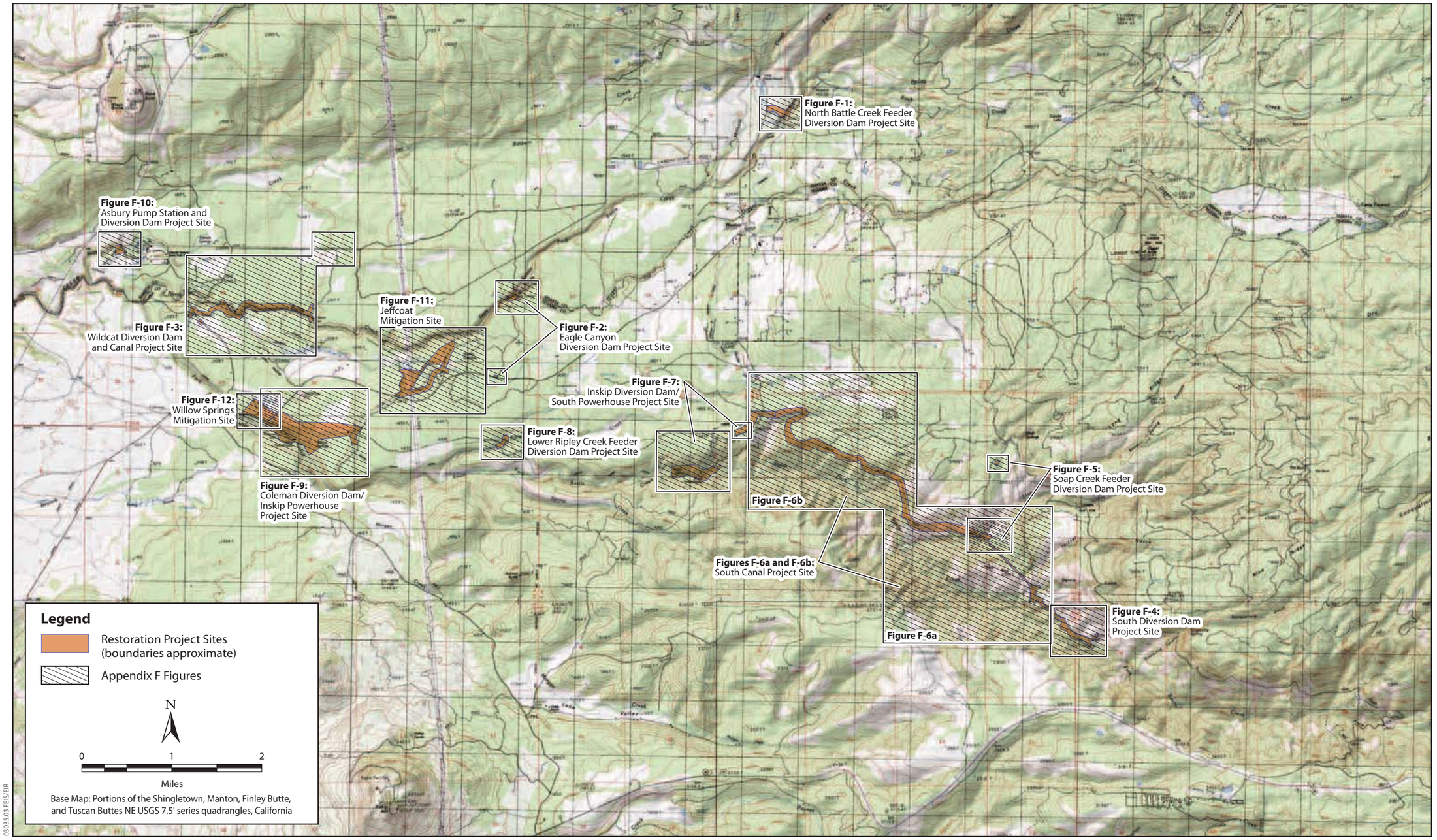
Appendix F

Proposed Construction Areas at Restoration Project Sites

Appendix F
Table of Contents

Figures

Tables



Index to Appendix F Figures

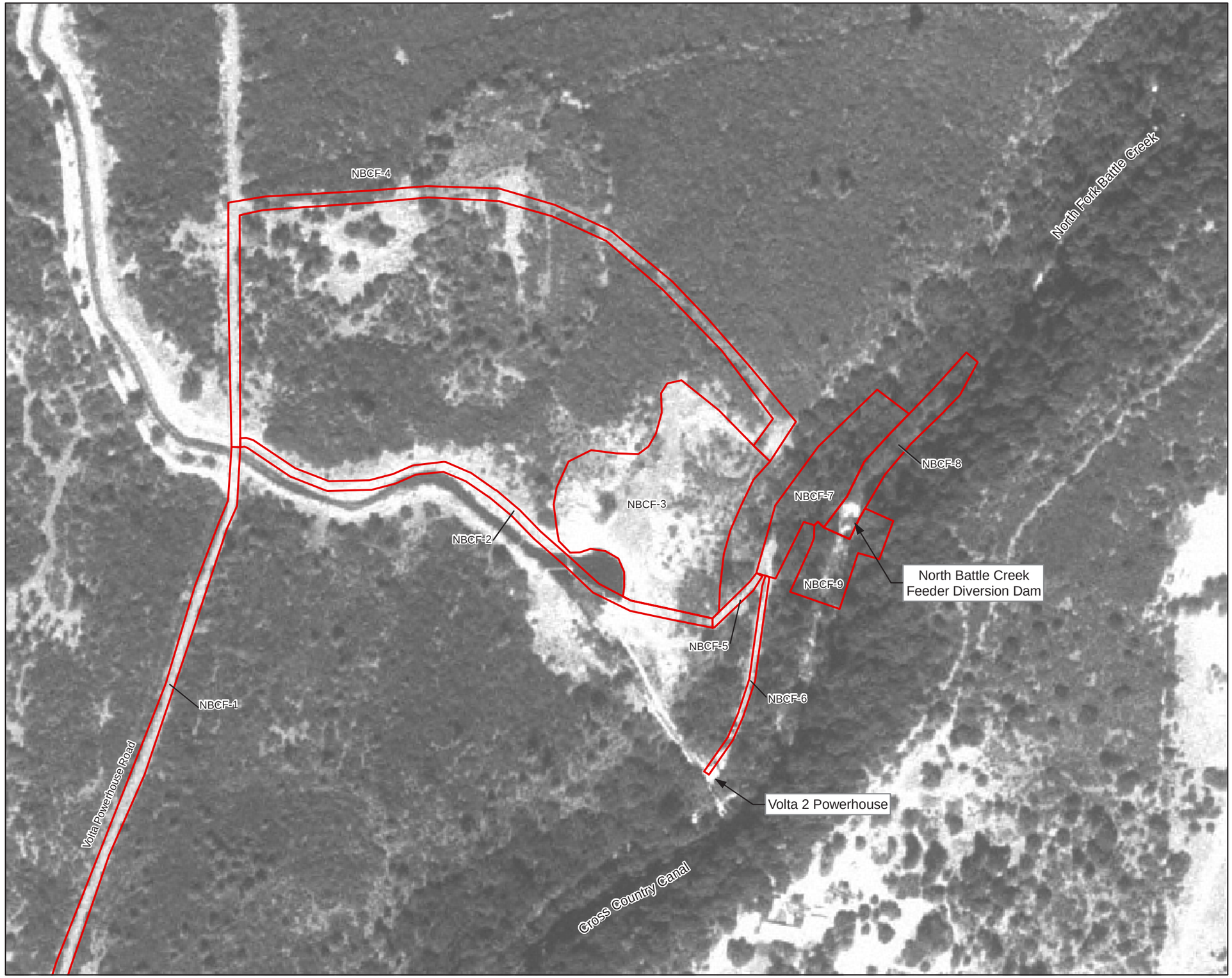


FIGURE F-1

PROPOSED CONSTRUCTION AREAS

NORTH BATTLE CREEK FEEDER
DIVERSION DAM PROJECT SITE

CONSTRUCTION BOUNDARY

FOR AN EXPLANATION OF THE
CONSTRUCTION CODES, SEE TABLE F-1.

N

200 0 200 Feet

SOURCE: U.S. Geological Survey Digital Orthophoto Quarter Quadrangles 1998

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Table F-1. Construction Activities Proposed at North Battle Creek Feeder Diversion Dam

Construction Code	Description of Activities
NBCF-1	**The lightly paved access road from Wilson Hill Road to the feeder canal between Volta 1 and Volta 2 Powerhouses.** This road would experience heavy construction traffic. This 3,100-foot-long, 15-foot-wide road would not be widened but would be maintained as necessary during construction and would be repaired to its preconstruction condition at the end of construction. The total area affected would be approximately 46,000 square feet.
NBCF-2	**Portion of the access road along the feeder canal to the sediment trap at the penstock intake.** This 20-foot-wide, 900-foot-long, gravel-surfaced road would be heavily used but not widened. It would be maintained by blading and the addition of gravel as necessary. The total area affected would be approximately 22,000 square feet.
NBCF-3	**Staging area near sediment trap and access road.** This area would be used for contractor staging and disposal of excavated earth materials resulting from construction of the new access road and fish facilities at this site. The disposal piles would be shaped and graded to prevent ponding of water, planted with suitable grasses and other vegetation, and protected with other erosion control measures to prevent turbid runoff from escaping the disposal site. Materials containing metal would be disposed of off site. The areas used for contractor staging would be cleared and graded, and the surface would be graveled as required to facilitate use. The total affected area would be 121,000 square feet.
NBCF-4	**Temporary access road and staging area.** A 20-foot-wide, 1,200-foot-long road would be constructed adjacent to a new 100-by-50-foot temporary staging area on the west canyon rim above North Battle Creek Feeder Diversion Dam. This staging area would be used to deploy trucked-in equipment and supplies by helicopter down to the work site. Vegetation-clearing, site-grading, and addition of gravel surfacing would be required. The total area affected would be approximately 48,000 square feet.
NBCF-5	**The paved "upper" segment of the steep access road to Volta 2 Powerhouse.** This road segment would experience extensive traffic. No improvement is anticipated for this 12-foot-wide, 400-foot-long segment. The traveled surface may require pothole repair and other maintenance during construction. After construction, additional repairs, including repaving, may be necessary. The total area affected would be approximately 2,700 square feet.
NBCF-6	**The paved "lower" segment of the steep access road to Volta 2 Powerhouse.** This 12-foot-wide, 500-foot-long segment would experience only limited and light construction traffic. This segment must be kept open and available for Pacific Gas & Electric Company use. The total area affected would be approximately 6,000 square feet.
NBCF-7	**New paved access road.** A new 10-foot-wide, 554-foot-long, paved access road would be constructed from the switchback between the upper and lower segments of the Volta 2 Powerhouse road down to the "landing" area adjacent to the right abutment of North Battle Creek Feeder Diversion Dam. To ensure their stability because of the overall steepness of the canyon wall (36º slope), a relatively large area would be affected by the excavation cut slopes. Total area affected would be approximately 37,000 square feet.
NBCF-8	**Area within the ordinary high-water mark of the creek extending approximately 400 feet upstream of North Battle Creek Feeder Diversion Dam.** Diversion banks and other water control systems would be required to allow construction of the fish

Construction Code	Description of Activities
	ladder and fish screen structures in the dry. The total area affected would be approximately 21,000 square feet.
NBCF-9	**Area within creek channel downstream of North Battle Creek Feeder Diversion Dam.** This area, extending approximately 150 feet downstream from the dam, would be disturbed by construction of the fish facilities. The left abutment for the new footbridge would extend up the left canyon wall about 80 feet east of the existing headworks. The total area affected would be approximately 20,000 square feet.

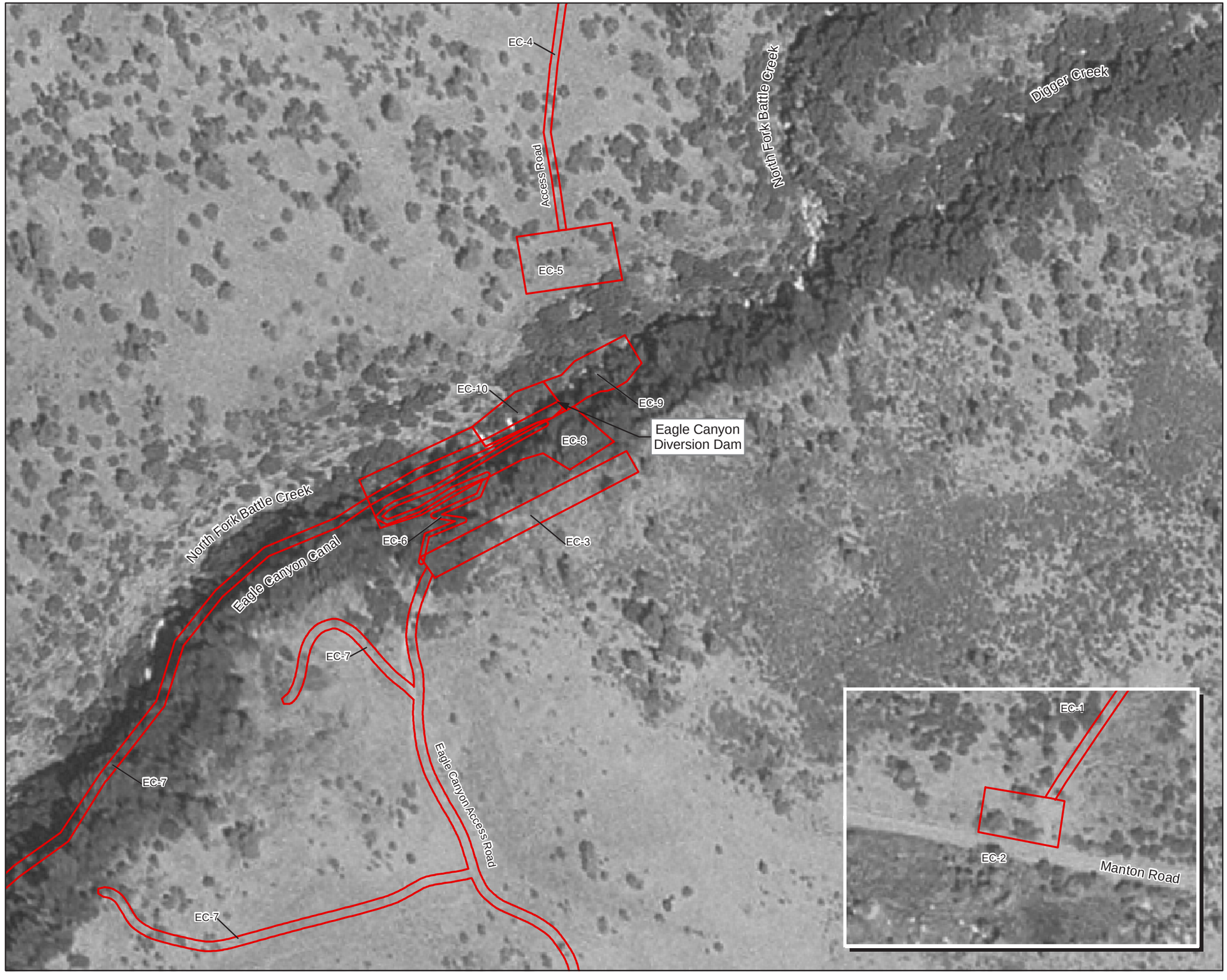

FIGURE F-2

PROPOSED CONSTRUCTION AREAS

EAGLE CANYON DIVERSION DAM
PROJECT SITE

CONSTRUCTION BOUNDARY

FOR AN EXPLANATION OF THE CONSTRUCTION CODES, SEE TABLE F-2.

N

200 0 200 Feet

SOURCE: U.S. Geological Survey Digital Orthophoto Quarter Quadrangles 1998

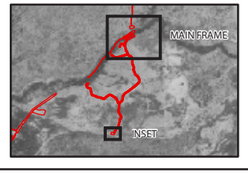

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Table F-2. Construction Activities Proposed at Eagle Canyon Diversion Dam

Construction Code	Description of Activities
EC-1	**Primary access road to work site.** Access is from the south over the existing dirt road, shown as Eagle Canyon Access Road, off Manton Road. This 20-foot-wide, 5,220-foot-long road would be graded, vegetation may be removed or trimmed, and gravel surfacing may be added as necessary to allow all-weather access during construction. The total area affected would be approximately 104,400 square feet.
EC-2	**Entrance to primary access road.** The entrance to the Eagle Canyon Access Road would be modified to ensure safe access to the site because stopping distances for cross traffic are inadequate and the apron is too short. The gate and fences would be widened and set back 100 feet. The culvert pipe that provides drainage along Manton Road would be removed and replaced with a longer section. The entrance area would be graded to promote drainage and compacted to provide an adequate foundation for placement of asphaltic concrete. Vegetation may be removed or trimmed. The total area affected would be approximately 15,000 square feet.
EC-3	**Area on the south rim of the canyon at the end of the access road.** This 50-foot-wide, 480-foot-long area- would be cleared of vegetation, graded, and graveled as necessary to serve as a staging area. The total area affected would be approximately 24,000 square feet.
EC-4	**Access road to the north canyon rim.** This 15-foot-wide, 4,800-foot-long road may be graded and graveled. The total area affected would be approximately 72,000 square feet.
EC-5	**Area on the north rim of the canyon at the end of the access road.** This 120-foot-wide, 200-foot-long area may be cleared, graded, and graveled to serve as a staging area. The total area affected would be approximately 24,000 square feet.
EC-6	**Footpath from the south canyon rim down to Eagle Canyon Diversion Dam.** This footpath would serve as the primary access route for personnel. This 1,000-foot-long trail would be improved to provide safer access during and after construction. The location of the footpath would remain the same; therefore, disturbance to this area would be limited to a maximum 10-foot width. The total area affected would be approximately 10,000 square feet.
EC-7	**Improvements to spring collection facilities.** Work required for the removal of the spring collection facilities on the south canyon wall would extend from Eagle Canyon Diversion Dam at Eagle Canyon Canal station 0+00 to station 29+18, approximately 2,900 feet. At least 21 collection points and 11 discharge points would be modified. Access to these points would be over the existing access road on the canyon rim above the flumes and tunnels and by existing paths, trails, and flume walkways and stairs. These access ways would not be altered to obtain access. The access roads to the turnaround areas at each trailhead may be graded and graveled. The individual improvement areas for the affected collection elements would vary with the required work. The total area of road to be affected is estimated to be approximately 42,840 square feet.
EC-8	**South canyon face.** Several areas on the south canyon face present a potential rockfall hazard to construction workers and the final facilities. The actual amount of affected canyon face would depend on ongoing stability assessments. If work is required at a specific area (e.g., removal by barring and scaling), access may be from above or from the side. A total area of 65,000 square feet has been estimated, but the actual area affected may be substantially less.

Construction Code	Description of Activities
EC-9	**Area within the ordinary high-water mark of the creek extending approximately 200 feet upstream of the dam.** Diversion banks and other water control systems would be required for construction of the fish ladder and fish screen structures in the dry. The total area affected would be approximately 14,000 square feet.
EC-10	**Area within the creek channel downstream of Eagle Canyon Diversion Dam.** This area would be disturbed by the construction of the fish facilities, which would extend approximately 180 feet downstream of the dam. Total area affected would be approximately 18,000 square feet.

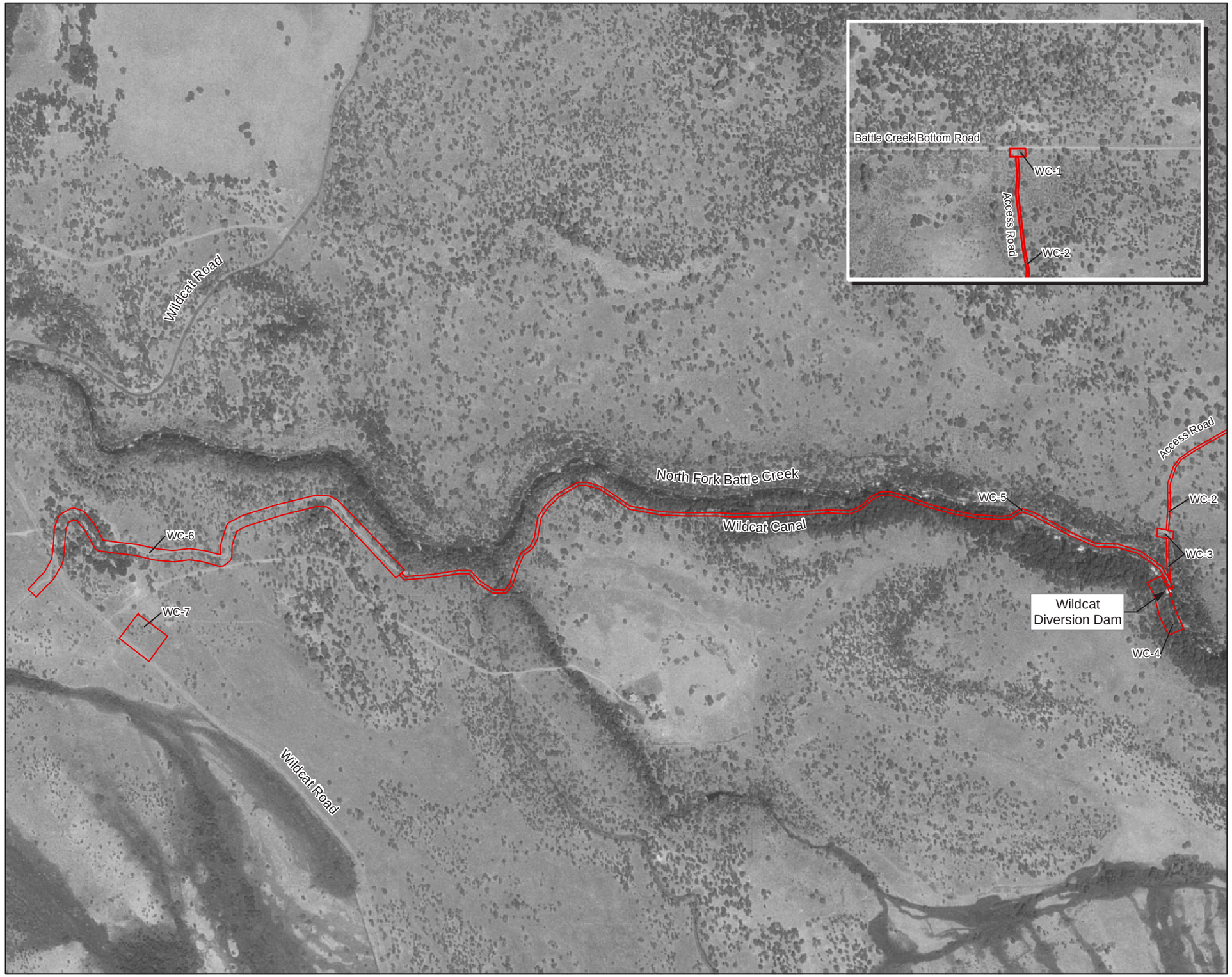

FIGURE F-3

PROPOSED CONSTRUCTION AREAS

WILDCAT DIVERSION DAM AND CANAL
PROJECT SITE

CONSTRUCTION BOUNDARY

FOR AN EXPLANATION OF THE CONSTRUCTION CODES, SEE TABLE F-3.

N

600 0 600 Feet

SOURCE: U.S. Geological Survey Digital Orthophoto Quarter Quadrangles 1998

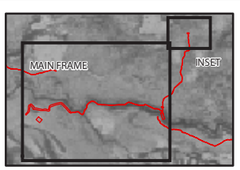

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Table F-3. Construction Activities Proposed at Wildcat Diversion Dam and Canal

Construction Code	Description of Activities
WC-1	**The intersection of the access road with Battle Creek Bottom Road.** This intersection would be widened, graded, and graveled. Fences and gates would be modified to facilitate the movement of construction equipment and personnel. The total area affected would be approximately 5,000 square feet (50 feet by 100 feet).
WC-2	**Access road from Battle Creek Bottom Road that proceeds south to the dam.** This 4,400-foot-long, 15-foot-wide road would be bladed and graveled as necessary to facilitate access. This area may be used for helicopter staging. The total area affected would be approximately 66,000 square feet.
WC-3	**Parking area on the north abutment above the dam site and footpath from parking area to dam site.** This parking area would be graded and graveled as necessary to serve as a staging area. This area would be used for helicopter staging. The total area affected would be approximately 5,000 square feet. The footpath would be improved as necessary to allow safe and efficient access for construction workers. Improvements may include rebuilding or adding to existing steps and stairs, shoring up or adding new handrails, and trimming or removing vegetation. The footpath is too narrow for bringing equipment to the work site. The total area affected would be approximately 5,000 square feet.
WC-4	**Wildcat Diversion Dam.** Work required below the canyon rim for the removal of the Wildcat Diversion Dam would be limited to an approximate 100-foot width across the canyon and extend 100 feet downstream from the dam and 250 feet upstream of the dam. The total area affected would be approximately 35,000 square feet.
WC-5	**Wildcat Pipeline.** Work required for the removal of the Wildcat Pipeline would be limited to the 5,500-foot-long pipeline corridor, which averages 20 feet wide. The total area affected would be approximately 110,000 square feet.
WC-6	**Wildcat Canal and access road from Wildcat Road.** Work required for the abandonment of the Wildcat Canal would be limited to a 70-foot-wide corridor along the portion of the canal from the pipe outlet box to 120 feet west of Wildcat Road, for a total of 3,100 feet. The total area affected would be approximately 217,000 square feet. This area also includes the access road alongside the canal for accessing the pipeline portion of the canal.
WC-7	**Staging area that may be established on private property adjacent to Wildcat Road.** The area would require grading, graveling, and fence and gate modifications. This area would be used for helicopter staging. The total area affected would be approximately 44,000 square feet.

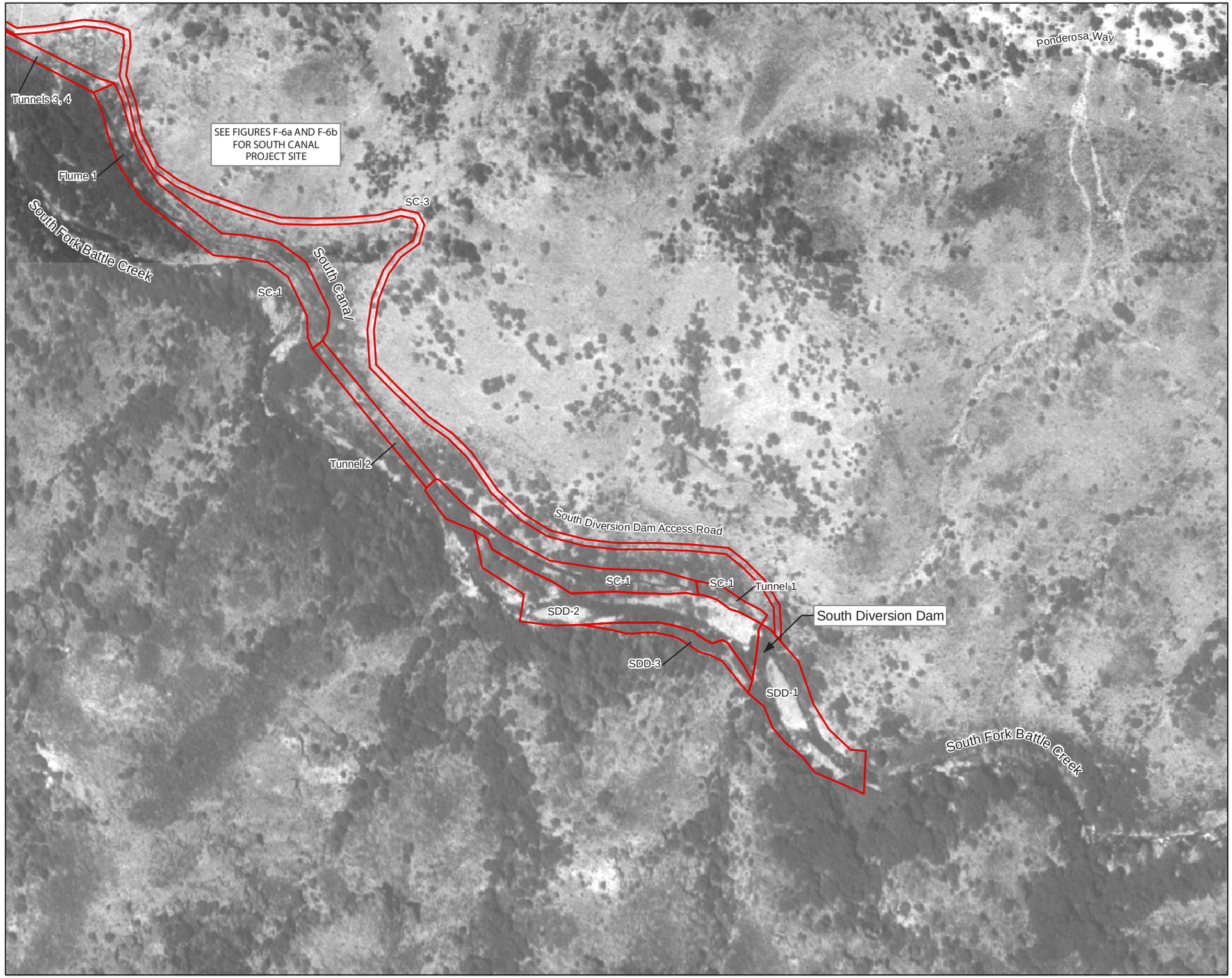

FIGURE F-4

PROPOSED CONSTRUCTION AREAS

SOUTH DIVERSION DAM PROJECT SITE

CONSTRUCTION BOUNDARY

FOR AN EXPLANATION OF THE CONSTRUCTION CODES, SEE TABLE F-4.

N

300 0 300 Feet

SOURCE: U.S. Geological Survey Digital Orthophoto Quarter Quadrangles 1998

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Table F-4. Construction Activities Proposed at South Diversion Dam

Construction Code	Description of Activities
SC-1	**South Canal.** The project width along the South Canal would be 70 feet for all three types of water conveyances used (open channels, flumes, and tunnels). It would not be necessary to disturb the entire project width during abandonment or removals: the entire 70 feet may be needed for open channel sections, up to 40 feet may be needed for the flumes, and only 20 feet may be needed for tunnels. This would result in affected areas of 1,412,250 square feet for the 20,175 feet of open channel, 95,360 square feet for the 2,384 feet of flumes (nine flumes), and 152,260 square feet for the 7,613 feet of tunnels (10 tunnels). The total area affected would be approximately 1,690,000 square feet.
SC-2	**Access roads to South Diversion Dam and South Canal.** Several access roads leading to the South Diversion Dam and South Canal will be improved. These improvements include the following modifications. ▪ Approximately 3 miles of unimproved public road (Ponderosa Way) would be bladed and graveled as needed to support construction equipment and maintain public access. The total area affected would be approximately 324,000 square feet. The portion of the road that would be affected is located to the north of the site and is not shown on the map. See Figure 4.9-2 (in Volume I) for the location of access roads to be used during construction of the Battle Creek Salmon and Steelhead Restoration Project (Restoration Project). ▪ Network of private unimproved access roads that branch off the Bluff Springs gate to the middle and western portions of the South Canal. These roads would be bladed and graveled as needed to support construction equipment. The total length of the road network that is affected is approximately 3.6 miles, and the total area affected would be approximately 451,000 square feet. This portion of the road that would be affected is located to the north of the site and is not shown on the map. See Figure 4.9-2 (in Volume I) for the location of access roads to be used during construction of the Restoration Project. ▪ Portions of access roads located along the canal banks will also be used for access but are not included in these figures. The private South Powerhouse Access Road and Old Ranch Road would also be used to provide access to the western portions of South Canal and are included in the description for the Inskip Diversion Dam/South Powerhouse site.
SC-3	**Private access road.** Improvements to the 2.3-mile private access road include a total area affected of approximately 234,000 square feet. The road would be graded and graveled.
SDD-1	**Area within the ordinary high-water mark of the creek extending approximately 500 feet upstream from South Diversion Dam.** Construction of a pilot channel for the excavated sediments, redistribution of the reservoir sediments in the areas upstream and downstream of the dam, and excavation of sediments to allow dam removal would affect this area. The total area affected would be approximately 72,000 square feet.
SDD-2	**Area within the creek channel downstream of South Diversion Dam, including part of the access ramp on the downstream right creek bank.** This area would be disturbed by equipment crossing the creek to reach the dam removal area and by the redistribution of the upstream sediments. The total area affected would be approximately 96,000 square feet.
SDD-3	**Area along the south creek bank.** This area would be disturbed by regrading and by equipment crossing the creek to reach the dam removal area. The total area affected would be approximately 18,000 square feet.

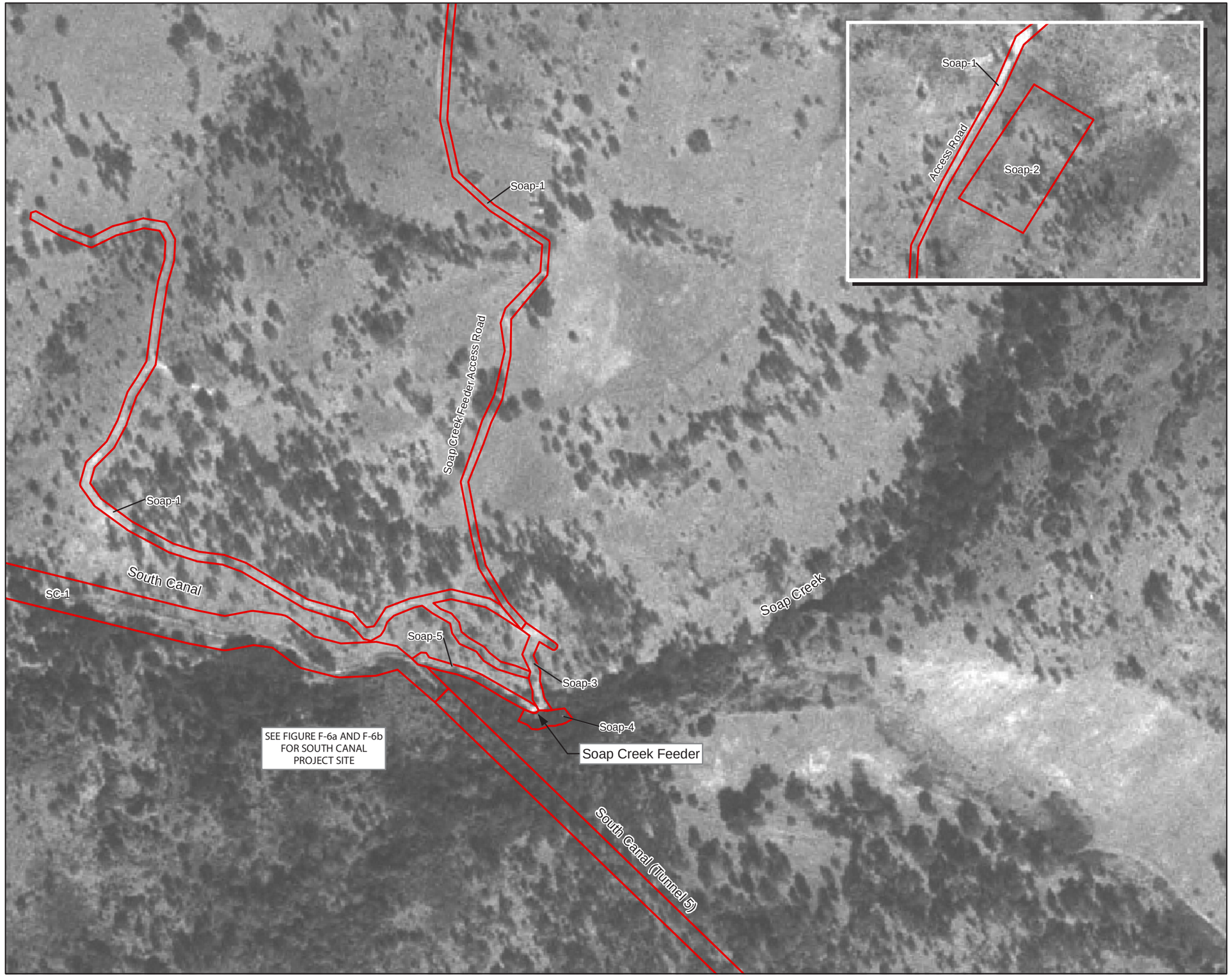

FIGURE F-5

PROPOSED CONSTRUCTION AREAS

SOAP CREEK FEEDER DIVERSION
DAM PROJECT SITE

CONSTRUCTION BOUNDARY

FOR AN EXPLANATION OF THE
CONSTRUCTION CODES, SEE TABLE F-5.

N

200 0 200 Feet

SOURCE: U.S. Geological Survey Digital Orthophoto Quarter Quadrangles 1998

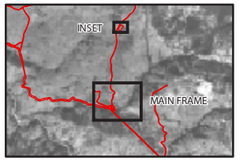

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Table F-5. Construction Activities Proposed at Soap Creek Feeder Diversion Dam

Construction Code	Description of Activities
Soap-1	**Existing access roads off of Ponderosa Way used to access the dam and South Canal.** These roads would be bladed and graveled.
Soap-2	**Staging area.** A staging area would be established to accommodate helicopter work. The proposed location would be established in the field but would be adjacent to the main access road at a flat spot at the top of the plateau after the turnoff from Ponderosa Way. Total area affected would be approximately 40,000 square feet.
Soap-3	**Staging area for the removal of Soap Creek Feeder Diversion Dam.** Work for the dam removal would be staged from a small area above the right abutment of the dam. This area and the access footpath leading down to the dam would be graded and shaped to establish safe access. The access path corridor would be minimized to about 20 feet wide. The total area affected would be approximately 5,000 square feet.
Soap-4	**Area within the creek channel upstream and downstream of Soap Creek Feeder Diversion Dam.** This area would be disturbed during dam removal. The affected area would extend approximately 60 feet upstream and 40 feet downstream of the dam and would be 40 feet wide bank to bank. The total area affected would be approximately 4,000 square feet.
Soap-5	**Area of pipeline and associated structures.** Removal would be contained within a 15-foot-wide corridor between Soap Creek Feeder Diversion Dam and South Canal, a distance of approximately 300 feet. The total area affected would be approximately 5,300 square feet.
SC-1	**South Canal.** The project width along the South Canal would be 70 feet for all three types of water conveyances used (open channels, flumes, and tunnels). It would not be necessary to disturb the entire project width during abandonment or removals: the entire 70 feet may be needed for open channel sections, up to 40 feet may be needed for the flumes, and only 20 feet may be needed for tunnels. This would result in affected areas of 1,412,250 square feet for the 20,175 feet of open channel, 95,360 square feet for the 2,384 feet of flumes (nine flumes), and 152,260 square feet for the 7,613 feet of tunnels (10 tunnels). The total area affected would be approximately 1,690,000 square feet.

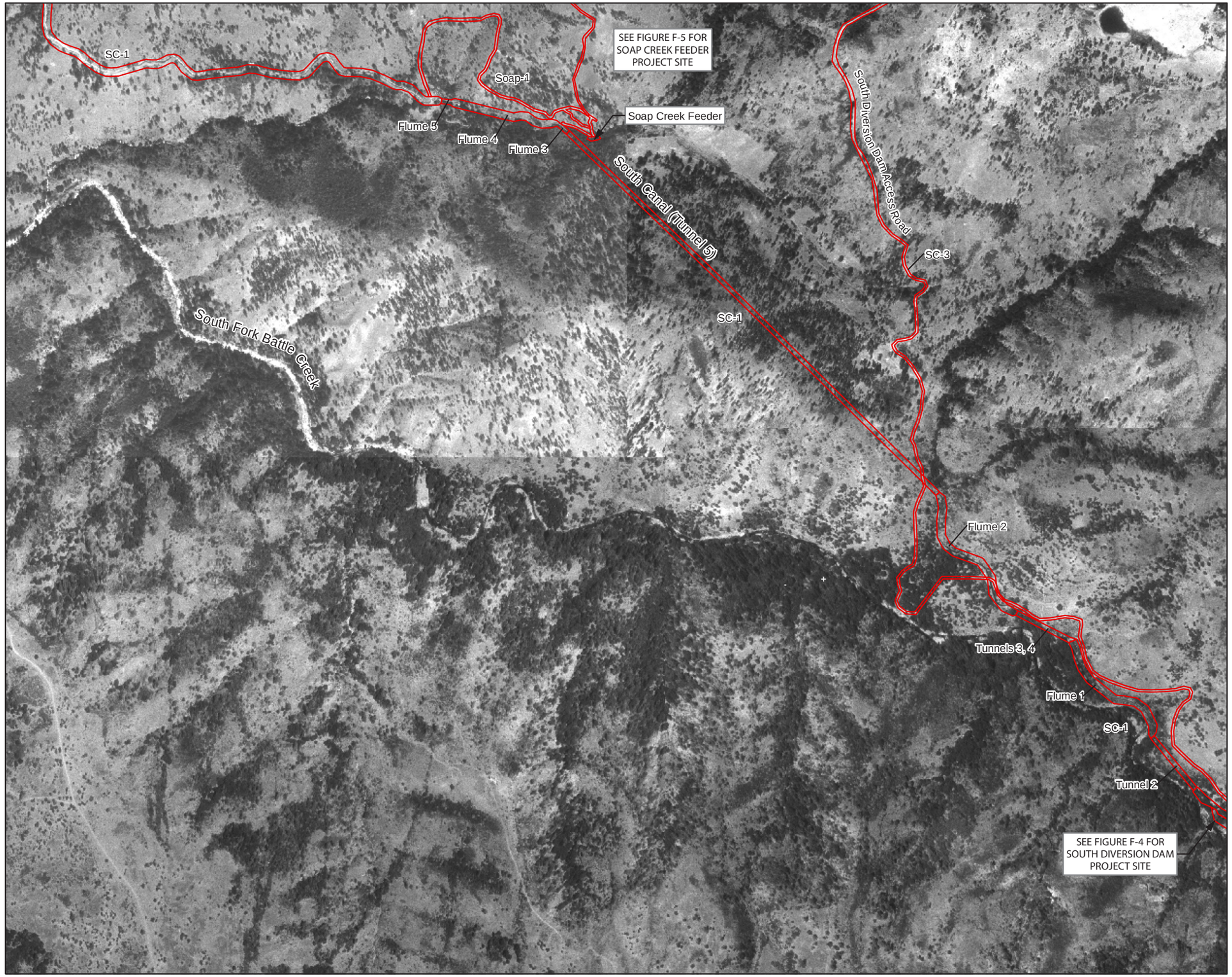


FIGURE F-6a

PROPOSED CONSTRUCTION AREAS

SOUTH CANAL PROJECT SITE

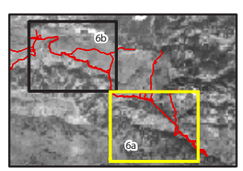
CONSTRUCTION BOUNDARY

FOR AN EXPLANATION OF THE CONSTRUCTION CODES, SEE TABLE F-6.

N

800 0 800 Feet

SOURCE: U.S. Geological Survey Digital Orthophoto Quarter Quadrangles 1998



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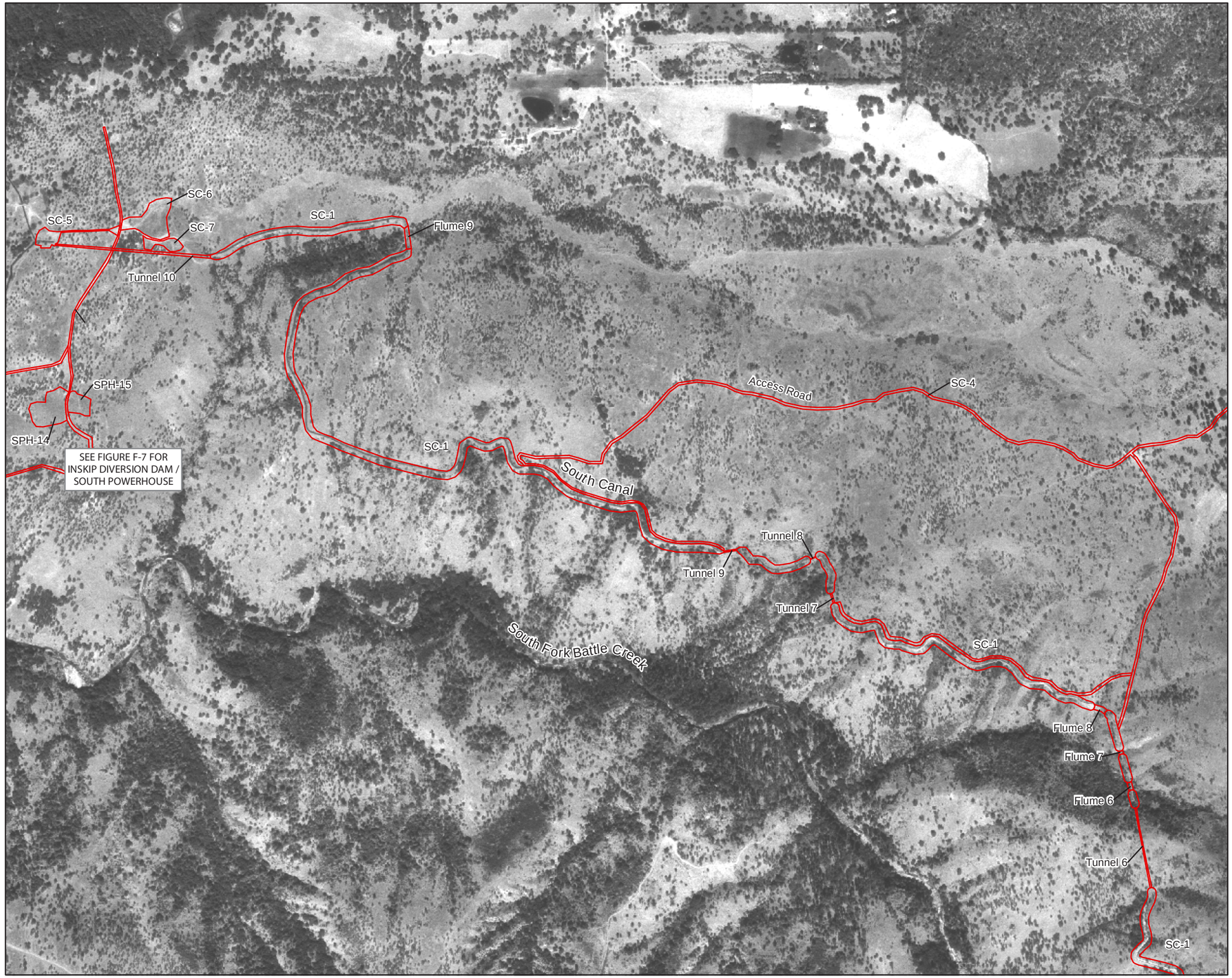

FIGURE F-6b

PROPOSED CONSTRUCTION AREAS

SOUTH CANAL PROJECT SITE

CONSTRUCTION BOUNDARY

FOR AN EXPLANATION OF THE CONSTRUCTION CODES, SEE TABLE F-6

N

800 0 800 Feet

SOURCE: U.S. Geological Survey Digital Orthophoto Quarter Quadrangles 1998

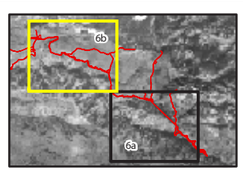

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Table F-6. Construction Activities Proposed at South Canal

Construction Code	Description of Activities
SC-1	**South Canal.** The project width along the South Canal would be 70 feet for all three types of water conveyances used (open channels, flumes, and tunnels). It would not be necessary to disturb the entire project width during abandonment or removals: the entire 70 feet may be needed for open channel sections, up to 40 feet may be needed for the flumes, and only 20 feet may be needed for tunnels. This would result in affected areas of 1,412,250 square feet for the 20,175 feet of open channel, 95,360 square feet for the 2,384 feet of flumes (nine flumes), and 152,260 square feet for the 7,613 feet of tunnels (10 tunnels). The total area affected would be approximately 1,690,000 square feet.
SC-4	**Private access road.** This road off of Ponderosa Way would be graded and graveled.
SC-5	**Contractor use/work area.** Access road improvements would be made to access the work site and staging area near the end of the South Canal. Tunnel 10 would be closed off at this site. In addition, this area would also be used for staging. The total area affected would be approximately 32,000 square feet.
SC-6	**Contractor use area.** This area would be used as a contractor staging area and potentially for disposal of spoil dirt. The total area affected would be approximately 79,990 square feet.
SC-7	**Staging area.** This area would be used as a contractor staging area. The total area affected would be approximately 23,200 square feet.