1.0 INTRODUCTION

1.1 IBWC Background Information

For centuries the Rio Grande River has been used as a source of irrigation water for agriculture in the El Paso – Juarez area. Even before the Spanish settlement of the area in the later half of the 17th Century, irrigation canals had already been constructed to convey water from the Rio Grande to cultivated fields. By the early 1900s, nearly 9,000 acres of the Rio Grande Valley in the El Paso-Juarez area were being irrigated with water from the river, as detailed in the Historical/Cultural Section of this Assessment, included as Appendix K ("Controlling Water on the Border: The American Canal System, International Boundary and Water Commission, El Paso, Texas" submitted November 1999 by Human Systems Research, Inc., and a Supplemental Report submitted April 2000 by Parsons Engineering Science). Currently in El Paso County, Rio Grande water is used to irrigate approximately 69,000 acres of farmlands and to produce nearly half of El Paso's potable water.

In 1889 the governments of the United States and Mexico established the International Boundary Commission (IBC), which a 1944 Treaty later renamed the International Boundary and Water Commission or IBWC. One of the early actions of the IBC was to discuss delivery of Rio Grande water to Mexico. During the Mexican-American Convention of 1906, the two countries agreed to deliver 60,000 acre-feet of water annually to Mexico at the headgates of the Acequia Madre facility on the southern shore of the Rio Grande in Cd. Juarez, Chihuahua, opposite El Paso, Texas. Presently, the IBWC fulfills the following international boundary and water responsibilities:

- Land boundary demarcation,
- River boundary maintenance,
- International flood control,
- Appropriation of the boundary river waters,
- Operation of international dams and reservoirs, and
- Solutions to boundary water quality issues.

The International Boundary and Water Commission is actually a single international commission, with an American Commissioner heading the US Section of the IBWC (USIBWC), and a Mexican Commissioner heading the Mexican Section of the IBWC (MXIBWC). Each Section is responsible for the IBWC functions or structures within each separate country.

1.2 Location and Description of the American Canal

The area under study in this document for the American Canal reconstruction alternatives comprises a narrow strip of land bordering the 1.98-mile long American Canal. The American Canal extends from the head gates at the American Dam to the upstream end of the Rio Grande

American Canal Extension (RGACE) adjoining the downstream International Dam. Replacement of the Old American Canal is also referred to as Reconstruction of the American Canal. The Canal is located east of the Rio Grande, on the American side of the international boundary between the United States and Mexico. Generally, the Canal parallels West Paisano Drive (US Highway 85) and the Burlington Northern Santa Fe Railroad tracks, which also occupy the same very narrow strip of land.

The Canal is located on the USGS map titled "Smeltertown, TX-NM Map #31106-G5-TF-024", portions of which are included as Figures 1, 2, and 3 in Appendix C. The study area forms a northwest-southeast trending polygon approximately 225 meters (738 feet) wide by 3,200 meters (10,497 feet) long, situated in UTMG Zone 13 with corner points at approximate locations as follows:

NW Corner	E 355350	N 3517400
NE Corner	E 355600	N 3517400
SW Corner	E356920	N 3514800
SE Corner	E357200	N 3514800

The American Canal is a concrete-lined canal consisting of three open channel segments generally paralleling West Paisano Drive, and two closed conduit segments under West Paisano Drive. Although the RGACE continues over 15 miles from the International Dam downstream to the Riverside Dam, the entire American Canal evaluated in this Assessment is only approximately two miles long.

It should be noted that some structures or roadways have been renamed since they were used in old maps of the American Canal area. For instance, the International Dam is labeled "Mexican Dam" in many of the older maps. West Paisano Drive is referred to by its former name, Doniphan Drive. The 1961 USIBWC map is contained in the Historical / Cultural Section of this document. This map was also used as the map source for "Figure 4: Map of the Utilities Located in the American Canal Area", (Appendix C).

1.3 Clarification Of "A" and "B" Terminology Used To Identify Canal Segments In Maps

Both the original 1938 Bureau of Reclamation map and also the 1961 USIBWC map of the Canal area (developed from the 1938 BOR map), use the "A" and "B" designations to describe the cross-sectional shape of the Open Channel Segment, rather than the location of the segment. As the location, rather than the shape of the canal segment is important for this Environmental Assessment, the "A" and "B" designations have not been used in the maps or for the descriptions of open channel segments

Parsons Reports contained in Appendix K]. For example, in this document the segments previously labeled "Lower Open Channel "A" or "B" will both be called simply, "Lower Open Channel."

MAP REFERENCES OF AMERICAN CANAL SEGMENTS

Designation in this Document	Designation on 1938 & 1961 Maps
Upper Open Channel	Upper Open Channel A
Closed Channel A, or Conduit A	Conduit A
Middle Open Channel	Middle Open Channel B
Closed Channel B, or Conduit B	Conduit B
Lower Open Channel	Lower Open Channel B and Lower Open Channel A

1.4 Condition Of American Canal Segments

The five segments of the American Canal appear to be in various stages of deterioration. The open channel segments appear to have suffered much more deterioration than the closed conduits, perhaps because the open channel segments are constructed of only three-inch thick concrete, and are more exposed to weathering (e.g., sun and wind) than are the closed conduits.

Because of the continuing deterioration of the concrete lining of the open channel segments of the American Canal, the flow capacity is now greatly diminished. The USIBWC is concerned that at some time in the near future the Canal will be unable to safely convey its design capacity of 1200 cfs due to loss of foundation material through cracks in the concrete lining from turbulence caused by normal canal flows. Subjecting the existing lining to the anticipated higher design flow of 1535 cfs desired for the American Canal, would accelerate this foundation deterioration, and hasten the failure of the concrete canal lining.

1.5 Historical and Legislative Background

For a full history and legislative background of the American Canal, refer to Appendix K of this Assessment to review the November 1999 Human Systems Research, Inc. report titled, "Controlling Water on the Border: The American Canal System, US Section of International Boundary and Water Commission, El Paso, Texas and the April 2000 Supplemental Report by Parsons Engineering Science, Inc." The 1993 "Final Environmental Assessment, Rio Grande American Canal Extension, El Paso, Texas," published by the USIBWC can also be used as a relevant background reference.

The construction of the American Dam and American Canal were authorized by the Act of August 29, 1935 (Ch. 305, 49 Stat. 961). Then by the Act of June 4, 1936 (Ch. 500, 49 Stat. 1463), the USIBWC was authorized to "construct, operate, and maintain the Rio Grande Canalization Project from downstream of the Percha Diversion Dam in New Mexico to the American Canal at El Paso, Texas."

Both the RGACE described in Section 1.6 and the present reconstruction alternatives for the American Canal were authorized by the "Rio Grande American Canal Extension Act of 1990," (refer to Appendix C of this document).

During the planning of the RGACE, the Mexican Section of the IBWC expressed interest in later receiving its annual 60,000-acre foot water allotment from the end of the RGACE near Riverside Dam rather than at the head gates of the Acequia Madre at the International Dam. For that reason, the USIBWC increased the design capacity of the RGACE by 60,000 acre-feet per year at a maximum delivery rate of 335 cubic feet per second (cfs). The final design capacity of the RGACE was 1535 cfs (1200 cfs + 335 cfs).

1.6 Other Recent American Canal Replacement Actions

As detailed within the Historical/Cultural Section at Appendix K, some of the original Canal structures (i.e., bridges) have been removed, but most were never replaced. During the last five years, however, a portion of the earthen Franklin Canal (which delivered water through the City of El Paso to farms in El Paso's Lower Valley) was replaced with the concrete RGACE structure. According to personnel from the El Paso County Water Improvement District #1 (EPCWID #1), the RGACE saves many thousands of acre-feet of water per year due to reduced seepage losses.

1.7 Organization Of This Document

The U.S. Council of Environmental Quality (CEQ) which is responsible for interpreting the National Environmental Policy Act (NEPA) requirements, has asked that under normal circumstances, Environmental Assessments be confined to 15 pages of text which should be easily understood by persons without a science, engineering or other technical background. In order to comply with CEQ guidelines, this document incorporates the single most important indicator effect to represent the many effects to a given environmental issue (e.g., Air Quality). Those selected indicator effects for each issue are listed in charts for ease of comparing alternatives.

Only summary information from each section (i.e., Transportation Corridor) of the Assessment is included in this text. More complete assessment documentation for each section is included in its specific appendix, followed by any supporting documentation.

2.0 PURPOSE OF AND NEED FOR ACTION

2.1 Rationale For Change

Capacity

- The American Canal was originally designed to convey 1200 cfs of irrigation water, but its capacity has diminished due to structural deterioration.
- The RGACE was constructed from 1997 – 1998 to convey 1535 cfs of water, but actually receives much less from the deteriorating American Canal.
- The El Paso Water Utilities – Public Service Board (EPWU-PSB) presently produces 80 MGD (124 cfs) of potable water from the Canal, but plans to increase production to 120 MGD (186 cfs) during the next five years.
- Within approximately five years, the EPWU-PSB plans year-round potable water production from the Canal.
- Mexico is considering producing potable water from its Rio Grande allotment and receiving its water allotment via a siphon beneath the Rio Grande at the end of the RGACE near Riverside Dam, rather than at the head gates of the Acequia Madre near the International Dam. However, Mexico has not finalized this change in point of delivery at this time.
- Much water is currently lost by seepage through existing cracks in the American Canal.

Stability

- The existing American Canal is over 70 years old, and has suffered many cracks over the years.
- The concrete lining of the Canal is only three inches thick. At least four-inch thick reinforced concrete is preferred for open channels.
- Merely patching the Canal would not utilize newer concrete industry improvements for canal design and construction.

Safety

- When the Canal was originally constructed, there was little thought of persons drowning in the Canal. Many safety structures can now be installed to assist in saving the lives of the persons who fall into the Canal.
- When the Canal was constructed in the 1930's for delivery of irrigation water, the designers were probably not concerned about infiltration of potentially contaminated groundwater into the Canal through the under drain system or through future cracks in the canal lining. However, the current use of the Canal as El Paso's principle potable water source raises this concern of protecting the water quality within the Canal structure.

2.2 Previous Related Environmental Assessments

Prior to construction activities of the 15.4-mile long RGACE, an Environmental Assessment was published by the USIBWC in December, 1993, titled, "Final Environmental Assessment, Rio Grande American Canal Extension." Following the recommendations of that document, the USIBWC constructed a concrete-lined canal that begins at the downstream end of the approximately 2-mile long American Canal, and ends at Riverside Dam near the Zaragoza International Bridge.

This previous assessment of the RGACE described in detail, the need for added safety features, for reducing water losses, and for conveying water to Mexico near Riverside Dam.

2.3 Explanation Of Need For Decision

Reconstruction of the American Canal is needed to increase canal security, to physically stabilize the structure, and to increase flow capacity to obtain the full benefits of the RGACE. The American Canal segments are shown in Figure Nos. 1-3 located in Appendix C. At several locations, the reinforced concrete panels of the Canal have deteriorated and are in structural distress. Reconstruction of the Canal is necessary to increase its conveyance capacity to equal that of the RGACE; to improve the structural integrity of the existing, deteriorated concrete lining; and to allow for the continued operation of the Canal over the life of the new RGACE. Further, structural stability may be increased by installation of: 1) a thicker concrete lining; 2) improved panel joints which contain smooth dowels to permit longitudinal thermal expansion and contraction while limiting transverse movement; and 3) flexible joint filler material between the concrete panels, and/or reinforced concrete lining. Installation of high fences, warning signs, safety ladders, and safety cables set at intervals along the Canal will minimize accidental physical access and reduce the chance for human injury. One important physical constraint in the area is the limitation of space between the Rio Grande and the very steep slope rising to Interstate 10, especially in the Middle Open Channel Segment, which has very limited right-of-way for any construction alternative.

2.4 Scoping of Major Issues and Their Indicators

The NEPA process of grouping environmental concerns into areas of investigation is often called the scoping of major issues. In this assessment, the phrases "environmental resources" and "environmental issues" are used interchangeably. The environmental issues have been grouped or scoped into the following areas of investigation:

- Air Quality,
- Habitats, Wetlands, Endangered Species, Fish and Wildlife,
- Real Estate, Utilities, Easements, and Rights-of-Way,
- Transportation Corridor,
- Environmental Justice,

- Historical/Cultural,
- Water and Soil,
- Hazardous Waste, and
- Miscellaneous.

3.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

Most construction activities will take place during the non-irrigation or dry season from mid October through mid February except those activities not affecting water conveyance in the Canal, i.e., contractor staging and mobilization, fence installation, etc. (Refer to Location Maps in Appendix C.) The construction performance period is anticipated to extend through two non-irrigation periods beginning in the fall of 2003 and concluding in the spring of 2005.

3.1 Alternative 1 – Closed Conduit Alternative

Replace all existing open channel segments (Upper, Middle, and Lower) between the American Dam and International Dam with closed conduits, with the exception of a 400-foot length of open channel immediately below the headgates and a 100-foot length of open channel immediately above the gauging station in the Upper Open Channel segment. The two excepted sections of open channel would be reconstructed and enlarged. Because the existing segments of the closed conduit under Paisano Drive are in good repair and appear adequate to carry the projected flows, those culverts would be left in place.

3.2 Alternative 2 – Closed Conduit/Open Channel Alternative A

Replace the Middle Open Channel segment with a closed conduit. Reconstruct and enlarge the Upper and Lower Open Channel segments. No repairs or replacement of the closed conduit segments would be performed.

3.3 Alternative 3 - Closed Conduit/Open Channel Alternative B

Replace the Middle and Lower Open Channel segments with a closed conduit. Reconstruct and enlarge the Upper Open Channel segment. No repairs or replacement of the closed conduit segments would be performed.

3.4 Alternative 4 – Open Channel Alternative (the Proposed Action)

Replace the Upper, Middle, and Lower Open Channel segments with enlarged open channel segments. No repairs or replacement of the closed conduit segments would be performed.

3.5 Alternative 5 – No Action Alternative

Leave the three open channel segments untouched, with no replacements, enlargements, or repairs of any canal segments.

3.6 Alternatives Considered But Eliminated

3.6.1 Repairing The Existing Concrete Lining

This Alternative would have been similar to the No Action Alternative, but would have patched the original 3-inch thick concrete lining as needed, without increasing the capacity of the Canal. As the existing Canal is in poor condition and inadequately sized, this Alternative was not studied in depth.

3.6.2 Repairing the Existing Concrete Lining and Raising the Ramparts Above the Concrete Lining of the Canal

This Alternative would have patched the original 3-inch thick concrete lining, and increased the capacity of the Canal to approximately 1535 cfs by building ramparts vertically above the existing lip of the Canal. This Alternative would probably cause more stress to the existing concrete lining, creating a greater potential safety concern. Therefore, this Alternative was not studied in depth.

3.6.3 Replacing All Five Canal Segments with a Continuous Open Channel Located Between West Paisano Drive and the Rio Grande

In the area of the Middle Open Channel of the Canal where the Rio Grande nearly abuts West Paisano Drive, the Rio Grande flood plain (much of it owned by ASARCO) is too narrow for construction of a new canal. For this same reason, the same Canal segment was not built on the west side of Paisano Drive in 1938; therefore, this Alternative was not further studied.

3.7 Proposed Mitigation Measures for All Four Action Alternatives

All four action alternatives require the removal of the 1938 Smelter Bridge at the entrance to ASARCO. The loss of the bridge will be mitigated by preparation of Level III Historic American Engineering Record (HAER) documentation including drawings, photographs, and written data. The proposed mitigation is fully detailed in the Parsons Report contained in Appendix K of this document

4.0 DESCRIPTION OF KEY ISSUES OR RESOURCES OF THE AFFECTED ENVIRONMENT

The issues summarized below are thoroughly discussed and evaluated in the Appendix corresponding to that particular issue. For each environmental issue, the most important indicator was chosen to evaluate the issue in a matrix of representative effects from the five different reconstruction alternatives.

DESCRIPTION OF ENVIRONMENTAL ISSUES AFFECTED BY REPLACEMENT ALTERNATIVES

Resource (Issue) ↓	Most Important Effects for Each Environmental Resource						
	1	2	3	4	5	6	Effect Chosen as Indicator
Air Quality	Will construction add excessive CO to air?	Will construction add excessive ozone to air?	Will construction add excessive particulates to air?	High risk of delays during Canal reconstruction due to air quality?			Will construction add excessive particulates to air?
Habitat , Wetlands, Endangered Species, Fish & Wildlife	# Acres of wetlands remaining	# Endangered species displaced during construction	# Endangered species habitats in Canal area	# Permanent fish population in Canal area	# Cliff Swallow nesting sites in Canal area	Population of Cliff Swallows in Canal area	Population of Cliff Swallows in Canal area
Real Estate, Utilities, Easements, Rights-of-way	Length of underground utility mains and lines relocated for construction	% Change in values of commercial properties	Length of overhead electric lines relocated during construction	Length of TxDoT right-of- way used for staging during construction	$ loss to El Paso agribusiness from 30-day canal failure	# local farm bankruptcies resulting from 30-day canal failure & repair	# local farm bankruptcies resulting from 30-day canal failure & repair
Transportation Corridor	# Automobiles per day on W. Paisano during construction	# Automobiles per day on Yandell Drive overpass during canal construction	# Buses per day on Paisano during construction	# W. Paisano northbound lanes closed during construction	# Annual pedestrian traffic deaths on W. Paisano & I-10	# Annual pedestrian traffic injuries on W. Paisano & I-10	# Annual pedestrian deaths on W. Paisano & I-10
Environmental Justice	# local residents to be relocated by construction	# Drownings in American Canal annually	% Increase in illegal crossings through Canal	# Annual crimes reported to police in Canal area	Annual cost for additional Border Patrol Agents	# Local residents permanently employed through Canal reconstruction	# Drownings in American Canal annually
Historical, Cultural	# Original 1938 bridges remaining	# Original 1938 bridge abutments remaining	# Original 1938 closed conduits remaining	Length of closed conduit remaining	Length of open channel remaining	Length of original 1938 open channel lining remaining	Length of open channel remaining
Water and Soil	Maximum water delivery capacity (cfs)	Stormwater capture capacity (cfs)	Lost EPWU–PSB daily drinking water production during construction (MGD)	EPCWID #1 - $ costs during Canal reconstruction	Availability of ASARCO oil/water separator during reconstruction	Direct financial loss to farmers during reconstruction	Lost EPWU–PSB daily drinking water production during construction
Hazardous Wastes	Residents at risk from potential airborne heavy metals?	Residents at risk from potential airborne hydrocarbons?	Construction workers at risk from potential airborne heavy metals?	Workers at risk from potential airborne hydrocarbons?	Disposal of heavy metal-soil or water as hazardous waste?	Disposal of hydrocarbon-soil or water as hazardous waste?	Disposal of hydrocarbon-soil or water as hazardous waste?
Miscellaneous	Contractor construction costs						Contractor construction costs

Note: Some environmental issues have fewer than six effects, resulting in some blanks in the chart above.

4.1 Air Quality

A conformity determination has been made under 40 CFR, Part 51.858 using analytical methods. The Federal action is in conformity with the specific requirements and the purposes of the Texas State Implementation Plan pursuant to the USIBWC's affirmative obligation under Section 176 (c) of the Clean Air Act in accordance with the requirements of 40 CFR, Ch. 1, Part 51, Subpart W. The Federal action is in compliance with the Clean Air Act.

As detailed in Appendix F, El Paso is located in an EPA designated “non-attainment area.” The non-attainment designation indicates that at least once per year, the area exceeded the Maximum Air Concentration (MAC) for ozone, carbon monoxide, or particulates. However, because of significantly improved air quality tin the area since 1992 the "non-attainment" status may be redesignated as a "maintenance" area by the time of construction. In the El Paso area during the proposed Canal reconstruction period from October through February, carbon monoxide and particulates are more serious concerns than ozone, especially when air inversion layers trap airborne contaminants near the land surface during the hours from sunset through mid-morning. Either airborne particulate or carbon monoxide concentrations could have been selected as the indicator issue, but particulates are more visible to the public. Therefore, Air Particulate Concentration was chosen as the indicator for this issue.

4.2 Habitats, Wetlands, Endangered Species, Fish And Wildlife

Before onsite reconstruction activities begin, the preparation of a Construction Stormwater Pollution Prevention Plan (S3P) will be required by the TNRCC and the City of El Paso. The S3P will include a section of "Best Management Practices" such as hay bales, silt fences, or other similar erosion prevention techniques as also requested by Texas Parks and Wildlife Department. The Canal area contains no wetlands, populations of endangered species, habitats, or permanent fish populations. Because of the extent of concrete lining, the Canal area does not have the number of animal or plant populations of other nearby areas like those on the earthen banks of the nearby Rio Grande. As planned, all the reconstruction alternatives would avoid disturbance of migratory bird nesting sites during the early March through late July breeding season, and therefore, comply with the provisions of the Migratory Bird Treaty of 1918. Because Cliff Swallows nest in the Canal area and feed mainly on water insects that live in the same area, the population of Cliff Swallows was chosen as the indicator issue.

4.3 Real Estate, Utilities, Easements And Rights-Of-Way

During any of the construction alternatives, utility lines and mains do not generally appear to require relocation. Nor does it appear that rights-of-

way or easements need to be purchased or permanently changed. Local real estate values in the Canal area do not appear to be affected by the choice of any alternative. However, the farms that are irrigated from the American Canal are more greatly affected by the Canal than properties in the Canal area. The estimated Number of Farm Bankruptcies due to a canal failure was chosen as the indicator of this issue.

4.4 Transportation

None of the alternatives will permanently affect any transportation resources, except pedestrian traffic deaths on West Paisano Drive (US 85) and Interstate 10, which are expected to rise proportionately to the number of persons crossing the border illegally via the Canal area. The only temporary construction effect to transportation in the Canal area is the necessary temporary closure of one lane of northbound traffic on West Paisano Drive. Therefore, the Number of Pedestrian Traffic Fatalities was chosen as the most important indicator of effects to transportation.

4.5 Environmental Justice

None of the alternatives would temporarily or permanently displace local poor persons or change the number of available jobs in the Canal area. The alternatives would affect the number of persons crossing into the US (potentially smuggling drugs and weapons) while passing through the river and Canal. These illegal crossings would require different numbers of US Border Patrol Agents and El Paso Police Officers to protect the area. But even though the cost to the Border Patrol could be very considerable, the worth of a human life saved from drowning is even higher. Especially since safety is one of the principal reasons for construction listed in the "Purpose and Needs" statement of this Document. Therefore, the number of Canal Drownings was chosen as the indicator to Environmental Justice.

4.6 Historical / Cultural

It is difficult to quantify the effects to cultural and/or historical resources in this Assessment. None of the five alternatives will disrupt the flow of water in the Rio Grande in the area of the Zaragoza Bridge where the Ysleta del Sur Pueblo (Tribe) uses the River and its waters for certain tribal religious ceremonies at locations held sacred by the Tribe. None of the Tribe's sacred locations would be accessed as part of any of the five reconstruction alternatives. Therefore, none of the five alternatives should disrupt the religious practices of the Tribe.

All historically or culturally important sites dating before 1937 are considered to have been either destroyed by the annual flooding of the shifting alluvium in the Rio Grande floodplain prior to construction of Elephant Butte Dam, or highly disturbed by construction activities of the American Canal in the 1930s. If archaeological sites or historical structures that may qualify for designations as State Archaeological

Landmarks, or that may be eligible for listing on the National Register of Historic Places in accordance with 36 CFR Part 800 are discovered after work begins, the contractor will immediately cease operations in that particular area and notify the client, the Texas State Historic Preservation Officer (SHPO), the Ysleta del Sur Pueblo Tribe (Tribe), other appropriate agencies, and the USIBWC. The contractor will take reasonable steps to protect and preserve the discoveries until they have been inspected by the client, SHPO, Tribe, other appropriate agencies, and the USIBWC, and will assist obtaining any necessary approvals or permits to enable the work to continue. The contractor will not resume work in the area of the discovery until authorized to do so by the client, SHPO, Tribe, other appropriate agencies, and the USIBWC. If human remains are discovered, the Tribe will be notified immediately and consulted with in a timely and meaningful manner to provide information and address rights under the Native American Graves Protection and Repatriation Act. (See appendix B.4 regarding the Tribe's enthnographic spiritual connection to the Rio Grande).

As the American Canal is one of only two remaining American systems constructed to implement international water treaties, the remaining historical structures (i.e., the Smelter Bridge at the entrance to ASARCO) may have more importance to historians than to the public. The loss of the historic Smelter Bridge, which is required by the four Action Alternatives, will be mitigated by preparation of Level III Historic American Engineering Record (HAER) documentation including drawings, photographs, and written data. The proposed mitigation is fully detailed in the Parsons Report contained in Appendix K of this document. To best portray the original open visual character of the Canal, the length of open channel segments was chosen as the indicator effect for the Historical / Cultural Resource.

4.7 Water And Soil

As the primary source of local groundwater (the Hueco Bolson) is being rapidly depleted, the EPWU-PSB will soon rely on the American Canal as its primary sustainable source of drinking water. Currently, water from the Canal is used by El Paso County farmers to irrigate crops with annual production of over $300 million which essentially pays the salaries of nearly 50,000 local people in agriculture-related jobs. During peak irrigation and water production seasons, an emergency canal shutdown with related-repairs caused by possible contaminated groundwater entering the undersized and deteriorating canal would drastically disrupt the lives of all El Pasoans. Therefore, the lost daily EPWU–PSB Drinking Water Production was chosen as the indicator to this resource.

4.8 Hazardous Waste Disposal

Historic manufacturing facilities and railroad tracks were used in the area long before chemical or petroleum releases were regulated by the government. In the 1960s, the former community of Smeltertown adjoining the Upper Open Channel segment was condemned and closed because of high concentrations of lead in both the blood of Smeltertown residents and in the local soil. More important than the lead concentrations in soil are the presence of other heavy metals in groundwater and soil. Arsenic, cadmium and selenium have been detected in the soil of the Canal area, likely originating from nearby past industrial usage. It is unlikely that area residents or employees will be affected by heavy metals during reconstruction, however, construction workers will need personal protection equipment (i.e., respirators, etc.) if airborne heavy metal exposures occur.

There have been several known hydrocarbon releases in the vicinity of the American Canal. Although there have been discussions of possible spills or releases before the existence of TNRCC, no other hazardous waste releases are known with certainty. Based on a review of available data of soil and groundwater analyses, there is a possibility of encountering diesel or gasoline plumes in all three open channel sections of the Canal. Therefore, Disposal of Hydrocarbon-Contaminated Groundwater and Soil was chosen as the indicator for the issue of Hazardous Waste Disposal.

4.9 Miscellaneous Issues: Costs, Maintenance, Etc.

Based on similar recent construction, the USIBWC estimates contractor construction cost to be approximately $1 million per mile ($190 per foot) for open channel construction, and approximately $3 million per mile ($570 per foot) for closed conduits. No direct cost estimates were available either for extensive repairs to the Canal or for annual maintenance for each alternative. Therefore, Contractor Construction Cost was chosen as the indicator. However, the construction cost estimates do not include any costs for expected slope shoring in the Middle Section to maintain the required slope for the BNSF Railroad. Cost estimates for shoring will be determined later during the design phase.

5.0 SUMMARY OF CONSEQUENCES OR EFFECTS TO ENVIRONMENTAL RESOURCES

None of the alternatives would encounter or disturb wetlands, endangered species, or threatened wildlife habitats. None of the alternatives would cause any permanent detrimental effect to local wildlife populations. Generally, the beneficial lowering of drowning deaths in the Canal is roughly offset by increases in pedestrian traffic fatalities on nearby highways. The first four alternatives appear to safeguard a steady flow of El Paso County's only renewable source of domestic and irrigation water; Alternative 5 (the No Action Alternative) does not.

The CEQ regulations require including direct and indirect effects and their significance, and cumulative effects. A comparison of consequences of each alternative is matrixed in the following table. Summary descriptions of expected consequences caused by each alternative follow the matrix.

MATRIX CHART SHOWING EXPECTED CONSEQUENCES OF EACH ALTERNATIVE TO INDICATOR EFFECTS OF ENVIRONMENTAL RESOURCES

Expected Consequences to Resources of Each Alternative Action					
Alternative → Resource (Issue) ↓	**ALT 1**	**ALT 2**	**ALT 3**	**ALT 4**	**ALT 5**
Air Quality	Canal reconstruction will not add excessive PM-10 particulates to air.	Canal reconstruction will not add excessive PM-10 particulates to air.	Canal reconstruction will not add excessive PM-10 particulates to air.	Canal reconstruction will not add excessive PM-10 particulates to air.	Canal reconstruction will not add excessive PM-10 particulates to air.
Habitat, Wetlands, Endangered Species, Fish and Wildlife	Population of 25 Cliff Swallows in Canal area	Population of 25 Cliff Swallows in Canal area	Population of 25 Cliff Swallows in Canal area	Population of 25 Cliff Swallows in Canal area	Population of 25 Cliff Swallows in Canal area
Real Estate, Utilities, Easements, Rights–of-Way	0 Local Farm Bankruptcies resulting from canal repair shutdown	0 Local Farm Bankruptcies resulting from canal repair shutdown	0 Local Farm Bankruptcies resulting from canal repair shutdown	0 Local Farm Bankruptcies resulting from canal repair shutdown	500 Local Farm Bankruptcies resulting from canal repair shutdown
Transportation Corridor	4.5 Annual Pedestrian Highway Traffic Deaths	3 Annual Pedestrian Highway Traffic Deaths	4.5 Annual Pedestrian Highway Traffic Deaths	1.5 Annual Pedestrian Highway Traffic Deaths	1.5 Annual Pedestrian Highway Traffic Deaths
Environmental Justice	0 Drownings in American Canal annually	3* Drownings in American Canal annually	1* Drowning in American Canal annually	5* Drownings in American Canal annually	5 Drownings in American Canal annually
Historical, Cultural	675 feet of Open Channel	4959 feet of Open Channel	2239 feet of Open Channel	7979 feet of Open Channel	7804 feet of Open Channel
Water and Soil	0 MGD lost daily EPWU – PSB Drinking Water Production	0 MGD lost daily EPWU – PSB Drinking Water Production	0 MGD lost daily EPWU – PSB Drinking Water Production	0 MGD lost daily EPWU – PSB Drinking Water Production	80 – 120 MGD lost daily EPWU – PSB Drinking Water Production
Hazardous Wastes	Disposal of hydrocarbon-contaminated soil or water as hazardous waste is likely	Disposal of hydrocarbon-contaminated soil or water as hazardous waste is likely	Disposal of hydrocarbon-contaminated soil or water as hazardous waste is likely	Disposal of hydrocarbon-contaminated soil or water as hazardous waste is likely	Disposal of hydrocarbon-contaminated soil or water as hazardous waste is likely (at future time)
Miscellaneous	Approximately $4.6 million Contractor Construction Cost	Approximately $2.8 million Contractor Construction Cost	Approximately $3.7 million Contractor Construction Cost	Approximately $1.6 million Contractor Construction Cost	Approximately $0 million Contractor Construction Cost (Does not include future Contractor Emergency Repair Costs)

*Note: Construction of additional fences and new safety equipment would probably significantly reduce the number of drownings from these estimates.

5.1 Discussion Of Effects Of Alternative 1 (The Closed Conduit Alternative)

Replacing the three open channel segments with closed conduits appears to best safeguard the water supply, but at the highest reconstruction cost of any of the alternatives. Alternative 1 requires as much soil work and dewatering as Alternative 2, 3, and 4, with the same risk of hazardous waste disposal as in Alternative 2, 3, and 4. With exclusive use of closed conduits, this Alternative loses the open channel character of the 1938 Canal. While this Alternative is expected to reduce the number of annual drownings in the Canal, it would actually prevent any possibility of assisted rescue if someone falls into the Canal in either of the short open sections. This Alternative would likely triple the number of pedestrian injuries and fatalities on the two nearby highways, and would greatly increase the local reported crime rate. The US Border Patrol, El Paso Police Department, BNSF and UP Railroads, and ASARCO especially do not want this Alternative chosen.

5.2 Discussion Of Effects Of Alternative 2 (The Closed Conduit/Open Channel Alternative A)

The Closed Conduit/Open Channel Alternative A appears to adequately safeguard the water supply, but at approximately half the construction cost of the Closed Conduit Alternative. This Alternative reduces the annual number of Canal drownings, but increases the number of pedestrian traffic fatalities on nearby highways. This Alternative does preserve the original open character of the Canal in the segment closest to the planned city park, but not in the segment most visible to the public along West Paisano.

5.3 Discussion Of Effects Of Alternative 3 (Closed Conduit/Open Channel Alternative B)

Closed Conduit/Open Channel Alternative B appears to safeguard the water supply almost as well as the first two alternatives, at a lower construction cost than Alternative 1, but higher than Alternative 2. This Alternative does preserve the original open character of the Canal in the segment closest to the planned park, but not in the segment most visible to the public along West Paisano.

5.4 Discussion Of Effects Of Alternative 4 - "The Proposed Action" (Open Channel Alternative)

This Alternative is preferred by USIBWC, BOR, EPCWID #1, Border Patrol, El Paso Police Department, BNSF and UP Railroads, ASARCO, and Parsons Engineering Science (the Cultural Historical Consultant for this Assessment). This Alternative would adequately ensure the supply of water to farmers and water

treatment plants at approximately one third the cost of the Closed Conduit Alternative. This Alternative maintains the lowest number of pedestrian deaths and injuries. The high number of drownings appears the same as the No Action Alternative, but that number will probably be greatly reduced with the addition of safety equipment and new fences. This Alternative best preserves the original open channel character of the original Canal.

5.5 Discussion Of Effects Of Alternative 5 (The No Action Alternative)

When looking at only short-term rather than long-term direct and indirect effects, Alternative 5 appears more appealing than it should. As with any new construction project, a no-action alternative is typically the least expensive and least disruptive in the short run. This Alternative best preserves historical structures in the short term. However, it does not provide long-term preservation and the necessary capacity to provide El Paso with a reliable source of irrigation water and drinking water. The likelihood of hazardous waste disposal during construction for the No Action Alternative appears to be nearly zero until one realizes that canal failure events with related emergency repairs would result in even more costly, expedited disposal of the same contaminated groundwater and soil.

In the event of a major emergency canal repair during the peak of the irrigation season, the short-term effects to area farmers and domestic water users would be staggering, and the long-term cumulative effects could be even worse.

Cumulative Impacts (per CEQ Regulations)

During the peak water season, a loss of 120 MGD of drinking water production, a $300 million loss to local agribusiness, and up to 500 forced bankruptcies of local farmers renders the short-term cost savings for No Action as actually the most expensive of the alternatives. In addition, choosing Alternative 5 (the No Action Alternative) appears to result in a higher combined number of annual deaths from drownings and highway pedestrian fatalities than any other alternative. The historical significance of preserving the entire original American Canal does not outweigh the additional loss of human lives, and the potential huge losses of potable water production and losses to agribusiness.

In addition, the No-Action Alternative greatly increases the risk and embarrassment of an emergency environmental cleanup from potentially contaminated groundwater entering the Canal from failed channel walls. This scenario would be a public relations disaster, especially in the near future as the city of El Paso plans to use American Canal water year round as a drinking water source.