SECTION 4
ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES

To assess the direct, indirect, and cumulative impacts of the USIBWC Proposed Action, the Project Area was defined as the "area of influence" potentially impacted by the Proposed Action. The Project Area includes the U.S. portion of a sandbar and vegetated island that extends 1,407 feet from the downstream side of the Retamal Dam and east to the international boundary, as described in subchapter 3.1. Sometimes the area of influence includes surrounding or adjacent areas such as the USIBWC managed lands west of the sandbar and vegetated island on the river terrace and the contractor equipment lay-down area. The area of influence for other resource areas such as air quality, hazardous waste, cultural resources, socioeconomics, and environmental justice are discussed on a regional basis.

4.1 WATER RIGHTS

4.1.1 Proposed Action – Option 1

Water from the Rio Grande would be required to mix with the dredge material as a requirement to create slurry to transport the sediment to the dewatering cells located in Mexico. River flow could not be reduced during hydraulic dredging operations. The amount of water released upstream must be the same as the required flow rate needed for hydraulic dredging. Approximately 1,200 acre-feet of water rights would be needed for dredging operations to occur; however, additional amounts will likely be necessary to allow for contingencies such as lower than normal production rates, down times, inclement weather, *etc*.

Hydraulic dredging operations could not occur without water acquisition. Currently, there are no U.S. water rights available. Water would have to be temporarily supplied by Mexico or purchased from water right holders.

4.1.2 Proposed Action – Option 2

Water rights would not be required; therefore, impacts would not be expected.

4.1.3 No Action Alternative

There would be no impact on water rights.

4.2 RIVER HYDROLOGY

4.2.1 Proposed Action – Option 1

Water Regimes

The estimated maximum amount of slurry mix that would be used during hydraulic dredging operations is approximately 300 cy/hr. Therefore, assuming a 10-hr working day,

that is equivalent to 3,000 cy/day of slurry mix. This represents a very small amount of water that would be removed from the river. Although the decant water from the dewatering cells on the Mexican side would not be allowed to enter the river directly, it is likely the decant water would eventually make its way back into the river through groundwater flow.

The average stream flow at the project site is approximately 635 cfs, which is equivalent to 2,035,200 cy/day. Assuming the maximum amount of slurry mix required per day is 3,000 cy, the increase in water usage required for hydraulic dredging operations is approximately 0.15 percent.

Long term impacts on river hydrology would be negligible as the Proposed Action would re-establish design channel configuration created during the original dam construction. Dredging activities would result in re-establishment of the international boundary; however, long-term maintenance would likely be required to preserve the boundary.

Sedimentation

The slurry mix would be pumped by diesel or electric-powered centrifugal pumps with discharge pipes ranging from 6 to 48 inches in diameter and transported by pipeline to the designated disposal area on the Mexican side of the river.

Sediment may be lost downstream during dredging operations creating higher levels of TSS. Hydraulic dredging operations generally result in less turbidity. Elevated levels of suspended solids concentrations are generally confined to the immediate vicinity of the dredge and dissipate rapidly at the completion of the operation (USACE 1983). Depending on dredging equipment used, dredging operations would be performed with downstream areas enclosed with silt curtain, Gunderbooms®, or other appropriate means to prevent degradation of turbidity outside the dredging area. The placement of silt curtains or Gunderbooms would be necessary to prevent fine sediments from being lost downstream during the dredging operations.

Long-term maintenance would likely be required to address re-occurring island formation and related sediment accretion at dam apron to assure channel configuration is maintained in the future.

Flood Control

Hydraulic modeling results indicate that an approximate 0.05 foot increase in flood containment capacity would be achieved by dredging. Therefore, removal of the sandbar and island would not appreciably improve flood containment capacity.

4.2.2 Proposed Action – Option 2

Water Regimes

Mechanical dredges do not require water to remove bottom sediment. Dredging is performed through the direct application of mechanical force to dislodge and excavate the material at almost *in situ* densities. Backhoes, buckets (such as clamshell, orange-peel, and

dragline), bucket ladder, bucket wheel, and dipper dredges are types of mechanical dredges that may be used under this option.

River flow would be maintained at all times during dredging activities. Areas of the island as well as cross sections of the river would have to be segregated or sectioned off from the flow of water so as not to cause loss of dredge material during operations. Therefore, river flow is not expected to be impacted by mechanical dredging activities.

Long term impacts on river hydrology would be negligible as the Proposed Action would re-establish design channel configuration created during the original dam construction. Dredging activities would result in re-establishment of the international boundary; however, long-term maintenance would likely be required to preserve the boundary.

Sedimentation

Sediment may be lost downstream during dredging operations creating higher levels of TSS. Sediment best management practices (BMP) would be necessary to prevent fine sediments from being lost downstream during the dredging operations. An impervious silt curtain downstream or around the dredging operation could be used. The flexible polyester-reinforced vinyl fabric forming the barrier is maintained in a vertical position by floatation material at the top and a ballast chain along the bottom. The curtain pieces are manufactured in 100-foot sections which are joined at the site. Suspended solids of less than 300 parts per million would have to be maintained downstream of the dredging operations according to TCEQ requirements. Any negative impacts due to fugitive sediments will be localized and occur only during times of actual dredging operations.

Since a mechanical dredge would not be capable of transporting dredged material to the final destination, other means of transport would be required. Truck access from the dredge site on the U.S. side of the river to Mexico is not available. Potentially, a conveyor system could be used to transport dredged material to the top of the dike on the Mexican side, where truck access would be possible.

Long-term maintenance would likely be required to address re-occurring island formation and related sediment accretion at dam apron to assure channel configuration is maintained in the future.

Flood Control

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.2.3 No Action Alternative

Water Regimes

No impacts would occur from the baseline activities. The main channel in the river could potentially continue to shift toward the Mexican side of the international boundary.

Sedimentation

The accumulation of sediment would likely continue in the channel on the U.S. side of the Rio Grande and along the concrete apron beneath the flood gates, thus potentially impairing the ability of the gates to operate effectively to properly control flood events. Further changes to the international boundary would likely occur as the river continues to cut into the Mexican side of the river bank. The main channel in the river could potentially continue to migrate, thus shifting the international boundary.

Long-term maintenance would likely be required to address sediment accretion at the dam apron and to assure channel configuration is maintained in the future.

Flood Control

Currently, there is no appreciable impact to flood containment capacity.

Long-term maintenance would likely be required to assure channel configuration is maintained in the future. Bank stabilization (armoring with rip-rap) on the Mexican side would likely re-establish the former bank extent and the international boundary.

4.3 WATER AND DREDGE MATERIAL QUALITY

4.3.1 Proposed Action – Option 1

Sediment and elutriate sampling results of the dredge material indicate parameters analyzed for are below TCEQ criteria for those parameters. If the sediment spoils were to be used in the United States, there would be no restrictions as the use of the spoils material. Likewise the elutriate (decant water) analysis showed no parameters exceeding TCEQ criteria levels.

TSS is the only water quality parameter of concern. TSS in the discharge from the BU site would be controlled through BMPs. See subchapter 4.2.1 for further details.

Elutriate created in Mexico from the dewatering process of the spoils would be directed away from and not allowed into the river.

The spoils created from Option 1 would be put to a BU in Mexico reinforcing flood control levees.

4.3.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1. Mechanical dredging operations would likely cause an increase in TSS over the hydraulic dredging method. TSS in the discharge from the BU site would be controlled through BMPs. See Subsection 4.2.2 for further details.

4.3.3 No Action Alternative

Under the No Action Alternative, there would be no change from the baseline activities.

4.4 SOILS AND GEOLOGY

4.4.1 Proposed Action – Option 1

Construction activity under Option 1 would occur within an area in which the soils have been disturbed and modified by prior construction. Approximately 54,000 cy of sediment would be removed and disposed of in dewatering cells located on vacant Mexican Federal Government land adjacent to the river at the dredging location. The equipment lay-down area would revert to the pre-construction state. The contractor would ensure completion and approval of a storm water pollution prevention plan before initiating activities. The plan likely would include erosion control techniques that would be used during construction and dredging activities to minimize erosion.

Earthwork would be planned and conducted in such a manner to minimize the duration of exposure of unprotected soils. If embankments near the island are disturbed to allow access of heavy equipment to the dredging area, then the side slopes and back slopes would be protected immediately upon completion of rough grading. Protection would be provided by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Slopes too steep for stabilization by other means would be stabilized by hydroseeding, mulch anchored in place, covering by anchored netting, sodding, or such combination of these and other methods as may be necessary for effective erosion control. Use of BMPs such as rock berms, silt fences, and single point construction entries would minimize erosion during dredging and vegetation clearing activities. Grass and other landscaping would be reestablished in the disturbed areas immediately after completion of construction, thereby reducing the potential for erosion. For these reasons, no significant soil impacts would be expected.

Short-term minor surface disturbances would occur at equipment lay down areas. These areas have previously been disturbed and may require minor modification to the topography to allow for equipment egress. Any topsoil removed from the site would be replaced upon completion of the project.

The Project Area is not located in areas of known earthquake faults. Because dredging and other construction activities are not located along any known faults, the potential for surface fault rupture occurring at the Project Area is considered to be low.

4.4.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.4.3 No Action Alternative

The No Action Alternative would include the continuation of current maintenance practices under the baseline condition, which would not affect the existing soils and geology in the Project Area. There would be no significant erosion or compaction of soils due to the current maintenance practices.

4.5 WETLANDS

4.5.1 Proposed Action – Option 1

The Proposed Action will eliminate 2.1 acres of riverine wetlands. The wetlands are characterized by early successional species and dominated by non-native arundo. Although the wetlands are dominated by non-native species, the relatively limited amount of riverine wetlands in the LRGV accentuates their wetland value. Approximately 4,178 acres of wetlands are found in the LRGV, of which 52 acres are considered riverine wetlands. The elimination of 2.1 acres of riverine wetlands represents a net decrease of 4 percent of riverine wetlands for the LRGV. The loss of riverine wetlands would be mitigated as a result of conducting the Proposed Action.

Heavy sediment loads and variable water regimes of the Rio Grande would continue to provide a source and means for sediment build-up.

4.5.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.5.3 No Action Alternative

Long-term changes could include an increase in wetlands as sediment continues to accrete and vegetation becomes established. Decrease in wetlands are also possible in the advent of a storm event which could displace the island. Some erosion of the upstream point of the island and sandbar has occurred based on comparison of 1996 ortho imagery and 2003 ground survey.

Heavy sediment loads and variable water regimes of the Rio Grande would continue to provide a source and means for sediment build-up.

4.6 VEGETATION

4.6.1 Proposed Action – Option 1

A total of 2.3 acres of vegetation would be removed by hand prior to dredging activities. Loss would include 2.1 acres of Arundo-Salix community and 0.2 acre of a Salix-Celtis community. Overall, vegetation on the island is common for the region and the effects of its loss to the regional vegetative community would be minimal. Table 4.6-1 describes the vegetation communities that would be impacted by this option.

Table 4.6-1 Vegetation Communities Impacted

Vegetation Communities	Comments
Vegetated Island	
Arundo Flats	The community would be removed as a result of Proposed Action
Arundo-Salix	The community would be removed as a result of Proposed Action
Salix-Celtis	The community would be removed as a result of Proposed Action
Riparian Margin/Terrace	
Salix-Fraxinus	Waterward margin adjacent to the Project Area would be avoided. Portion owned by USFWS Refuge adjacent to Project Area would also be avoided.
Arundo	USFWS Refuge property adjacent to Project Area that would be avoided.
Oldfield	Adjacent to Project Area, possible equipment lay-down location.
Salix-Acacia	Adjacent to Project Area, possible equipment lay-down location.

4.6.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.6.3 No Action Alternative

There will be no measurable change from the baseline conditions. Long-term changes could include an increase in early successional communities. Decrease in vegetation is also possible in the advent of a storm event which could displace the island. Some erosion and loss of vegetation on the upstream point of the island has occurred based on comparison of 1996 ortho imagery and 2003 ground survey.

4.7 WILDLIFE

4.7.1 Proposed Action – Option 1

The removal of the sediment island would have a localized negative effect on some species of wildlife. Use of the island by several wildlife species was observed during field investigations (USIBWC 2003b). Dredging operations would have a direct localized effect on benthic invertebrates, although it is not likely to have a measurable effect on the river's benthic community. Effects on wildlife, particularly migratory birds, would be minimized by conducting dredging operations outside of the nesting season and major migratory periods. Although the Project Area habitat is not considered unique and is dominated by intrusive non-native species, the limited extent of riverine wetland communities within the LRGV accentuate the Project Areas values as wildlife habitat.

4.7.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.7.3 No Action Alternative

Under the No Action Alternative, there would be no change from the baseline condition.

4.8 THREATENED, ENDANGERED, AND SENSITIVE SPECIES

4.8.1 Proposed Action – Option 1

The Proposed Action is not likely to affect T&E species near the Project Area. Although there is a possibility of T&E species within the Project Area, the Proposed Action is not likely to affect listed species. The USFWS concurs with this analysis through a letter dated June 17, 2003 assuming BMPs are followed during dredging operations (see Appendix A).

4.8.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.8.3 No Action Alternative

Under the No Action Alternative, there would be no change from the baseline condition.

4.9 AQUATIC RESOURCES

4.9.1 Proposed Action – Option 1

There are no commercial fisheries in the river near the Project Area. Some recreational fishing was observed near the Project Area using cast nets on the Mexican side of the river to collect crawfish.

Fish would be minimally affected by dredging activities in the Project Area. Temporary increases in turbidity and equipment noise and activity will cause avoidance by mobile species such as fish. Such effects will cease when dredging is completed. Benthic organisms in the dredged material should be directly affected; however, the area represents a minor portion of river bottom so the effect on those organisms will not affect the ecosystem. Further, birds and fish, due to their mobile nature, would be able to avoid the dredging equipment and sustain no long-term ill effects from the Proposed Action.

4.9.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.9.3 No Action Alternative

Under the No Action Alternative, there would be no change from the baseline condition.

4.10 AIR QUALITY

Impacts to air quality in attainment areas would be considered significant if pollutant emissions associated with the implementation of the federal action caused or contributed to a violation of any national, state, or local ambient air quality standard, exposed sensitive receptors to substantially increased pollutant concentrations, represented an increase of 10 percent or more in affected AQCR's emissions inventory, or exceeded any significance criteria established by the SIP. Impacts to air quality in nonattainment areas would be considered significant if the net change in proposed pollutant emissions caused or contributed to a violation of any national, state, or local ambient air quality standard; increased the frequency or severity of a violation of any ambient air quality standard; or delayed the attainment of any standard or other milestone contained in the SIP. With respect to the General Conformity Rule, impacts to air quality would be considered significant if emissions increased a nonattainment or maintenance area's emissions inventory by 10 percent or more for individual nonattainment pollutants; or exceeded *de minimis* threshold levels established in 40 CFR 93.153(b) for individual nonattainment pollutants or pollutants for which an area has been redesignated as a maintenance area.

The Project Area is located within AQCR 213, which is under attainment status for all criteria pollutants; therefore, the General Conformity Rule would not apply.

4.10.1 Proposed Action – Option 1

Fugitive dust from ground disturbing activities and combustive emissions from construction equipment would be generated during construction activities. Fugitive dust would be generated from activities associated with site clearing, grading, cut and fill operations, and from vehicular traffic moving over the disturbed site. These emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions.

The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. The USEPA has estimated that uncontrolled fugitive dust emissions from ground-disturbing activities would be emitted at a rate of 80 pounds of total suspended particles (TSP) per acre per day of disturbance (USEPA 1995). In a USEPA study of air sampling data at a distance of 50 meters downwind from construction activities, PM_{10} emissions from various open dust sources were determined based on the ratio of PM_{10} to TSP sampling data. The average PM_{10}

to TSP ratios for top soil removal, aggregate hauling, and cut and fill operations is reported as 0.27, 0.23, and 0.22, respectively (USEPA 1988). Using 0.24 as the average ratio for purposes of analysis, the emission factor for PM_{10} dust emissions becomes 19.2 pounds per acre per day of disturbance.

The USEPA also assumes that 230 working days are available per year for construction (accounting for weekends, weather, and holidays), and that only half of these working days would result in uncontrolled fugitive dust emissions at the emitted rate described above (USEPA 1995). The construction emissions presented in Table 4.10-1 include the estimated annual PM_{10} and $PM_{2.5}$ emissions associated with Option 1. These emissions would produce slightly elevated short-term PM_{10} and $PM_{2.5}$ ambient air concentrations. The USEPA estimates that the effects of fugitive dust from construction activities would be reduced significantly with an effective watering program. Watering the disturbed area of the construction site twice per day with approximately 3,500 gallons per acre per day would reduce TSP emissions by as much as 50 percent (USEPA 1995).

Table 4.10-1 Proposed Action – Option 1 Air Emissions

Criteria Air Pollutant	CO (tpy)	VOC (tpy)	NOx (tpy)	SOx (tpy)	PM10 (tpy)
Hidalgo County Emissions Inventory[a]	3,674	601	2,615	59	374
Construction Emissions	0.13	0.05	0.44	0.05	0.42
Construction Emissions as Percent of Hidalgo County Emissions	0.00%	0.01%	0.02%	0.08%	0.11%

[a] TNRCC 2003

Note: VOCs are not an air pollutant criterion. However, VOCs are reported because, as an O_3 precursor, it is a controlled pollutant.

Specific information describing the types of construction equipment required for a specific task, the hours the equipment is operated, and the operating conditions vary widely from project to project. For purposes of analysis, these parameters were estimated using established cost estimating methodologies for construction and experience with similar types of construction projects (Means 2002). Combustive emissions from construction equipment exhausts were estimated by using USEPA-approved emissions factors for heavy-duty diesel-powered construction equipment (USEPA 1985). The construction emissions presented in Table 4.10-1 include the estimated annual emissions from construction equipment exhaust associated with the Proposed Action. As with fugitive dust emissions, combustion emissions would produce slightly elevated air pollutant concentrations. However, the effects would be temporary, fall off rapidly with distance from the proposed construction site, and would not result in any long-term impacts.

All vegetation resulting from clearing activities would be deposited on the Mexican riverbank and appropriately disposed by the Mexican Contractor. It is likely the material would be chipped in place on the island and managed along with the dredged sediment. Another option is burning the material after it has been cleared. Outdoor burning activities require compliance with specific TCEQ guidelines and prior notification of intent to the appropriate commission regional office (§§111.209-.219, TCEQ 1996).

In summary, emissions from the construction activities for Option 1 would be temporary and would be eliminated when the activities are completed, and would not be regionally significant.

4.10.2 Proposed Action – Option 2

Significance criteria for Option 2 would be the same as that stated for Option 1 in subchapter 4.10.1. Under Option 2, construction activity would increase slightly due to the additional use of cranes and other mechanical dredging equipment.

The methodologies used to estimate emissions from ground disturbing activities and combustive emissions from construction equipment for Option 1 were used to determine the emissions for Option 2. Table 4.10-2 lists the emissions anticipated from Option 2 and compares the emissions to the baseline emissions inventory for Hidalgo County.

Similar to Option 1, all vegetation resulting from clearing activities would be deposited on the Mexican riverbank and appropriately disposed by the Mexican Contractor. It is likely the material would be chipped in place on the island and managed along with the dredged sediment. Additionally, if the material were burned then specific TCEQ guidelines would have to be followed as described in subchapter 4.10.1.

Table 4.10-2 Proposed Action – Option 2 Air Emissions

Criteria Air Pollutant	CO (tpy)	VOC (tpy)	NO_X (tpy)	SO_X (tpy)	PM_{10} (tpy)
Hidalgo County Emissions Inventory[a]	3,674	601	2,615	59	374
Construction Emissions	0.52	0.16	1.64	0.18	0.51
Construction Emissions as Percent of Hidalgo County Emissions	0.014%	0.027%	0.063%	0.305%	0.136%

[a] TNRCC 2003

Note: VOCs are not an air pollutant criterion. However, VOCs are reported because, as an O_3 precursor, it is a controlled pollutant.

Emissions from ground disturbing, construction, and dredging activities would last only as long as the duration of construction activity, fall off rapidly with distance from the construction site, and would not result in long-term impacts.

The construction emissions presented in Table 4.10-2 include the estimated annual emissions from construction equipment exhaust associated with Option 2. As with fugitive dust emissions, combustion emissions would produce slightly elevated air pollutant concentrations. However, the effects would be temporary, fall off rapidly with distance from the proposed construction site, and would not result in any long-term impacts.

In summary, emissions from the construction activities would be temporary and would be eliminated when the activities are completed, and would not be regionally significant.

4.10.3 No Action Alternative

Under the No Action Alternative, emissions would continue at the levels generated under the baseline condition.

4.11 NOISE

4.11.1 Proposed Action – Option 1

Operation of heavy-duty equipment, increased trucking activity, and increased transportation of workers to and from the Project Area would increase noise levels during implementation of Option 1 at the Project Area. Noise from equipment would be intermittent and of short-term duration and since there are no sensitive receptors near the Project Area, there would be minimal noise impacts from the proposed activities.

Assuming that noise from the dredging equipment radiates equally in all directions, sound intensity will diminish inversely as the square of the distance from the source. Therefore, in a free field (no reflections of sound), the sound pressure level decreases 6 decibels with each doubling of the distance from the source. Under most conditions, reflected sound will reduce in attenuation because of distance.

Additional dredge pumps and equipment required over and above that used for routine maintenance dredging would be the primary source of noise from the proposed activities. Typical noise levels generated by this equipment range from 75 to 89 decibels at 50 feet from the source. Noise from these additional dredge pumps and equipment will be intermittent and of short-term duration. Since implementation of Option 1 would not exceed any federal and local noise guidelines and regulations, and there are no sensitive receptors in the vicinity of Project Area, there would be no noise impacts from the proposed activities.

4.11.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be similar to those described under Option 1.

4.11.3 No Action Alternative

Under the No Action Alternative, the noise environment would not change from the baseline condition.

4.12 CULTURAL RESOURCES

4.12.1 Proposed Action – Option 1

Correspondence from the Texas Historical Commission (THC) concerning the removal of the sediments from the Project Area stated that the Proposed Action should not have an effect on cultural resources eligible for inclusion in the National Register of Historic Places (NRHP). The THC acknowledged that although construction of storage and

dewatering facilities and field offices has the potential to damage cultural resources, these activities would be restricted to the Mexican riverbank and beyond their jurisdiction. Appendix A contains the letter to the USIBWC from THC concerning their review of the project.

Additionally, no archaeological or historical resources of cultural significance were identified within the Project Area or within a 1-mile radius during the environmental database search of historic sites according to previous cultural resource investigations within the Project Area (USIBWC 2003d; EDR 2003). If buried cultural materials are encountered during construction, the contractor would cease work in the immediate area and notify the State Historic Preservation Officer.

4.12.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be the same as those described under Option 1.

4.12.3 No Action Alternative

Under the No Action Alternative, removal of the island and sandbar downstream of the Retamal Diversion Dam would not occur; therefore, no disturbance of cultural resources would occur.

4.13 HAZARDOUS AND TOXIC WASTE

4.13.1 Proposed Action – Option 1

Hazardous and/or toxic products (*e.g.*, fuel, oil, grease, and hydraulic fluid) would be used in the dredging and construction equipment used for the proposed project. Implementing established industry practices for controlling releases of these substances would reduce the possibility of accidental releases of these hazardous and toxic products. Preventative maintenance and daily inspections of the equipment would ensure that any releases of these hazardous and toxic products are minimized. All visible dirt, grime, grease, oil, loose paint, etc., would be removed from the equipment prior to use at the site.

In the event of a catastrophic release of hazardous and toxic products, containment booms or equivalent barriers would be used to control dispersion and reduce the possibility of polluting the Project Area and other resources. Containment barriers would make product recovery much simpler. A skimmer would subsequently be used to extract any floating material released into the water surface.

Since the risk of an accidental release of hazardous and/or toxic chemicals or waste is minimal, and implementation of Option 1 would not result in noncompliance with applicable federal or state regulations, it is anticipated that there would be no hazardous and/or toxic waste impacts from the proposed activities.

A review of available historical aerial photographs was conducted to assist in identifying past land uses and potential environmental contamination sources, and to verify other information found in the records search. Results of the review did not reveal any potential sites within the Project Area or surrounding areas.

4.13.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be the same as those described under Option 1.

4.13.3 No Action Alternative

Under the No Action Alternative, removal of the island and sandbar downstream of the Retamal Diversion Dam would not occur; therefore, dredging and construction activities would not take place.

4.14 SOCIOECONOMICS

4.14.1 Proposed Action – Option 1

Changes in population resulting from dredging and construction activities are not anticipated. Workers would most likely come from the local labor force in Progreso, Weslaco, and the Donna area. Due to the proximity (no more than 9 miles) of the labor force to the Project Area, it is expected that workers would commute to the work site and not relocate. Therefore, adverse consequences to population, housing, and community infrastructure would not occur.

Beneficial effects to employment would occur during the construction period; however, the benefits would be short-term and would not measurably affect the county-wide unemployment rate of 13.7 percent in 2001 (Texas A&M University 2003). The project would generate income to the local economy. The amount would be small compared to the county's total income of $3.6 billion (average weekly wage of $415 for 167,733 employed in 2001) (Texas A&M University 2003); therefore, beneficial effects to Hidalgo's economy would be negligible.

Local roadways could experience short-term adverse consequences resulting from increased traffic during the construction period as workers commute to and from the work site; however, the consequence would be short-term.

4.14.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be the same as those described under Option 1.

4.14.3 No Action Alternative

Under the No Action Alternative, removal of the island and sandbar downstream of the Retamal Diversion Dam would not occur; therefore, dredging and construction activities would not take place. Consequently, there would no change to existing population, housing, and community infrastructure. Additionally, the No Action alternative would not have any measurable consequence, beneficial or adverse, to income and employment.

4.15 ENVIRONMENTAL JUSTICE

4.15.1 Proposed Action – Option 1

Data indicate that Hidalgo County has disproportionately high minority (approximately 89 percent) and low-income populations (individuals – 35.9 percent); however, land use adjacent to the Project Area is primarily rural and designated a wilderness area. Adverse consequences to disproportionately high minority and low-income populations resulting from construction activities associated would not occur.

4.15.2 Proposed Action – Option 2

Impacts associated with implementation of Option 2 would be the same as those described under Option 1.

4.15.2.1 No Action Alternative

Under the No Action Alternative, removal of the island and sandbar downstream of the Retamal Diversion Dam would not take place; therefore, the situation for minority and low-income populations would remain unchanged.

4.16 MITIGATION MEASURES

No significant environmental impacts have been identified for implementation of the Proposed Action. Best management practices would be implemented to minimize potential environmental impacts. Removal of the island would require a Department of the Army (DA) permit under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act (CWA) if mechanized dredging is considered. The DA permit is required for dredging activities in the Rio Grande and would address T&E species, wetlands mitigation, and BMPs. The USIBWC participated in a Pre-Application/Joint Evaluation Meeting with the USACE, the USFWS, and the TPWD concerning the Proposed Action to facilitate the permitting application process. Additionally, the USIBWC is working with The Nature Conservancy in identifying several mitigation projects in the southern part of Texas along a bend of the Rio Grande to offset the loss of 2.1 acres of wetlands. The Nature Conservancy has identified 10 acres in the Lennox Foundation Southmost Preserve, which is east of Brownsville in Cameron County, as a potential area for mitigation purposes for the USIBWC.

4.17 UNAVOIDABLE ADVERSE IMPACTS

Unavoidable environmental impacts would result from implementation of the Proposed Action; however, none of the impacts would be significant. The dredging activities would have unavoidable adverse impacts on biological, wetland, and fisheries resources. The loss of 2.1 acres of productive wetlands, although not unique, would require mitigation. This impact to benthic invertebrates would be localized and not likely effect area populations. The impact to prey and maturing fish would be the loss of backwater habitat.

4.18 RELATIONSHIP BETWEEN THE SHORT-TERM USE OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

It is a 1970 Boundary Treaty requirement to maintain the international boundary between the U.S. and Mexico. The USIBWC and MXIBWC are obligated to perform this maintenance dredging to clear sediment buildup in the river and prevent scouring of the Mexican shoreline to maintain the integrity of the International boundary.

The sediment buildup that created the sandbar and island occurred over several years resulting in a benefit to biological resources in the area. The island has grown to a point where maintenance measures are required to carry out Article 4, Section B of the 1970 Boundary Treaty requirements for boundary preservation. The water regimes of the river would likely cause sediment buildup to begin after dredging operations are completed requiring future maintenance operations when the sediment buildup reaches a stage where it impacts the flood control capacity of the river or causes the main channel in the river to shift the international boundary.

4.19 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of "... any irreversible and irretrievable commitments of resources which would be involved in the Proposed Action would it be implemented." Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the use of these resources would have on consumption or destruction of a resource that could not be replaced in a reasonable period of time. The irreversible environmental changes that could result from implementation of the Proposed Action include consumption of material resources, energy resources, and human resources.

Material resources used for the Proposed Action include building materials for construction of coffer dams, temporary brides for dredging operations, or the shoring of embankments. The materials that would be consumed are not in short supply and are readily available from suppliers in the region. Use of these materials would not limit other unrelated construction activities and, therefore, would not be considered significant.

Energy resources would be irretrievably lost. These include petroleum-based products such as gasoline and diesel fuel. During dredging operations, gasoline and diesel fuel would be used for operation of equipment and other vehicles. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no adverse impacts would be expected.

The use of human resources for dredging operations is considered an irretrievable loss, only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities and is considered beneficial.

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