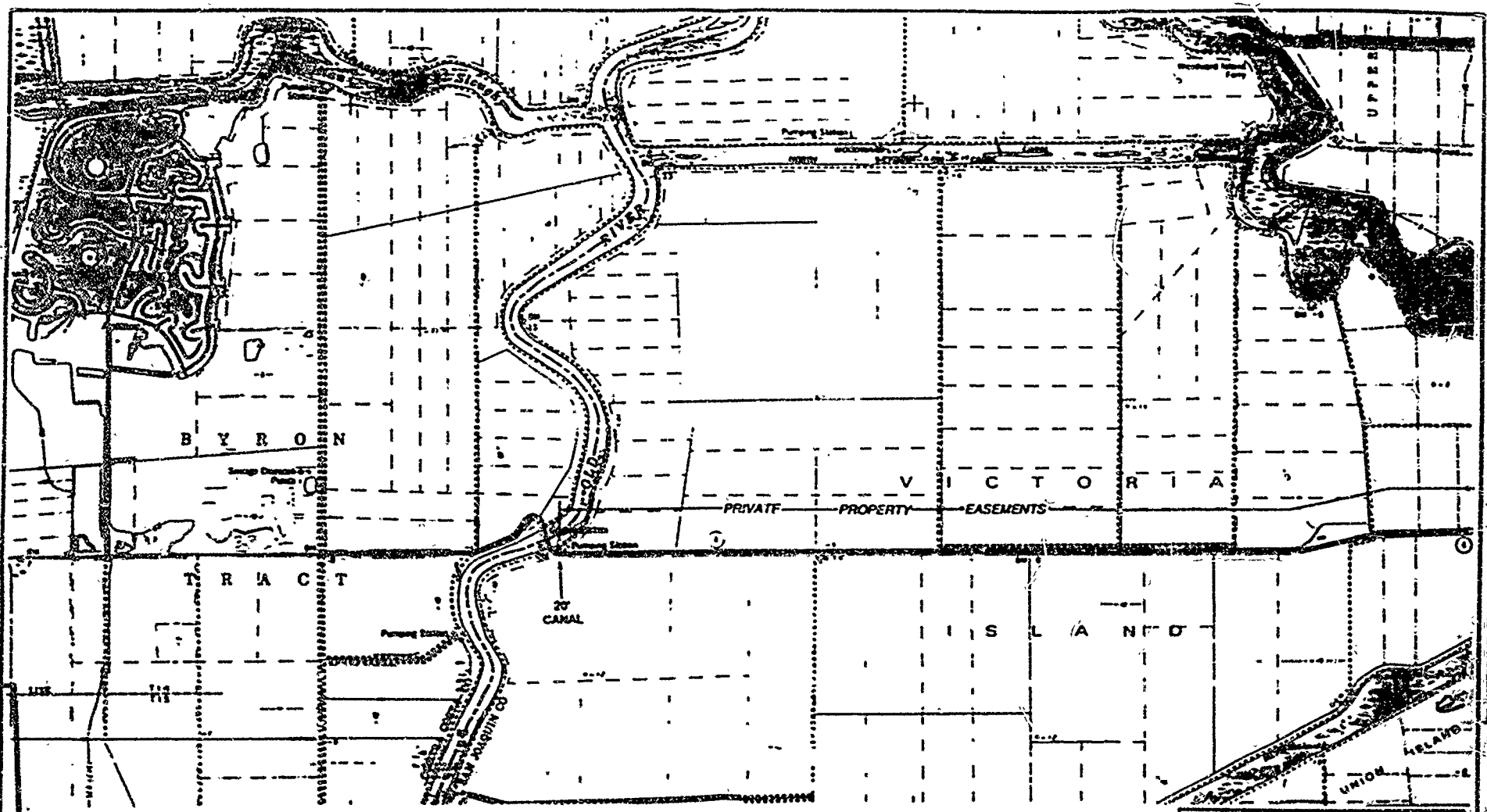


FIGURE 2B

Detailed US Sprint Fiber Optic Cable Map Along Private Property Easements

Gannett Fleming

CALENDAR PAGE 105
MINUTE PAGE 446



CALENDAR PAGE 107
MINUTE PAGE 427

FIGURE 2c

Detailed US Sprint Fiber Optic Cable Map Along Private Property Easements

Bechtel & Moore

TABLE 1

VASCULAR PLANT SPECIES OBSERVED ALONG U.S. SPRINT FIBER OPTIC CABLE ROUTE[1]

Scientific Name[2]	Common Name[2]	Habit[3]	Vegetation Type[4] RV	FM
Avena barbata*	Slender oats	AG	X	
Baccharis glutinosa	Mulefat	S		X
Brassica nigra*	Black mustard	AH	X	X
Bromus diandrus*	Rip-gut brome	AG	X	X
Bromus rubens*	Red brome	AG	X	
Centaurea solstitialis*	Star thistle	AH	X	X
Cephalanthus occidentalis	Buttonbush	S	X	
Chenopodium album*	Pigweed	AH	X	X
Cirsium vulgare*	Bull thistle	AH	X	
Convolvulus arvensis*	Field bindweed	PH	X	
Cynodon dactylon*	Bermuda grass	PG		X
Cyperus sp.	Sedge	PG	X	X
Distichlis spicata	Salt grass	PG		X
Epilobium californicum	Willow-herb	PH		X
Epilobium latifolium	Willow-herb	PH		
Erodium cicutarium*	Redstem filaree	AH	X	
Foeniculum vulgare*	Sweet fennel	PH	X	X
Hordeum leporinum*	Wild barley	AG	X	
Lactuca serriola*	Prickly lettuce	AH	X	X
Lemna minor	Duckweed	PH		X
Lepidium latifolium*	Peppergrass	PH		X
Lolium perenne*	Italian ryegrass	PG	X	
Ludwigia peploides	Floating seedbox	PH		X
Lupinus sp.	Annual lupine	AH	X	
Malva parviflora*	Cheeseweed	AH	X	
Marrubium vulgare*	Horehound	AH	X	X
Melilotus albus*	White sweet clover	PH		X
Myriophyllum hippuroides	Western water-milfoil	S		X
Nicotiana glauca*	Tree tobacco	PG	X	
Oryzopsis miliacea*	Smilo grass			

TABLE 1 (continued)

Scientific Name[2]	Common Name	Habit[3]	Vegetation Type RV	Vegetation Type FM
Phalaris arundinacea	Reed canary grass	PG	X	X
Phragmites communis	Common reed	PG		X
Polygonum aviculare	Prostrate knotweed	AH	X	X
Polygonum lapathifolium*	Willow weed	AH		X
Polygonum punctatum	Water smartweed	PH		X
Polypogon monspeliensis*	Rabbitfoot grass	AG		X
Potamogeton nodosus	Common American pondweed	PH		X
Raphanus sativus*	Wild radish	AH	X	X
Rorippa nasturtium-aquatica*	Water-cress	PH		X
Rubus ursinus	Blackberry	S	X	X
Rumex crispus*	Curly dock	PH		X
Salix lasiolepis	Yellow willow	T		X
Salsola kali*	Russian thistle	AH	X	X
Scirpus acutus	Bulrush	PG		X
Silybum marianum*	Milk thistle	AH	X	
Sonchus oleraceus*	Sow thistle	AH		X
Sparganium eurycarpum	Bur-reed	PH		X
Typha domensensis	Cattail	PG		X
Typha latifolia	Cattail	PG		X
Urtica holosericea	Stinging nettle	PH		X
Verbascum thapsus	Common mullein	PH	X	
Veronica americana*	Brooklime	PH		X
Veronica anagallis-aquatica*	Speedwell	PH		X
Vulpia myuros*	Fescue	AG	X	
Xanthium strumarium*	Cocklebur	AH	X	X

TABLE 1 (concluded)

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[3] Observed during field survey conducted on 16 July 1990.

[2] Scientific and common names follow Munz & Keck (1960) and Mason (1957).

[3] Habit: AG = annual grass; AH = annual herb; PG = perennial grass; PH = perennial herb; S = shrub; T = tree.

[4] Vegetation Type: RV = ruderal vegetation; FM = freshwater marsh.

* Non-native, introduced plant species.