Appendix B
Wetlands Assessment

WETLANDS ASSESSMENT

Background Information

Bergstrom Air Force Base was converted in 1993 and renamed as Austin-Bergstrom International Airport (ABIA) in November 1994. An Environmental Impact Statement (EIS) was developed in conjunction with the closure and realignment of Bergstrom Air Force Base. The EIS contained a discussion and delineation of all known or suspected wetland habitats on the ABIA property. This wetlands assessment is designed to provide a review of the areas discussed in the 1994 EIS.

A wetland is defined by section 404 of the Clean Water Act as an area that under normal circumstances is inundated or saturated by surface or groundwater and supports vegetation typically adapted for life in saturated soil. The U.S. Army Corps of Engineers defines a wetland as an area of hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation is defined as "…macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present" (U.S. Army Corps of Engineers 1987). "A hydric soil is a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation" (U. S. Army Corps of Engineers 1987). Wetland hydrology can be identified directly by observation of inundation or soil saturation or indirectly by observation of driftlines, watermarks, and drainage patterns.

Methodology

Applicable portions of the 1994 EIS were used as a basis for this wetlands evaluation and were reviewed prior to field investigations. Maps from the 1994 EIS that were reviewed for this project included the following: Surface Water Hydrology at Bergstrom AFB, Wetland Study Sample Locations, National Wetland Inventory Map for Wetlands on Bergstrom AFB, and Austin Bergstrom International Airport Locations of Environmental Sites.

Areas reviewed and delineated in the field for the 1994 EIS concentrated on wetlands identified by the National Wetlands Inventory. The acquisition area was an approximately 888 acre parcel of land that lies south of the former Bergstrom AFB and is bounded on the south by Burleson Road, to the east by State Highway 973, and on the north and west by the former base. Eighteen sites were specified as wetland areas in the EIS.

Tony Wood and Trina Mullen, biologists with Baer Engineering and Environmental Consulting, Inc. (Baer Engineering), performed an evaluation of these eighteen sites at ABIA to determine their current ecological function and condition. These areas were examined for the presence of hydrophytic vegetation, hydric soils, positive indicators of wetland hydrology, and to determine if wetland conditions still exist. The field reconnaissance was performed on August 17, 2001.

Research Results

During the field reconnaissance and site evaluation conducted on August 17, 2001, Baer Engineering found an assortment of conditions at the identified sites. The wetland areas include ponds, drainage ditches, and intermittent and perennial streams. Water is transported from the study area to Onion Creek and the Colorado River by highly channelized streams and ditches.

Two primary types of wetland systems, as classified by the National Wetland Inventory, are found in the study area. These are palustrine and riverine wetland systems. The first, a palustrine system, includes "all non-tidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens…" This includes but is not limited to vegetative wetlands such as marshes, swamps, bogs, and ponds. The second type of wetland system found in the study area, riverine wetlands, includes "all wetlands and deepwater habitats contained within a channel." Exceptions to this type are the palustrine wetlands that are dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens. A channel is defined as an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water. Each type of wetland system can be permanently flooded, temporarily flooded, or seasonally flooded.

Field Observations

Onion Creek Sites

Two of the sites were identified by the 1994 EIS as wetland areas along Onion Creek south of the runways. These sites were thought to be representative of the creek from Richard Moya County Park upstream to a confluence with an unnamed tributary on the west side of ABIA.

Site 1

Site 1 is located just north of Onion Creek (a riverine, lower perennial open water, permanently flooded wetland) approximately 0.5 mile northwest of the county park. This forested area contains large trees in the overstory such as pecan, hackberry and box elder with sweet grape in the canopy. The shrub layer is dominated by dogwood and elderberry while poison oak, poison ivy, giant ragweed, and rattlebush are present in the understory. One hundred percent of the dominant vegetation is categorized as hydrophytic vegetation. Soils were not saturated at the time of investigation, and according to the EIS, the site is not saturated for the required 14 or more days during the growing season. Wetland hydrology was directly observed in the creek itself through inundation, but because the banks are so high, the site itself had no indication of recent flooding. In conclusion, site 1 has changed little since the 1994 EIS and although the site exhibits hydrophytic vegetation, the wetland hydrology, and the hydric soils categories were not met, therefore, the site is not considered a jurisdictional wetland.

Site 18

Site 18 is also located on Onion Creek just upstream from site 1 at a confluence with an unnamed tributary. At the time of the site visit, site 18 was enclosed in fencing and inaccessible, but could be seen from the fence line. The vegetation was very similar to that seen at site 1 with large trees such as pecan, box elder, and ash dominating the canopy layer, with sweet grape intertwined. Chinaberry, poison ivy, poison oak, and ragweed are the dominant species in the understory and shrub layers. The soil is listed in the EIS as a Friar silty clay loam, and is not classified as a hydric soil. The site had no indication of wetland hydrology through direct or indirect observation. Again the site north of Onion Creek supports hydrophytic vegetation, but does not exhibit hydric soils or wetland hydrology, and is therefore not considered a jurisdictional wetland.

The area encompassing the unnamed tributary from the runway area to the confluence with Onion Creek is considered to be a palustrine forested wetland. The vegetation is the same as that observed around Onion Creek. Water was observed in the drainage channel at the time of field observation, and the soils are thought to be the same as those found in Onion Creek. This area meets all three wetland criteria and covers approximately 0.21 acres. Onion Creek is considered a water of the United States. In conclusion, observations made during the August 17, 2001 field reconnaissance for sites located on Onion Creek are consistent and concur with the findings of the 1994 EIS.

Northwest Sites

Five potential wetland sites were observed in this area in the 1994 EIS. Each was characterized as a highly channelized ditch developed to carry stormwater away from impermeable surfaces.

Site 2

Site 2 was not considered a jurisdictional wetland in the 1994 EIS because it is a drainage ditch that has been excavated from an upland habitat. Baer Engineering concurs with these findings.

Site 3

Site 3 was described in the 1994 EIS as two drainage ditches that form a "Y" at the southeastern side of the north aircraft parking apron. However, site conditions at this location have been significantly altered. A stormwater retention pond and culvert system have been constructed in this area since 1994. These structures drain the area and eliminate standing water. The area is now dominated by cultivated grasses and is kept manicured and mowed. No hydrophytic vegetation was observed in the area. Due to the constructed drainage features, the soils are no longer considered hydric and the area is not saturated for fourteen days of the growing season. None of the three criteria for determining a wetland are currently met at this site. This location should not be considered a jurisdictional wetland.

Site 4

Site 4 was not considered a jurisdictional wetland in the 1994 EIS because it is a drainage ditch that has neither surface water, saturated soils nor hydrophytic vegetation. Baer Engineering concurs with these findings. This location should not be considered a jurisdictional wetland.

Site 5

Site 5 is a drainage ditch along a fenceline that drains the north end of the airfield. Ragweed was the only hydrophytic vegetation observed on this site. No standing water was observed during the time of the field observation. In fact, the area was very dry and although the field studies were performed during the dry season, it is the opinion of Baer Engineering that during a typical year the soils are not saturated for the required fourteen days during the growing season. In conclusion, this site does not meet the hydric soils or wetland hydrology categories and is no longer considered to be a jurisdictional wetland.

Site 6

Site 6 was observed as a fairly broad area at the north end of a runway noted by a tree clump. Vegetation was dominated by large trees with sweet grape intertwined in the canopy, heartleaf ampelopsis, poison oak, and poison ivy. Soil type is noted in the EIS as Altoga silty clay series. Because field observations were made during the dry season, standing water was not observed, but is the opinion of Baer Engineering that the area is probably saturated for the required fourteen days during the growing season. Due to the dry conditions, wetland hydrology was not directly observed. However, observation of the drainage patterns leads us to believe that wetland hydrology exists at this site. The site meets all three wetland categories and is considered to be a palustrine, emergent, seasonal wetland. The total area for the site is approximately 0.25 acres.

Sites Along the Unnamed Creek

The sites along the unnamed creek located west of the runway are part of a drainage system that begins in the northern half of the airport, crosses the perimeter road and continues south where it dumps into Onion Creek.

Site 7

Site 7 was previously described as a wetland along the northern part of the drainage system on the west side of the perimeter road. Baer Engineering noted the area to be a dry swale that has recently been scraped and recontoured to encourage drainage. Virtually no vegetation was noted in the area except upland grasses. The soils were dry at the time of the field observation except at the opening to the culvert where a very small amount of standing water was noted. In conclusion, site 7 is no longer considered a jurisdictional wetland because hydrophytic vegetation does not occur and hydric soils and wetland hydrology are not generally observed in this area.

Site 8

Site 8 occurs in the same drainage to the west and parallel to the perimeter road. For our purposes site 8 has been split into site 8a, which is the area near the road junction, and site 8b, which is the remainder of the drainage ditch area.

Site 8a is a relatively dry drainage ditch at the edge of airport property along US 183 at McKinney Falls Road. The dominant vegetation includes mesquite and prickly pear cactus, which are not considered hydrophytic vegetation. Hydric soils were not observed in this area and the ditch was dry at the time of observation. Site 8a is not considered to be a jurisdictional wetland because it fails all three categories to qualify as a wetland.

Site 8b is the remainder of the drainage ditch to the west and runs parallel to the perimeter road. Standing water was noted in the lower portion of the drainage ditch. Soils in the drainage are noted as Houston black clay series, which is considered a hydric soil. Vegetation in the area includes large trees such as pecan and hackberry on the bank, and cattails in the lower portion with the standing water. The lower part of the channel exhibits all three wetland criteria and is considered a jurisdictional wetland. The wetland area is confined to the lower portion of the streambed. The banks of the creek are a well-drained and drier habitat. The approximate area of this wetland is 0.92 acre.

Site 9a

Site 9a is a portion of this drainage area with steep banks leading to a previously ponded area. Dominant vegetation includes large trees on the bank with sweet grape intertwined, poison oak, and poison ivy. Due to the fact that the field observation took place in the dry season, no standing water was noted, but it is believed that wetland hydrology exists under normal conditions. The soils are believed to be hydric in nature. We observed the extensive presence of mud cracks which indicate high clay content soils with a significant shrink-swell potential. These soils appear to have been hydric during wetter seasons. The well-drained banks surrounding the previously ponded area are not considered wetlands, but the lower lying channel area exhibits the three wetland criteria and is considered a jurisdictional wetland. The wetland area is approximately 1.4 acres.

Southeast Sites

Site 9b

Site 9b is a drainage at the south corner of the east taxiway. It joins Onion Creek approximately one mile to the southeast. Dominant vegetation in the area includes hackberry, ragweed, poison oak, poison ivy, and sweet grape in the canopy. No water was present at the time of investigation and wetland hydrology was not exhibited indirectly. Hydric soils were not observed at the time of the investigation and are thought not to be saturated for the required fourteen days of the growing season. Baer Engineering believes that similar conditions are evident in 2001 as those that were

observed in 1994. We concur with the findings of the 1994 EIS. Site 9b should not be considered as a jurisdictional wetland.

Site 10

Site 10 is located at the uppermost part of the drainage ditch running southeast through the old munitions storage area. Dominant vegetation includes willows, ragweed, sunflowers, beebalm and umbrella grass. Water and hydric soils were noted only at the tunnel openings on the east and west sides of the runway. The remainder of the site was extremely dry. The soil type is noted in the EIS as the Houston black clay series, but no mottling or gleying was found at the time the EIS was performed. Although the area exhibits some hydrophytic vegetation, the wetland hydrology and hydric soils categories were not met. Site 10 is no longer thought to be a jurisdictional wetland.

Site 11

Site 11 is a drainage ditch that passes through an old landfill area. Banks are stabilized by angular limestone cobble and are held in place with galvanized steel wire mesh. Dominant plant species include willows, ragweed and grasses. The EIS identifies the drainage area as a riverine, intermittent, streambed, seasonal wetland. The description that seems appropriate for the area now, noted during the field investigation, is a palustrine, seasonal wetland. The soils are the Altoga silty clay series and were gleyed at the time of the EIS field study. Wetland hydrology was observed indirectly through the observation of grasses flattened by running water. Water was not observed at the time of the field study, but it is believed that under normal circumstances in the growing season water is present in the ditch channel. Since the channel itself meets the three wetland criteria, it is considered a jurisdictional wetland, but the drier bank areas are not. The wetland area is approximately 1.72 acres.

Site 12

Site 12 is another drainage ditch that flows through an old landfill area. It separates the old munitions storage area and the lower portion of the golf course area. The EIS describes the area as a palustrine, emergent marsh wetland. Field investigation indicates that concrete has been added to the bottom of the drainage channel since the 1994 EIS was performed. Approximately six inches of standing water was observed in the concrete channel. Dominant plant species include algae on the water surface, bermuda grass, umbrella grass, and ragweed. Hydric soils were not noted during the field investigation, because the only water present was in the concrete channel area. In conclusion, site 12 is no longer a wetland area, due to the fact that a man-made concrete bottom has been added and hydric soils no longer exist.

Golf Course Sites

Two ponded areas were observed on the golf course during field observations by Baer Engineering. According to employees of the golf course, the sequencing of the front and the back nine holes has been changed, and improvements have been made to the golf course in recent years, making it difficult to accurately locate the wetland sites using descriptions from the 1994 EIS. For our

purposes, site 13 and 15 still exist on the course, but site 14 was unable to be located and it is believed not to be a wetland area.

Site 13

Site 13 is a constructed pond area on the golf course. It appears to be excavated from upland soils. The pond is apparently maintained by golf course personnel. It does not appear to support hydrophytic vegetation. Water is present in the pond, but since the three wetland criteria are not met, site 13 could be defined as an aquatic habitat, but not a jurisdictional wetland.

Site 15

Site 15 is a man made pond located by what is now golf course hole 3. A fountain was observed in the middle of the pond area to aerate pond water. Large trees such as oak, willow, box elder, and hackberry were observed around the pond and duckweed and other aquatic plants were in the water. Wetland hydrology was directly observed through inundation of the ponded area, and wetland soils area thought to exist. This area should be considered a palustrine, permanently flooded area which is approximately 0.01 acres.

Site 16

Site 16 is believed to be the creek that flows from the pond identified as Site 15. This creek flows northeast toward the Colorado River through a steeply banked and well-drained valley. This creek appears to have constant and continuous flow. Creek vegetation is similar to that found in and around the adjacent pond including duckweed. The vegetation on the banks included large oak, pecan, and hackberry trees as well as poison oak and poison ivy in the understory. Since all three wetland criteria are met, the creek bed and associated lower banks should be considered a jurisdictional wetland. This area is approximately 0.34 acres.

Off Airport Property Sites

Site 17

Site 17 is located on Onion Creek near FM 973 and is not considered to be airport property. Onion Creek is defined in the 1994 EIS as a riverine, lower perennial, open water, permanent wetland. Vegetation in the area includes large trees such as oak, pecan, cypress, cottonwood, and hackberry. Poison oak and poison ivy were noted in the understory. Wetland hydrology was directly noted through inundation and soils in the creek are assumed to be hydric. All three wetlands criteria are met at site 17 and it is still considered to be a jurisdictional wetland. However, this site is not believed to be airport property or under ABIA control.

Conclusion

Baer Engineering and Environmental Consulting conducted an evaluation of the wetlands named in the 1994 Environmental Impact Statement at Austin Bergstrom International Airport. Eighteen sites

were reviewed during the site reconnisance for functional value in the ecological system at the airport. The following table summarizes our findings, including site number which correlates to the 1994 EIS, weather the site still functions as a jurisdictional wetland, and the amount of area the wetlands encompass.

Site Number	Jurisdictional Wetland ?	Approximate Size
Sites 1 and 18	Partial	0.21 acres
Site 2	No	N/A
Site 3	No	N/A
Site 4	No	N/A
Site 5	No	N/A
Site 6	Yes	0.25 acres
Site 7	No	N/A
Site 8a	No	N/A
Site 8b	Yes	0.92 acres
Site 9a	Yes	1.4 acres
Site 9b	No	N/A
Site 10	No	N/A
Site 11	Yes	1.72 acres
Site 12	No	N/A
Site 13	No (Aquatic habitat)	N/A
Site 14	Does Not Exist	N/A
Site 15	Yes	0.01
Site 16	Yes	0.34
Site 17	Off Airport Property	N/A
Total Wetland Acreage at ABIA		**4.85 acres**