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Amended Environmental Impact Statement

**Construction Of Pilot Channel
In The Salt And Gila Rivers
Ninety-First Avenue To Gillespie Dam
Maricopa County, Arizona**

**Department Of The Interior
U.S. Fish and Wildlife Service
Region 2**

A125.901

DRAFT
AMENDED ENVIRONMENTAL IMPACT STATEMENT

CONSTRUCTION OF PILOT CHANNEL
IN SALT AND GILA RIVERS
NINETY-FIRST AVENUE TO GILLESPIE DAM
MARICOPA COUNTY, ARIZONA

Department of the Interior
United States Fish and Wildlife Services
Region 2

Prepared by:
Flood Control District of Maricopa County

with the assistance of

BOYLE ENGINEERING CORPORATION
Phoenix, Arizona

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1. PURPOSE AND NEED FOR THE ACTION

1.1 PURPOSE

The Flood Control District of Maricopa County, Arizona, is developing plans for a pilot channel down the centerline of a 1,000 foot wide clearing along the Salt and Gila Rivers from Ninety-first Avenue to Gillespie Dam (Exhibit 1). The purpose of the proposed action is to facilitate the flow of floodwater and to alleviate flood-related damage to public and private property. The pilot channel will contain low flows within the cleared area and establish a well defined channel for flood flows to follow. Spoil material from the construction of the channel will be spread on the adjacent cleared area and also be used to fill the upstream end of some meanders.

1.2 NEED

At present flows in the river between Ninety-first Avenue and Gillespie Dam originate from sewage effluent, irrigation tailwaters, water deliveries to the Buckeye Irrigation District, pumpage from drainage wells and groundwater seepage. These flows, averaging between 300 and 1,000 cfs per day, meander, not only within the 1,000 foot clearing, but also in existing low flow channels outside the cleared area. When floods occur flow is directed along the meanders towards adjacent property and away from the cleared area.

1.3 BACKGROUND TO STUDY

In October 1980 a Draft Environmental Impact Statement was prepared on "Clearing of Phreatophytic Vegetation from the Salt and Gila Rivers from Ninety-first Avenue to Gillespie Dam" (Reference 1). A final statement (Reference 2) was submitted by the Department of the Interior, U.S. Fish and Wildlife Service, Region 2 in November 1981.

The EIS assessed the environmental consequences for clearing a 1,000 foot wide and alternative 2,000 foot wide corridor of vegetation to reduce flooding. The 1,000 foot corridor was recommended. The key issues addressed in the statement were: impacts on vegetation, wildlife habitat, and dove productivity; value in minimizing flood damages; erosion and deposition of sediments; and degradation of air quality. The EIS was approved and the initial clearing has since been completed. The Flood Control District is currently performing periodic maintenance clearing within the 1,000 foot corridor.

The original EIS did not consider the environmental consequences of constructing a pilot channel and partially altering the course of the existing low flow meandering channel. However, rather than preparing an entirely new EIS, it was considered more applicable to amend the existing EIS to address any additional impacts.

2. PROPOSED ACTION

2.1 INTRODUCTION

Presently low flows meander in one or more channels both within and outside the cleared area. This pattern of flow contributes to bank erosion in some locations by directing flow to erosion susceptible areas. To rectify the situation it is proposed to construct a pilot channel along the centerline of the 1,000 foot clearing. The excavated material will be spoiled adjacent to the channel and at the upstream end of some meanders.

Field trips were made to the study area with representatives of U.S. Fish and Wildlife Service, Arizona Game and Fish Department and Flood Control District of Maricopa County to assess the impact of the pilot channel.

A major concern was the elimination of low flow water that supports vegetation to the south of the clearing, particularly just downstream of State Highway 85 (Exhibit 5). North of the clearing does not present a similar problem because these areas are currently fed by irrigation tailwaters.

To support the area just downstream of State Highway 85, the southerly meander will not be blocked off. The pilot channel will be constructed along the centerline of the clearing with provision for water to flow in the southerly meander toward the Robbins Butte Wildlife Area.

2.2 AVAILABLE DATA

To perform the analysis and present the results, the available data included the original draft Environmental Assessment Report (Reference 3); the draft and final EIS; an updated set of aerial photos showing the actual clearing, contour plans of the study area and new topography produced in June, 1984.

The draft Environmental Impact Statement included plans of the "Salt-Gila River Clearing Project", Plates A through F. These Plates, containing the alternative clearing alignments, are used as base plans in this report and renamed Exhibits 2 to 7 respectively. The original scale has been modified to reflect the actual situation. All revisions and additional proposals to the original Plates are shown in black on the drawings.

Alignment plans of the actual clearing were prepared from recent aerial photographs. These plans, covering Exhibits 4-7 and part of 3, were superimposed onto contour plans to establish existing ground elevations along the proposed alignment of the pilot channel. Composite tracings of the alignment and profile, not included in this report, are available for use in future detailed design, if required.

2.3 PRESENT ALIGNMENT OF CLEARED AREA

Following approval of the original EIS, work began on the 1,000 foot clearing. The actual alignment varied from the original to better reflect existing ground conditions. These changes were made by the Flood Control District of Maricopa County in coordination with the U.S. Fish and Wildlife Service and Arizona Game and Fish Department. For example, the clearing on Exhibit 5 was moved south to center on the highway bridge crossing. The current alignment is shown on the Exhibits.

2.4 PILOT CHANNEL

The pilot channel has been sized to convey the estimated daily peak flow of 1,000 cubic feet per second. A number of cross-sections were analyzed and it is proposed to establish an average depth of flow of 3 feet and vary the width depending on available channel gradients.

Adopting a Manning's roughness factor (n) of 0.028 and side slopes of 2 to 1, channel widths vary from 50 feet to 85 feet for bed grades of 0.0017 to 0.0006 respectively. Velocities of flow will vary from 6.6 feet per second to 3.9 feet per second for these sections.

In the steeper grades, the pilot channel will scour to a cross sectional width that will support non erodible velocities of about 3 feet per second. This is actually encouraged to strengthen the "centerline" location of the river within the cleared area.

2.5 SPOIL MATERIAL

For most of the channel length the water surface is close to the existing ground, therefore requiring only a minimum cut of 3 feet. In a few places, the cleared area is on higher ground requiring excavations up to 12 feet. The longitudinal section of the proposed channel is shown on the Exhibits.

Generally the pilot channel excavation will be spoiled in the 1,000 foot clearing. This amounts to about 4 inches of fill for areas in minimum cut. For areas with deeper cuts, excavated material will also be spoiled in the entrance of some meanders.

The spoil will be spread evenly on the adjacent cleared areas so that future flood flows are not impeded. With the construction of the pilot channel the total hydraulic carrying capacity of the section will not be reduced.

Another major area to deposit excavated material is in the upstream end of meanders and also, if necessary, in existing low flow channels outside the cleared area. This work is required to reduce low flows from continuing their meandering path. The fill locations are shown on the Exhibits.

3. AFFECTED ENVIRONMENT

3.1 INTRODUCTION

The original draft and final EIS for the clearing describes the affected environment covered by this amendment. Since the time of those reports, the only major change has been the construction of the 1,000 foot wide clearing between Ninety-first Avenue and Gillespie Dam.

4. ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

The major items reviewed in the original EIS include:

- . Climatology
- . Air Quality
- . Geology and Topography
- . Soils
- . Hydrology
- . Vegetation
- . Wildlife
- . Fisheries
- . Cultural Resources
- . Energy
- . Land Use
- . Transportation
- . Socioeconomics

Of the above, only air quality, soils, hydrology, vegetation, wildlife and fisheries have any additional or changed impacts from the original study. This section focuses on changes to the original study. The reader is referred to the draft EIS (Reference 1) for the basic major affected environment conclusions for the clearing.

4.2 AIR QUALITY

The construction of the pilot channel would temporarily degrade the local air quality due to increases in airborne particulates and construction exhaust emissions. This condition is however, localized and short term. Maintenance of the channel would be carried out in conjunction with the clearing maintenance and would not present any additional impacts.

4.3 SOILS

Initially the pilot channel will have scouring velocities for the peak daily flow. This will cease when the channel widens to a stable section. The material will be deposited in low flow sections downstream.

Soil erosion to the existing banks of the river will be reduced by aligning the flood flows along the centerline of the clearing and away from erosive banks.

4.4 HYDROLOGY

Construction of the proposed pilot channel and spoiling material on the adjacent banks will not result in a decrease in the carrying capacity of the river. A depth of flow in the channel has been designed for 3 feet. To keep groundwater drawdown to a minimum the designed water surface profile is at ground levels for most of the channel. The only exception to this is where the channel goes through some deep sections of cut. With this design change in groundwater will be minimal.

North of the proposed channel current wet areas are fed by local irrigation tailings and will not be generally affected. South of the clearing, wet areas relying on upstream low flows will dry up when the meanders are cut off. They will however be inundated during periodic high flows. This is the intention except for the area just downstream of State Highway 85 which will continue to be fed by low flows.

Long term water quality will not be affected by the proposed works. There will be a temporary degradation of water quality due to increased turbidity during construction and maturing of the pilot channel.

4.5 VEGETATION

During the construction phase of the pilot channel, all cottonwood/willow and mesquite will be avoided if possible. Low quality salt cedar regeneration and annual grasses and weeds will be removed. No endangered plant species will be affected by the proposed action.

4.6 WILDLIFE

The construction of the pilot channel will reduce the available habitat by confining flows to a centralized channel. Some of the wet areas to the north may be diminished in size and total productivity. This will have some affect on shore birds and non game species but this is not anticipated to be significant. Game species will not be affected. No threatened and endangered species would be affected by the proposed action.

4.7 FISHERIES

Centralizing the channel will reduce the available habitat suitable for fish survival and reproduction. During the construction phase and subsequent maintenance the fish fauna would be subject to potential increases in suspended solids and turbidity due to construction equipment movement within and adjacent to bodies of water. This work will however take place in conjunction with the annual maintenance of the clearing. The increase in suspended solids and turbidity should not cause any adverse impacts because these conditions are a natural occurrence in desert streams. No threatened and endangered species would be affected by the proposed action.

REFERENCES

1. Department of Interior, US Fish and Wildlife Service Region 2 DRAFT ENVIRONMENTAL IMPACT STATEMENT, Clearing of Phreatophytic Vegetation from the Salt and Gila Rivers Ninety-First Avenue to Gillespie Dam, Maricopa County, Arizona
2. Department of Interior, US Fish and Wildlife Service Region 2 November 1981 FINAL ENVIRONMENTAL IMPACT STATEMENT, Clearing of Phreatophytic Vegetation from the Salt and Gila Rivers Ninety-First Avenue to Gillespie Dam, Maricopa County, Arizona
3. Benham Blair and Affiliates, Inc. October 1980 DRAFT ENVIRONMENTAL ASSESSMENT REPORT, Clearing of Phreatophytic Vegetation from the Salt and Gila Rivers Ninety-First Avenue to Gillespie Dam, Maricopa County, Arizona

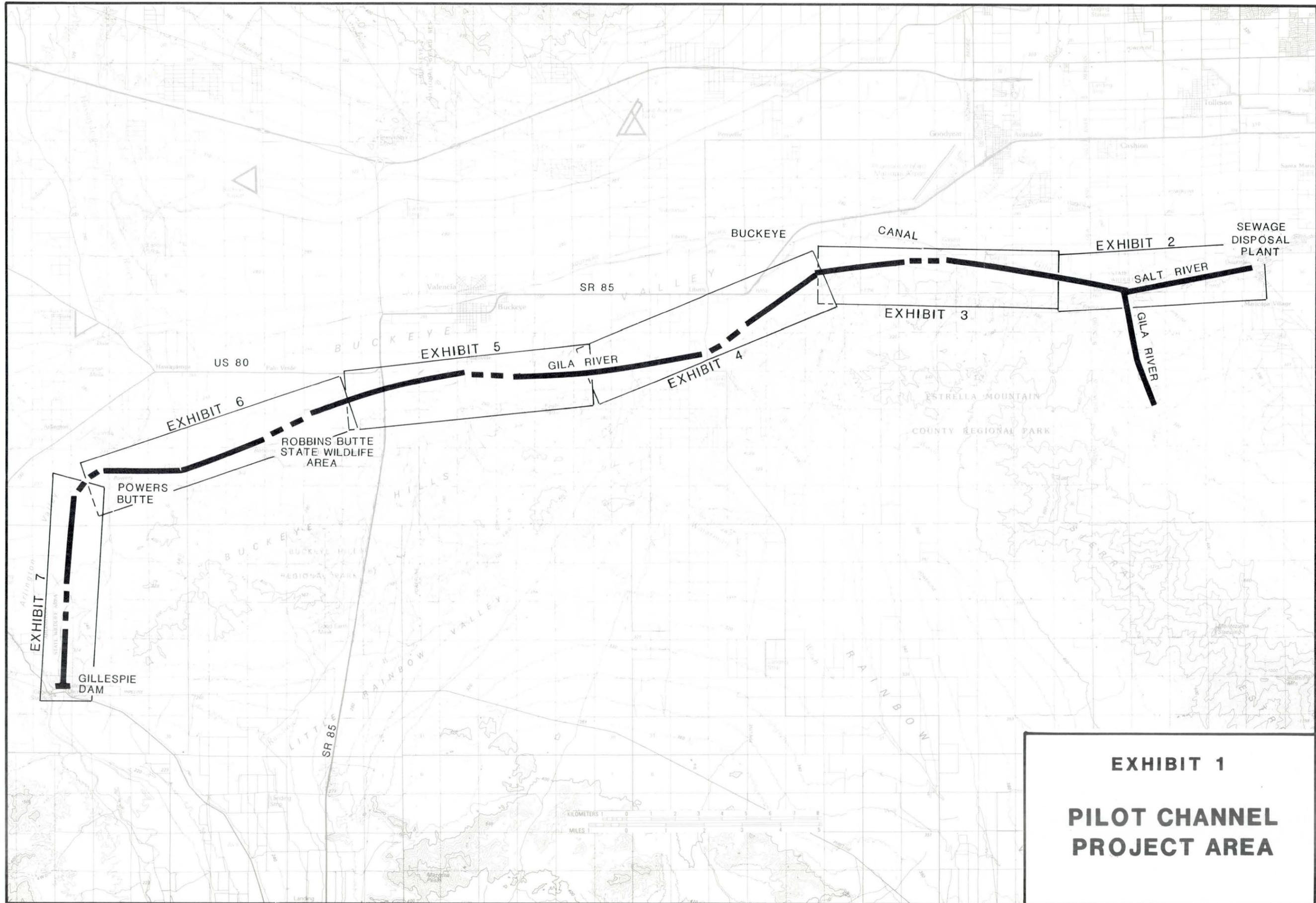
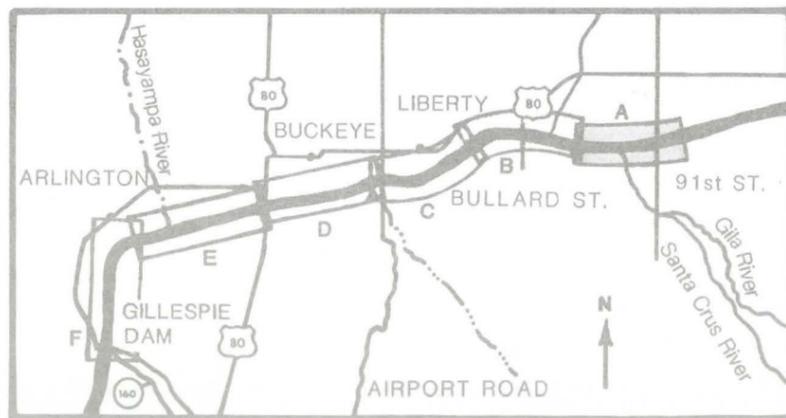


EXHIBIT 1
PILOT CHANNEL
PROJECT AREA



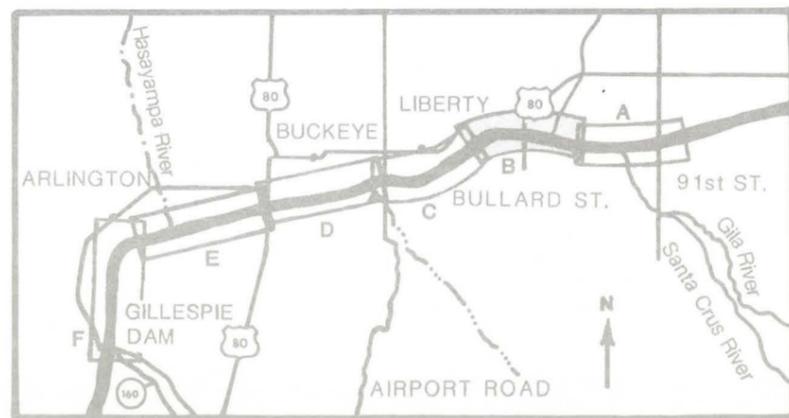
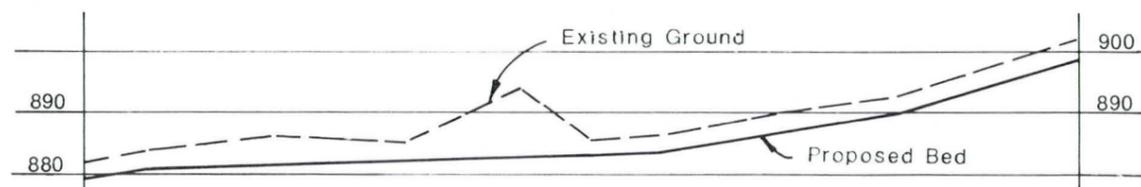
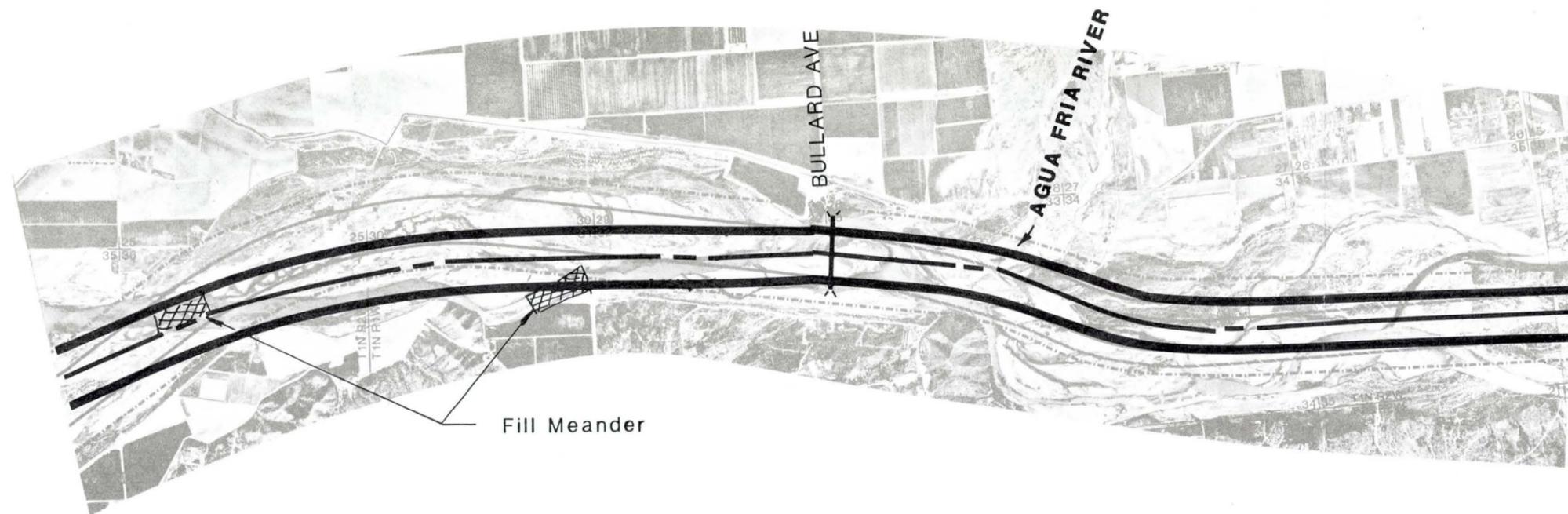
Legend

- Proposed action (1,000-foot clearing)
- Alternative 1 (1,000-foot FWS clearing)
- Alternative 2 (2,000-foot clearing)
- Pilot Channel
- Adopted Clearing

Source: Arizona Department of Transportation 1980.



EXHIBIT 2
PILOT CHANNEL



Legend

- Proposed action (1,000-foot clearing)
- Alternative 1 (1,000-foot FWS clearing)
- Alternative 2 (2,000-foot clearing)
- Pilot Channel
- Adopted Clearing

Source: Arizona Department of Transportation 1980.

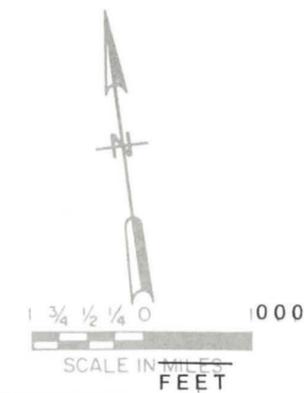
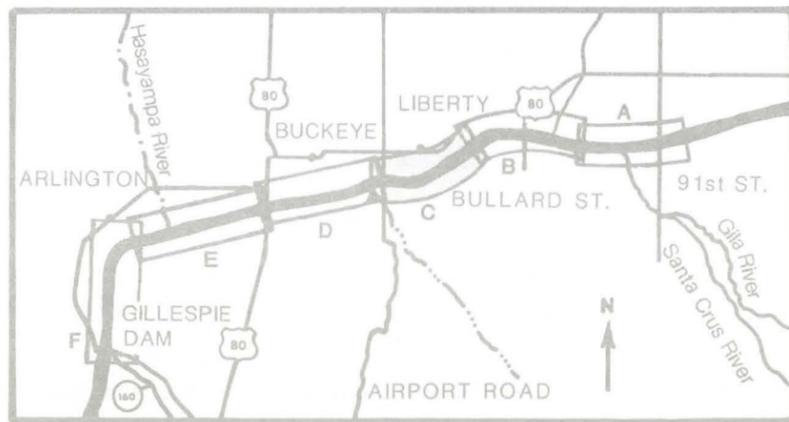
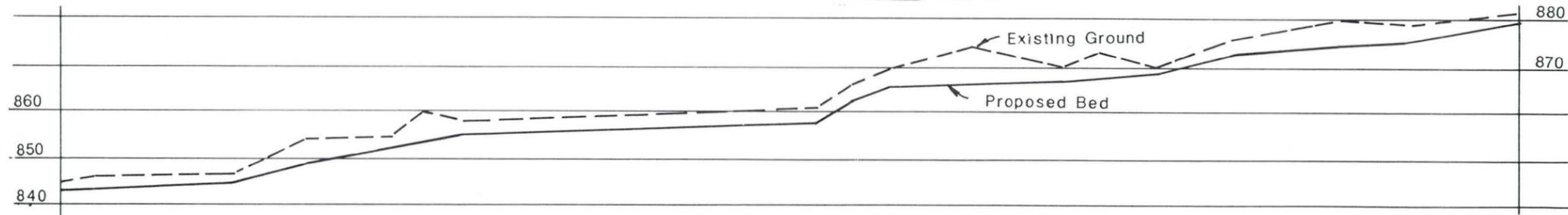
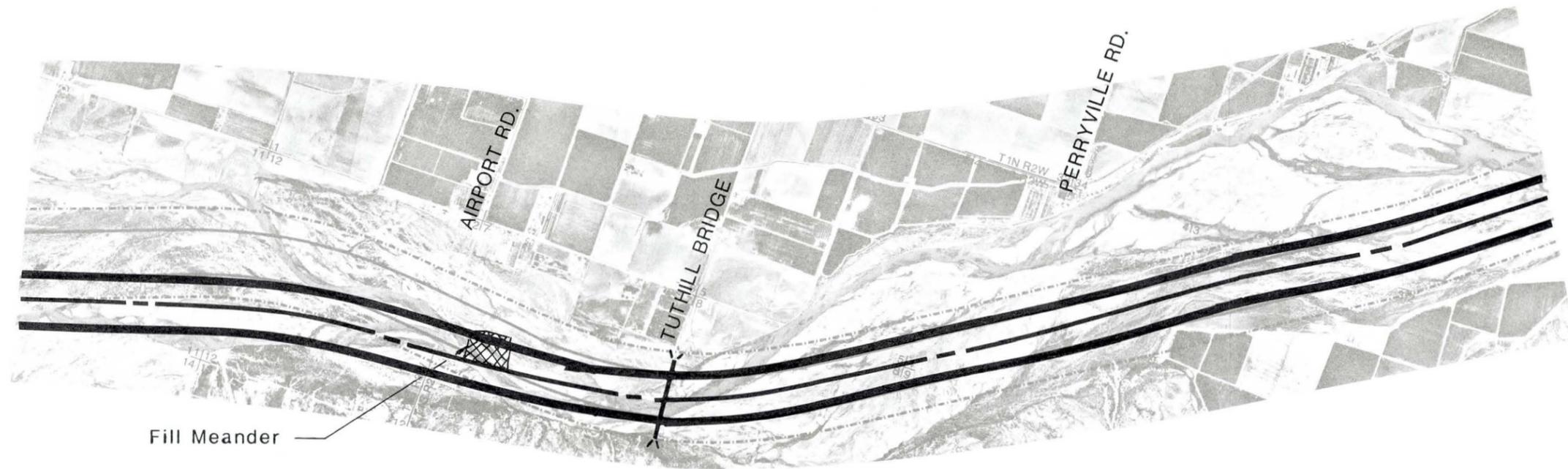


EXHIBIT 3
PILOT CHANNEL

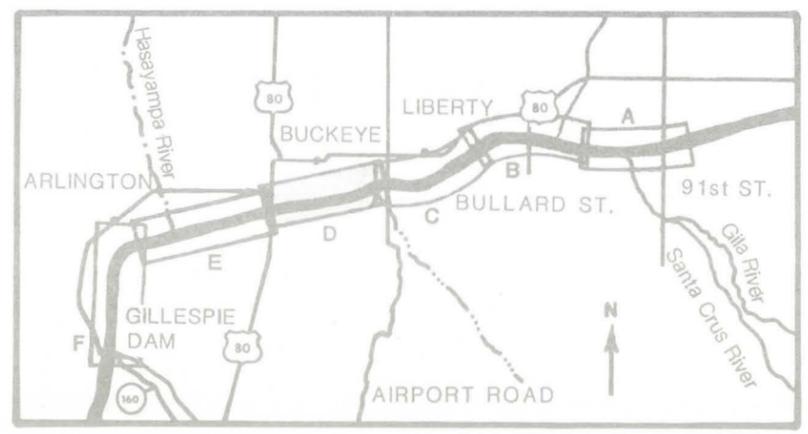
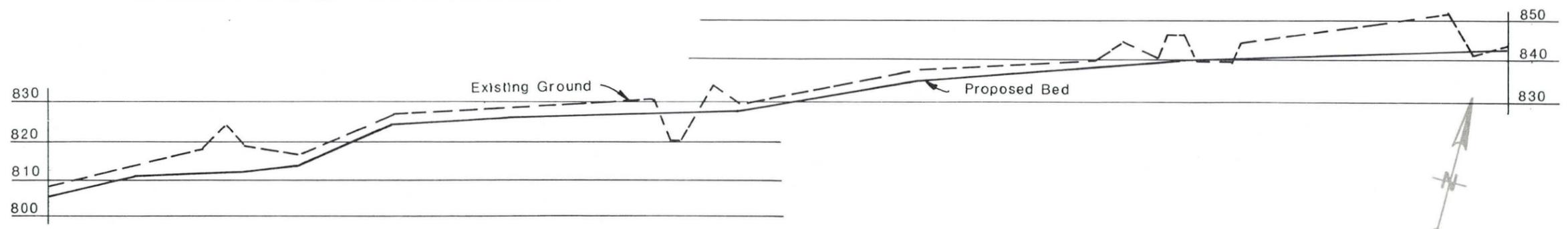
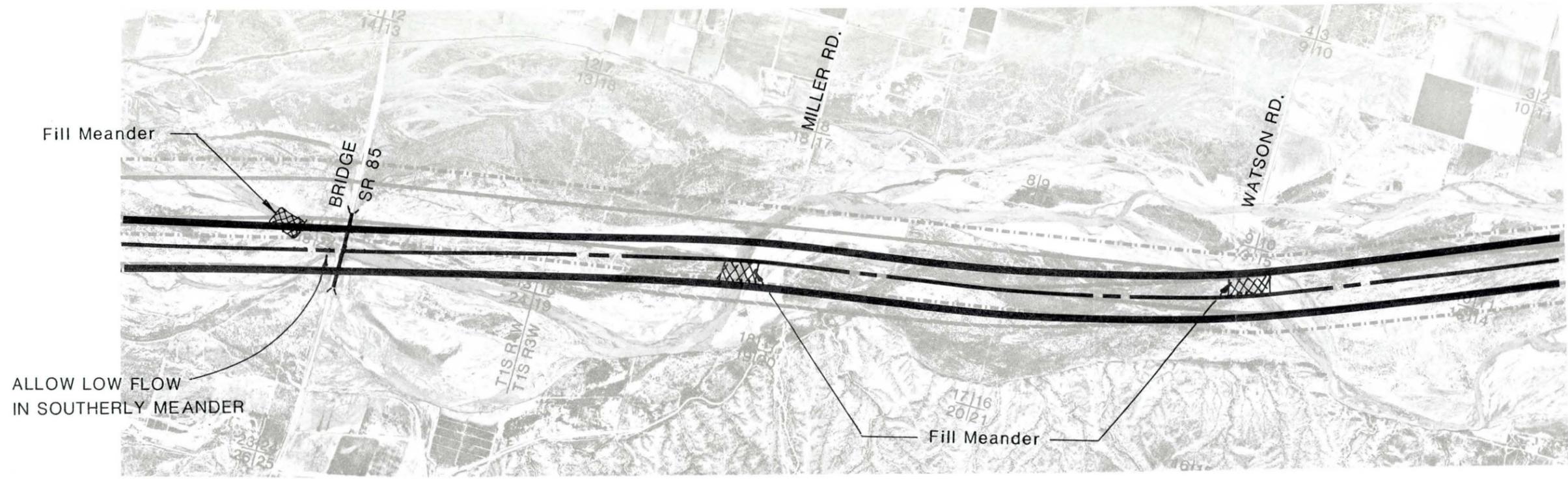


Legend

- Proposed action (1,000-foot clearing)
- Alternative 1 (1,000-foot FWS clearing)
- Alternative 2 (2,000-foot clearing)
- Pilot Channel
- Adopted Clearing

Source: Arizona Department of Transportation 1980.

EXHIBIT 4
PILOT CHANNEL



- Legend
- Proposed action (1,000-foot clearing)
 - Alternative 1 (1,000-foot FWS clearing)
 - Alternative 2 (2,000-foot clearing)
 - Source: Arizona Department of Transportation 1980.
 - Pilot Channel
 - Adopted Clearing



EXHIBIT 5
PILOT CHANNEL

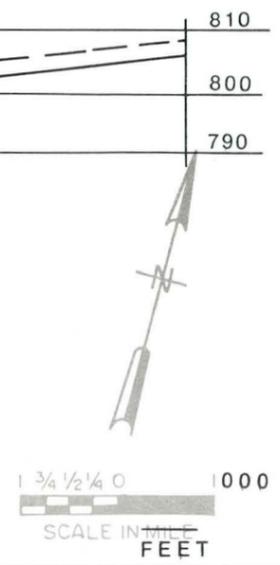
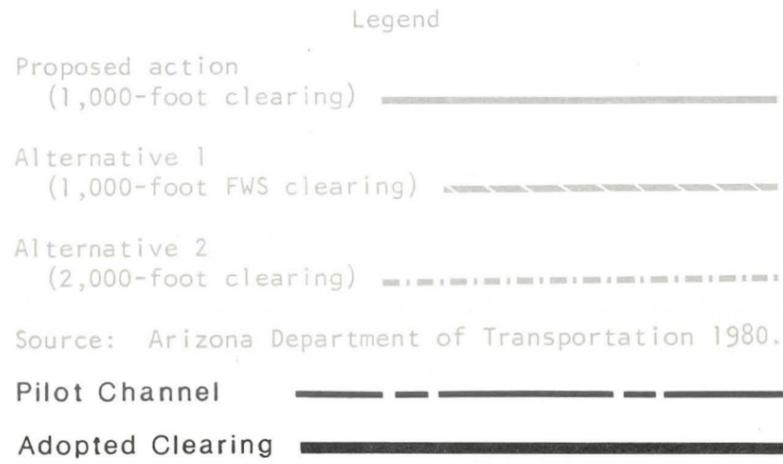
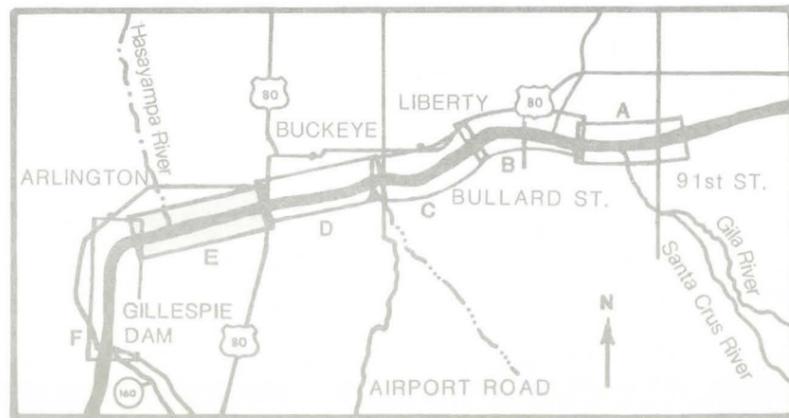
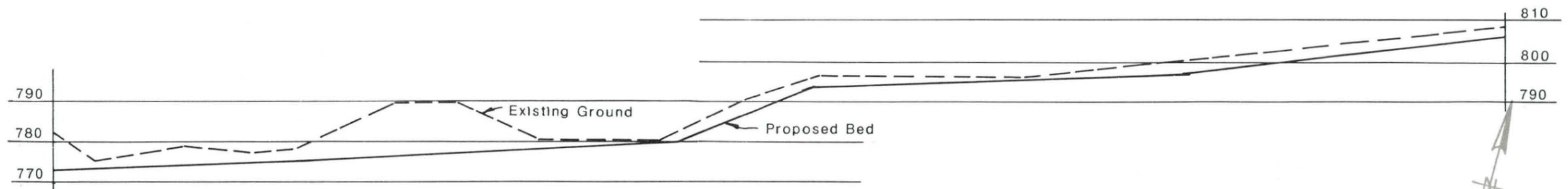
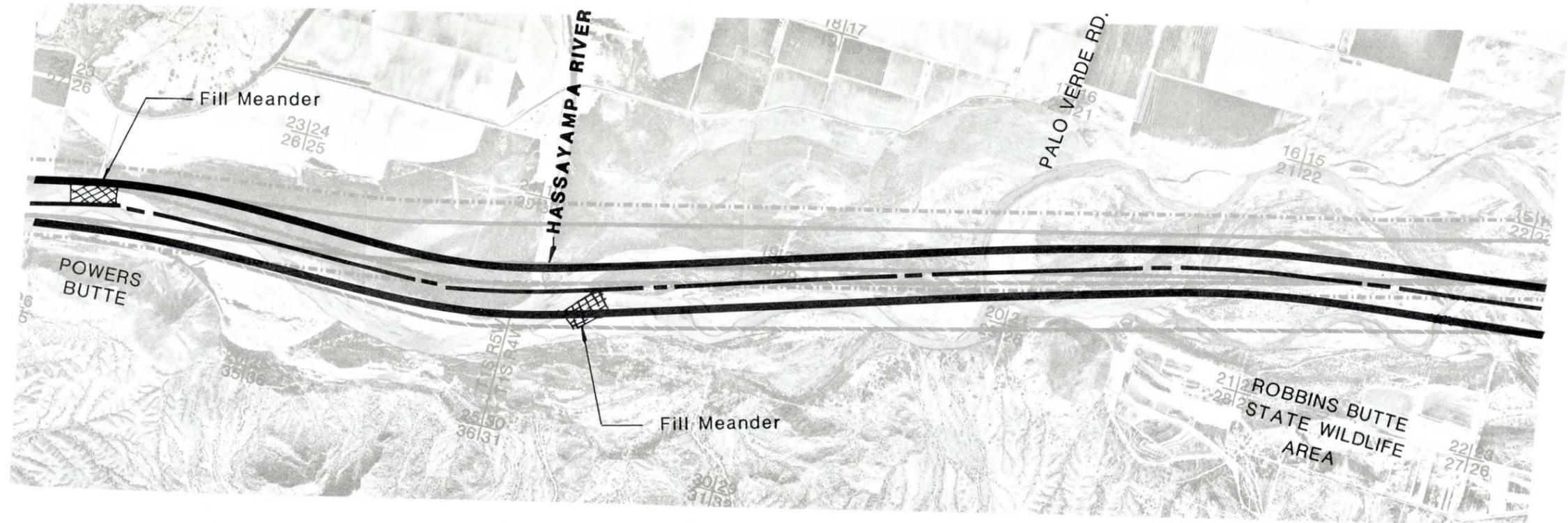
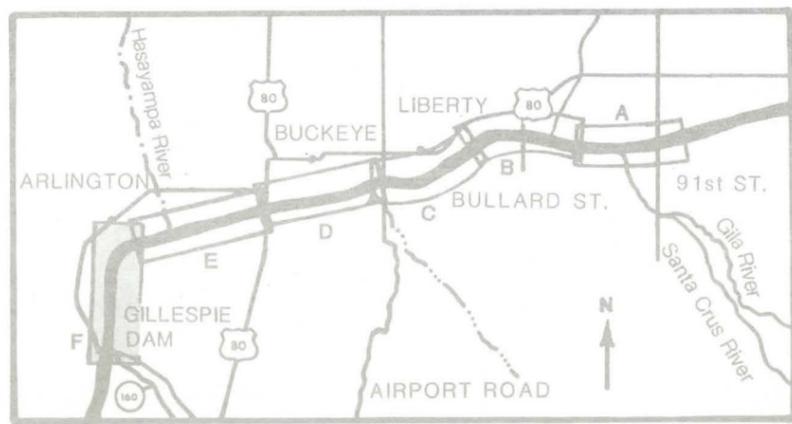
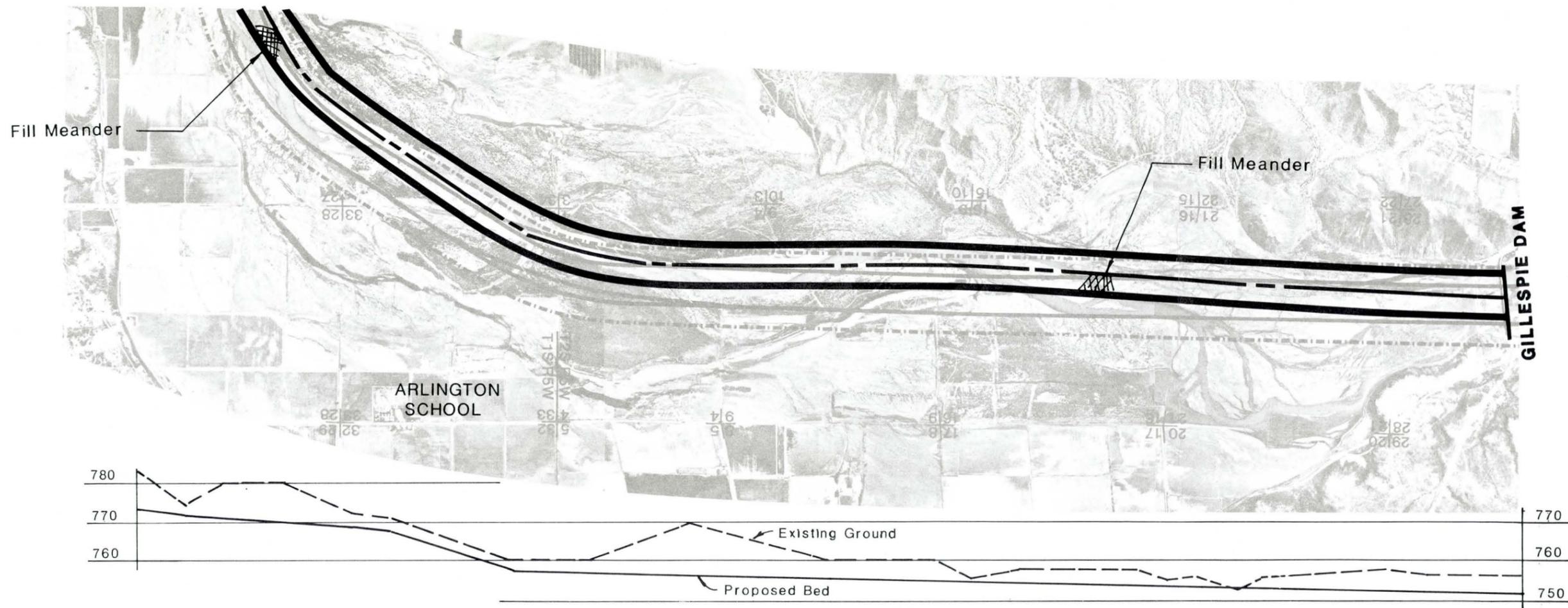


EXHIBIT 6
PILOT CHANNEL



- Legend
- Proposed action (1,000-foot clearing)
 - Alternative 1 (1,000-foot FWS clearing)
 - Alternative 2 (2,000-foot clearing)
 - Pilot Channel
 - Adopted Clearing
- Source: Arizona Department of Transportation 1980.

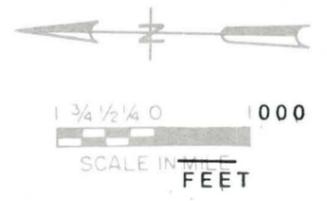


EXHIBIT 7
PILOT CHANNEL