



Appendix F

Environmental Study

Lubbock Outer Route Study

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1. Environmental Study

Environmental analysis was conducted as part of the Lubbock Outer Route Study, primarily through desktop research, and some field observation. 678 parcels were sent right-of-entry (ROE) requests for field observations. 219 parcels provided ROE, 50 parcels provided conditional ROE, 40 parcels denied ROE and 369 did not respond.

1.1. Geology

According to the Geologic Atlas of Texas, Lubbock Sheet (Fisher 1974) the Lubbock Outer Route project transverses an area comprised mostly of Quaternary Pleistocene-age sediments. One of the largest surface deposits in the area is the Blackwater Draw Formation (Qbd) which is made up of sand with fine to medium-grained quartz and large caliche nodules. Other similar aged deposits present include Quaternary Alluvium floodplain deposits (Qal) as well as Playa Deposits (Qp). Mostly the deposits in this region are the result of eolian or windblown mass transportation processes. This region known as the Southern Great Plains experiences persistent high velocity winds and periodic droughts. Combined with a region lacking natural vegetation due to anthropogenic land use (e.g. agriculture use) these factors contribute to the severe wind erosion this region experiences (Commission on Environmental Cooperation 1997).

Other older deposits within the area consist of Pliocene to Miocene aged fluvial sand, silt, clay and gravel capped by caliche known as the Ogallala Formation (P_oMo) (Fisher 1974). These deposits are only on the surface in areas where ephemeral streams have eroded away Quaternary deposits.

Underlying these surface deposits is the Ogallala Aquifer (Wyatt et al. 1977). The aquifer stretches across eight states from the Texas Panhandle to parts of southern South Dakota. This unconfined aquifer is a Tertiary Deposit containing fluvial sediments and fine grained eolian silts and clays (Mehta et al., 2000). The upper part of this aquifer is made up of hard, caliche-cemented beds known as the “caprock.” (Wyatt et al. 1977)

Recharge in the project area occurs primarily through infiltration with a focus on playa lakes which fill with water after periods of precipitation. This water stands for a considerable time where a portion is allowed to infiltrate into the underlying aquifer by percolating through the soil around the perimeter of the playa lake (Fisher 1974).

Beneath the aquifer lies low permeable shale from the Triassic and Cretaceous ages. Prior to the deposition of the sediment that now makes up the Ogallala Aquifer the area contained many hills and wide valleys. This topography was buried as it existed in the Cretaceous period and now forms a very irregular surface beneath the aquifer. Due to this

irregular bottom the aquifer thickness can range anywhere from one foot to 1300 feet (Guru et al., 2000) (Fisher 1974).

1.2. Soils

Soils were evaluated for this study using the United States Department of Agriculture, Natural Resource Conservation Service Web Soil Survey Tool. The study area comprised all of the route options using a 400 foot buffer along each option which could be the potential ROW for the project. The soils within the study area consist of eleven different soil series. Generally, these soil series are deep, nearly level to gently sloping, and moderately permeable loamy soils on uplands (USDA 2014). Following is a brief description of each series:

- Acuff - formed in calcareous sediments modified by wind. Thickness of the solum ranges from 60 to 80 inches. The mollic epipedon commonly includes the entire A horizon. In the B horizon, clay content is generally 25 to 35 percent of the total mass. This Horizon is mildly alkaline and has a calcium carbonate content of 20 to 45 percent by volume.
- Amarillo - consists of deep loamy soils formed on uplands. Slopes can range from 0-3 percent but generally fall between 0-1 percent. The typical A horizon is 5-18 inches thick and made up of fine sandy loam and is mildly alkaline. Solum thickness ranges from 60 to 80 inches or more with depths to the calcic horizon ranging from 30-60 inches. The A horizon is 5 to 18 inches thick.
- Drake- consists of deep, loamy soils on uplands. These soils are formed in calcareous loamy sediments modified by wind. Typically the pedon of Drake clay consists of a dark grayish to brown A horizon with an abrupt but smooth boundary roughly 10 inches down. The first C horizon is usually clay loam or sandy clay loam with a high calcium carbonate content.
- Estacado - consists of deep, loamy soils on foot slopes and in valleys. These Aeolian soils form in calcareous loamy sediments with slopes ranging from 0 to 3 percent. Thickness of the solum can be more than 60 inches with the depth to the calcic horizon ranging from 10 to 30 inches. In the B horizon this soil contains roughly 18 to 28 percent clay and 10 to 50 percent calcium carbonate by volume.
- Lofton – The series consists of deep, loamy soils on benches around playas or in slight depressions on uplands. These soils formed in areas with little to no slope which are comprised of calcareous loamy eolian sediments. Thickness of solum ranges from 45 to 60 inches. The clay content of the argillic horizon is 40 to 50 percent. This soil tends to form deep cracks as such with it not uncommon to find vertical cracks as deep as three feet down. The A horizon is usually 6 to 10 inches thick with a dark brown to dark gray color. Soil pH is usually neutral to slightly alkaline.

- Mansker – consists of deep, loamy soils on uplands. These Aeolian soils form on uplands in calcareous loamy material. Solum thickness can be over 60 inches. Clay content in this series ranges from 25 to 35 percent and calcium carbonate ranges from 40 to 60 percent.
- Olton – consists of deep, loamy soils on uplands. These soils are formed in calcareous loamy Aeolian sediments. Solum thickness ranges from 60 to more than 120 inches with a mollic epipedon which is 11 to 20 inches thick. Clay content occurs mostly in the upper 20 inches of the B horizon and ranges from 35 to 45 percent.
- Portales – consists of deep, loamy soils on uplands. These soils are formed in calcareous loamy eolian or alluvial sediments with little to no slope. Typically the thickness of the mollic epipedon ranges from 11 to 20 inches with an average clay content anywhere from 28 to 35 percent. Depth to the calcic horizon ranges from 20 to 40 inches in depth. The A horizon is 10 to 18 inches thick with a dark, grayish brown to dark brown color. The B horizon occurs roughly 8 to 24 inches in depth and is usually gray to light brown and comprised of clay loam or sandy clay loam. The C horizon is usually 15 to 30 inches thick and light gray to white in color also made from clay or sandy loam.
- Posey – comprised of deep, loamy soils on uplands. These soils formed in calcareous loamy eolian sediments with gentle slopes of 0 to 8%. The solum thickness can be 60 inches or more with a calcic horizon beginning in the B horizon. The A horizon is typically reddish brown to grayish brown flowed by the B horizon which maintains more red color and can even be shades of yellow. The series is made up of sandy clay loam or clay loam with calcium carbonate content ranging from 10 to 20 percent by volume.
- Randal– consists of deep, clayey soils found within the bottom of localized depressions known as playa lakes. These soils formed in clayey sediments several feet thick which are underlined by caliche in some places. These soils crack when dry and have gilgai microrelief. Depth of this soil can be as great as 72 inches. When dry it is not uncommon to have cracks up to 1.6 inches in length and more than 20 inches in depth. The clay content is generally high ranging from 40 to 60 percent by volume. The A horizon is 12 to 50 inches thick with a dark gray color. The subsequent horizon generally has some small weakly cemented concretions.
- Zita – deep, loamy soils on uplands. These soils formed in loamy eolian deposits with slopes between 0-1%. The A horizon is 10 to 20 inches thick; texture is loam or fine sandy loam. Color ranges from brown to dark grayish brown. The B horizon is 12 to 24 inches thick. It is comprised of clay loam or sandy clay loam as above with similar color ranges. The C horizon differs in color occurring in shades of white to pinkish gray to light

gray and very pale brown. It is comprised of silty clay loam or clay loam with calcium carbonate ranging from 20 to 70 percent.

Most of the area around the route options is a level plain with numerous enclosed depressions which make up the playa lakes. A layer of clay lines the bottoms of the playa lakes which becomes less permeable as it is saturated. There are 11 playa lakes that the different route options cross. Although there are currently no flowing streams in the area, channels developed during the Pleistocene fill with water during sporadic wet periods for drainage.

Measures would be taken to prevent and correct erosion that may develop during construction. Temporary erosion controls would be in compliance with TxDOT Standard Specifications and would be in place, according to the construction plans, prior to commencement of construction. They would be inspected on a regular basis to ensure maximum effectiveness (TxDOT 2004).

1.3. Prime/Unique Farmland

The farmland study area includes all land within the route options considered in this study.

The soil data used to describe the existing conditions in the farmland study area was obtained from the NRCS Soil Survey of Lubbock County, Texas dated June 1991 and October 2009 (online) and is presented below. These data were used to complete a Farmland Conversion Impact Rating Form for Corridor Type Projects (form NRCS-CPA-106) and the results were coordinated with the NRCS on June 24th, 2014.

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The NRCS-CPA-106 form evaluates impacts to farmland soils based on a 260-point scale. One-hundred and sixty (160) points is the critical score for consideration for protection; those route options receiving scores totalling

Table F-1: Prime Farmland by Route Option

Option	Acres of Prime Farmland
1A	280
1B	293
1C	277
1D	290
2A	185
2B	182
2C	184
2D	180
3A	358
3B	343
3C	344
3D	362
3E	347
4A	111
4B	189
4C	254
4D	164
4E	164

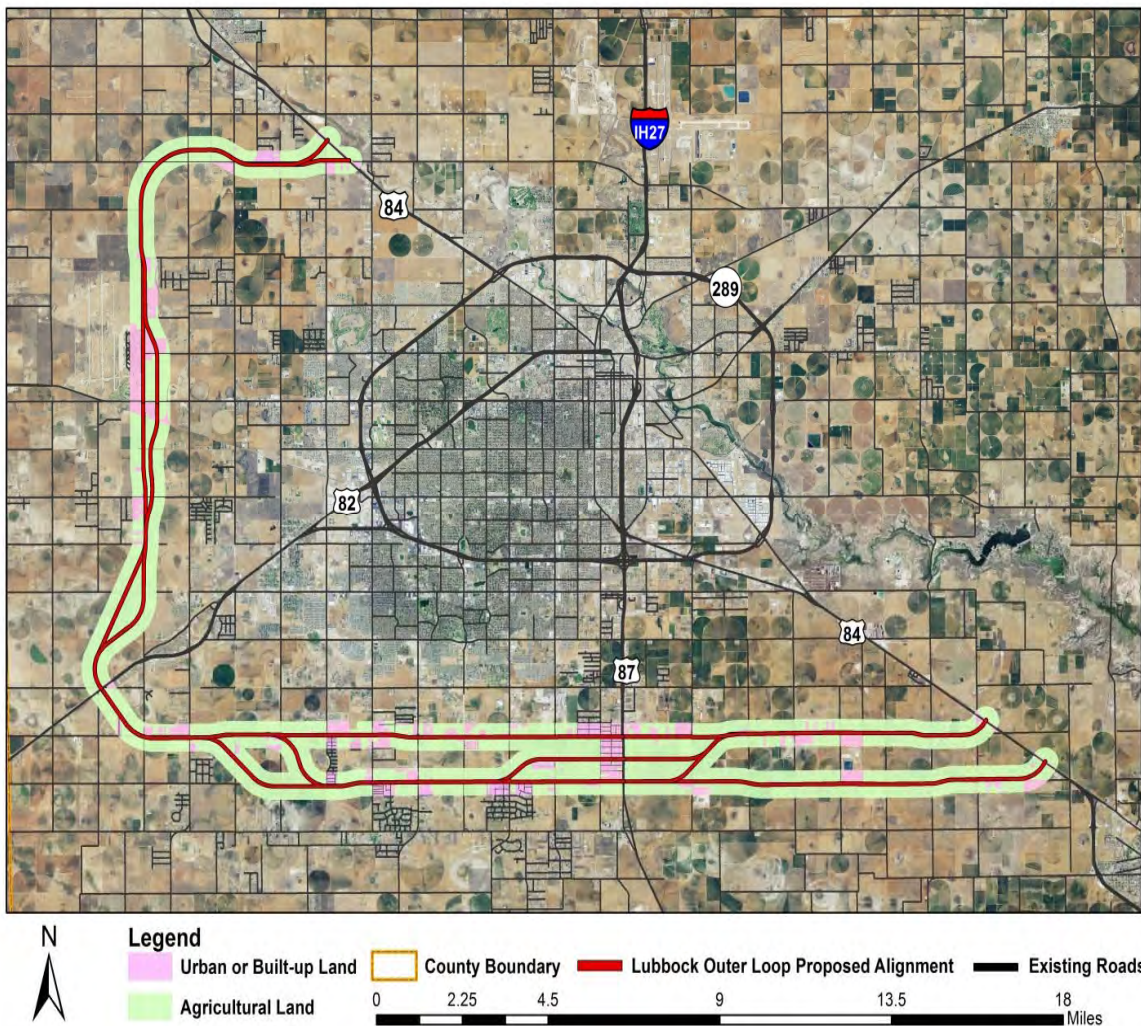
less than 160 points are given a minimal level of consideration for protection. Of the 17 route options initially considered for the Lubbock Outer Route, 16 fall below the threshold score of 160 points and are assigned a minimal level of consideration for protection. Option 1A received a score of 168 which makes it the only option considered that scored above the threshold score. Ultimately, environmentally speaking the best action would be to avoid this option and utilize one of the other options which scored below the threshold score. The NRCS requests that a return copy of Form CPA-106 be sent upon the final decision of the alignment during the environmental phase and recommends that accepted erosion control methods should be used during construction of the project.

All of the Segments and options would impact Prime Farmlands (Table 3). However, there are minor differences in various options. For example, in Segment 1, the various options would affect from 277 acres (Option C) to 293 acres (Option B). Segment 2 options present even less variability, with a range from 180 acres of prime soils impact (Option D) to 185 acres in Option A. Segment 3 prime farmland impacts would range from 362 acres in Option D to 344 acres in Option C. Segment 4 options range from 111 acres in Option A to a high of 254 in Option C (**Table F-1**).

1.4. Land Use

The land use study uses the Anderson Classification System and is located in southwest Lubbock County (Lubbock Central Appraisal District 2014). The land use study area is defined as an area approximately one-half mile in width or one-quarter mile on either side of the centerline of the proposed Lubbock Outer Route. An inventory of existing land uses in the study area was compiled from 2013 data provided by the Lubbock County Central Appraisal District and was then verified using aerial photography. For this project a Level I and Level II analyses were used to quantify the general land use patterns in the study area. The Level I analysis groups land uses into single general categories. For example, land uses such as cropland and pasture, confined feeding operations, orchards, groves and nurseries are a single category called Agricultural Land. This analysis is used to show the overall land use within the study area (**Figure F-1**). In an effort to quantify the potential direct impacts to land use, Geographic Information Systems (GIS) were used to calculate the number of acres, for each land use type, that could be impacted by each route option.

Figure F-1: Lubbock Outer Route Land Use Map



The Anderson Classification System was used to look at specific land uses within the study area (Anderson et. al 1976). Level II breaks down general categories such as Urban or Built-up Land into more refined land uses such as residential, commercial, transportation and industrial, recreation, and agricultural land uses.

The study area contains roughly 22,064 acres of land which has two major land uses: agricultural and residential. The project area's existing land use can be described as primarily agricultural with over eighty percent of the study area used for agricultural purposes. The area is largely flat with little topographic change making it ideal for large scale agricultural operations. The same geomorphic quality makes this area ideal for development. Currently there are approximately 1,320 acres of land being used as residential space making "residential" the second largest land use within the study area;

however, this amounts to only 6% of the total study area. Vacant land accounts for another 516 acres of land followed by commercial land which makes up 481 acres of the study area. Rangeland is the last major land use category within the study area comprised of 393 acres of land (Lubbock Central Appraisal District 2014).

1.5. Water Resources and Floodplains

Table F-2: Land Use Acreage

The surface waters within the Lubbock Outer Route project occur primarily as playa lakes. The only other surface water that occurs is Yellow House Draw which runs along U.S. 84 near the northern terminus of the proposed Outer Route. This ephemeral stream generally flows southeast until its confluence with the North Fork Double Mountain Fork of the Brazos River. The playa lakes and Yellow House Draw are ephemeral and are vital resources to the local ecosystem. Surface waters within the alternative routes are ephemeral, and can be identified on the basis of Federal Emergency

Land Use Category	Acreage (2013)	% of Total - 2013
Agricultural	18,592.5	84.27%
Residential (Single-Family and Multi-Family)	1320.3	5.98%
Vacant	515.7	2.34%
Commercial	481.0	2.18%
Range Land	393.2	1.78%
Open Space	33.1	0.15%
Utilities	3.87	0.02%
Industry	1.6	0.01%
Place of Worship	0.0	0.00%
Educational	0.0	0.00%
Parks	0.0	0.00%
Total	22,063.9	100%

Management Agency (FEMA) mapped floodplains, and/or National Wetland Inventory (NWI) Maps. NWI maps are addressed in Section 3.6. Alternative impacts to floodplains are addressed below.

It is FHWA's policy to avoid encroachments on floodplains. FHWA guidance on Engineering and Traffic Operations (23 CFR 650.113) requires that encroachments on floodplains be the only practicable alternative, which shall be supported by the following information: 1) the reasons why the proposed action must be located in the floodplain; 2) the alternatives considered and why they were not practicable; and 3) a statement indicating whether the action conforms to applicable state or local floodplain protection standards. Any modifications to the floodplains would require coordination with the FEMA.

The project corridor traverses several FEMA identified 100 year floodplains. As playa lakes are slight depressions, their surrounding areas are typically flat which produce large floodplains. FEMA Flood Insurance Rate Maps that include the project limits were reviewed. There are 11 FEMA map panels in the project study area. A complete listing of the mapped FEMA flood zones are shown in **Table F-3**.

Table F-3: FEMA Flood Zones within project area

Flood Zone Designation	FEMA Map Panel Number	Zone Description
A	48303C0150E, 4803C0175E, 4803C0275F, 48303C0400E, 48303C0405E, 48303C0410E, 48303C0430E, 48303C0450E, 48303C0475E, 48303C0460E	Areas of 100-year flood; no base flood elevations determined.
AE	4803C0270F, 48303C0400E	Areas of 100-year flood; base flood elevations determined
X	48303C0150E, 4803C0175E, 4803C0275F, 4803C0270F, 48303C0400E, 48303C0405E, 48303C0410E, 48303C0430E, 48303C0450E, 48303C0475E, 48303C0460E	Areas determined to be outside of the 500-year flood floodplain

Source: Jacobs, 2014

In Segment 1 Option 1B could impact the least amount of floodplain, followed by Option 1D. Options 1 A and 1C could have the greatest floodplain impacts (Table XX) in Segment 1; however, options 1C and 1D could both impact Yellow House Draw. All of the other floodplain impacts in all segments are to playa lakes (Table XX). In Segment 2, options 2D could have the least floodplain impacts with approximately 26.7 acres, and Segment 2A could have the greatest impacts to floodplains, as 39.1 acres of floodplain could be affected by this option. In Segment 3, options 3A and 3B could impact substantially more floodplains than options 3 C, 3D or 3E (Table XX). In Segment 4, Option 4E could affect only 1.5 acres of floodplain, while Option 4B could affect nearly 33 acres. In Segment 4 options 4 A, 4C and 4D range from 15.8 acres in Option 4D to 20.0 acres in Option 4A (Table F-4).

Table F-4: Options Impacted by Flood Plains

Option	Acres of Floodplain Impacted	100 Year Flood Plain	Yellow House Draw
1A	46.1	Yes	No
1B	37.1	Yes	No
1C	47.3	Yes	Yes
1D	38.2	Yes	Yes
2A	39.1	Yes	No
2B	31.8	Yes	No
2C	34.0	Yes	No
2D	26.7	Yes	No
3A	58.0	Yes	No
3B	57.9	Yes	No
3C	37.4	Yes	No
3D	35.9	Yes	No
3E	35.9	Yes	No
4A	20.0	Yes	No
4B	32.7	Yes	No
4C	16.9	Yes	No
4D	15.8	Yes	No
4E	1.5	Yes	No

Source: Jacobs, 2014

1.6. Wetlands and Other Waters of the US

Waters of the U.S., including wetlands, refer to those features which fall within the jurisdictional authority of the U.S. Army Corps of Engineers (USACE) according to Section 404 of the Clean Water Act (CWA).

The jurisdictional area of lakes, ponds, rivers, and streams is identified at the ordinary high water mark (OHWM). The OHWM is defined as:

“...that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed in the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas (33 CFR 328).”

Wetlands are those “areas that are inundated or saturated by surface or ground water at a frequency

and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions [as defined by the U.S. Army Corps of Engineers (USACE) and U.S. Environmental Protection Agency] (USACE 1987).”

Wetlands and waters of the U.S. in the project include playa lakes and streams. Yellow House Draw is the only stream that flows through the project area. It is located along the northeastern portion of this proposed project. However, the playa lakes are typical of the Texas high plains.

In the Texas high plains, there are approximately 19,300 playa lakes. The playa lakes that occur in the project area are ephemeral wetlands which periodically fill with water. These bodies can range in size from 15 acres to 800 acres with the majority smaller than 30 acres (TPWD 2014a). This periodic inundation of water generally occurs in late spring with the rains after which water can stand in these wetlands until fall in some cases (USDA 2007). These wetlands only cover a small percentage of the landscape but are arguably the most significant ecological features within the region.

The playa lakes are important due to their production of seed bearing vegetation and invertebrates which thrive in the saturated shores.

This biota is in turn consumed by larger animals including waterfowl which use these lakes during migration periods as sanctuaries and refuges (TPWD 2014a).

Table F-5 : Acres of Playa Lake Potentially Impacted

Option	# of Acres
1A	11
1B	6.6
1C	11.1
1D	6.6
2A	0
2B	0
2C	0
2D	0
3A	17.2
3B	19.2
3C	13.1
3D	8.1
3E	9.8
4A	2.8
4B	0.2
4C	0.6
4D	0.2
4E	0.7
	<i>Source: Jacobs, 2014</i>

The water contained in these playa lakes is an important source of recharge for the Ogallala Aquifer, which supplies the majority of water used to irrigate crops in the area. It is now estimated that as much as 95 percent of the recharge to the southern portion of the aquifer is directly from the playa basins (TPWD 2014a).

Playa lakes are considered special aquatic sites which are “geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region” (40 CFR 230.4). Playa lakes, with this designation under the jurisdiction of the USACE and EPA, are protected by Section 404 of the Clean Water Act. The placement of temporary or permanent dredge/fill material into jurisdictional waters of the U.S. would require a permit from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA). Any disturbance to Yellow House Draw and/or the playa lakes that fall within the project area would require coordination with USACE.

GIS was used to determine acres of playa lakes that could be impacted by each Segment and Option. The desktop survey used NWI data to identify playa lakes and field verification was used to validate electronic data (USFWS 2014a).

Segment 1 could have the least amount of impact with either option 1B or 1D at 6.6 acres, followed by option 1A impacting 11 acres, and option 1C impacting 11.1 acres. Segment 2 could have 0 acres of playa lakes impacted by all options. Segment 3 could have the least amount of impact with option 3D at 8.1 acres, followed by option 3E at 9.8 acres, 3C at 13.1 acres, option 3A at 17.2 acres, and the most with option 3B impacting 19.2 acres. Segment 4 could have the least amount of impact with options 4B and 4D at 0.2 acres, option 4C at 0.6 acres, option 4E at 0.7 acres, and the most impact with 4A impacting 2.8 acres.

1.7. Vegetation

According to Texas Parks and Wildlife Ecological Mapping System of Texas (EMST), majority of the study area is mapped as Row Crops and Conservation Reserve Program (CRP)/Other Improved Grasslands (TPWD 2014b). Additionally, portions of the project are mapped as High Plains Shortgrass Prairie, Native Invasive Mesquite Shrubland, Rolling Plains Mixed Grass Prairie, Urban Low Intensity, and Urban High Intensity. Row Crops are defined as crops and other annual agricultural fields. CRP/Other Improved Grasslands are defined as grassland systems usually consisting of introduced species, such as: Mediterranean lovegrass (*Eragrostis barrelieri*), weeping lovegrass (*Eragrostis curvula*), or King Ranch bluestem (*Bothriochloa var. songarica*). These areas are usually under contract with the landowner when enrolled in the CRP. The CRP is a U.S. Department of Agriculture program

that provides incentives for farmers to adopt practices that prevent soil erosion, improve water quality and restore wildlife habitat for future generations.

High Plains Shortgrass Prairie forms the matrix system with Blue grama grass (*Bouteloua gracilis*) dominating this system. Associated graminoids may include purple three-awn (*Aristida purpurea*), sideoats grama (*Bouteloua curtipendula*), hairy grama (*Bouteloua hirsute*), buffalograss (*Bouteloua dactyloides*), needle-and-thread grass (*Hesperostipa comata*), western wheatgrass (*Pascopyrum smithii*), James' galleta (*Pleuraphis jamesii*), alkali sacaton (*Sporobolus airoides*), and sand dropseed (*Sporobolus cryptandrus*). Although mid-height grass species may be present, especially on more mesic land positions and soils, they are secondary in importance to the sod-forming short grasses.

Native Invasive Mesquite Shrubland is dominated by native flora extending outside of normal distribution patterns due to altered land management or suppression of natural processes, such as fire or flooding. In this case, mesquite (*Prosopis glandulosus*) is dominant usually because of overgrazed and/or fire suppressed prairie soils.

Rolling Plains Mixed Grass Prairie can contain grass species such as sideoats grama, little bluestem (*Schizachyrium scoparium*), purple three-awn, sand dropseed, big bluestem (*Andropogon gerardii*), silver beardgrass (*Bothriochloa laguroides* ssp) blue grama grass. Numerous forb and sedge species (*Carex* spp.) can also occur within the mixed grass system in the Western Great Plains. Although forbs do not always significantly contribute to the canopy, they can be very important. Some dominant forb species include western ragweed (*Ambrosia psilostachya*), Indian blanket (*Gaillardia pulchella*), Narrow-leaved purple coneflower (*Echinacea angustifolia*), and rush skeletonplant (*Lygodesmia juncea*).

Urban Low Intensity is urban development, including single family sub-division developments. Usually less than 50% impervious cover. Urban High Intensity is urban development, usually greater than 50% impervious cover.

The vegetation surrounding playa lakes varies according to the amount of rainfall and the existing moisture regime. Moist and flooded conditions in playas favor vegetation representative of other North American wetlands; barnyard grass (*Echinochloa crusgalli*), smartweeds (*Polygonum* spp.), cattail (*Typha latifolia*), spikerush (*Eleocharis palustris*), arrowhead (*Sagittaria latifolia*), and dock (*Rumex* spp.). Due to the unpredictability and rapid changing of the moisture regime, playa lakes are dominated by annuals. A majority of the playas in the project area are cultivated and no longer hold water. These playas usually contain crops or upland vegetation (Haukos and Smith 1992).

Although there do not seem to be any threatened or endangered plant species present in the project area, it is important to analyze the vegetative communities for the presence of habitat utilized by threatened and endangered species as well as Species of Greatest

Conservation Need (SGCN). If critical habitat was found, it would be protected under the Endangered Species Act (ESA) and federal permits may be required to carry out construction. Healthy stands of vegetation are also necessary to help prevent erosion and sedimentation as a result of road building and the disturbances that occur along with it. Efforts would be taken to avoid and minimize disturbance of vegetation and soils during construction. All disturbed areas would be re-vegetated, according to TxDOT specifications, after construction is complete. In accordance with EO 133112 on Invasive Species, the Executive Memorandum on Beneficial Landscaping, and the 1999 FHWA Guidance on Invasive Species, only non-invasive species would be planted within the ROW

Due to the possibility of important remnant vegetation, in this case, communities listed as suitable habitat for Species of Greatest Conservation Need (SGCN), in the project area, A Tier I Site Assessment would be necessary, as stated in the TxDOT and TPWD Memorandum of Understanding signed in 2013, to determine possible impacts and the need for coordination with TPWD (TxDOT and TPWD 2013).

Efforts should be taken to avoid and minimize disturbance of vegetation and soils during construction. All disturbed areas should be re-vegetated, according to TxDOT specifications, after construction is complete. In accordance with EO 133112 on Invasive Species, the Executive Memorandum on Beneficial Landscaping, and the 1999 FHWA Guidance on Invasive Species, only non-invasive species should be planted within the ROW.

1.8. Wildlife Habitat

The proposed project area and adjacent areas are located in a mostly rural agricultural setting. The predominant wildlife found in these types of areas includes species that have adapted to rural agricultural environments and adjacent wooded and riparian areas. These include species such as mice (*Mus* spp.), rats (*Rattus* spp.), jackrabbits (*Lepus* sp.), rabbits (*Sylvilagus* spp.), raccoon (*Procyon lotor*), snakes (Suborder Serpentes), insects (Order Insecta), and a variety of birds (Class Aves).

The majority of the wildlife habitat within the proposed project area is concentrated in and around the playa lakes. Playa lakes are critical for migrating birds and other wildlife. Plants found around playa lakes are extremely beneficial to nesting birds and other wildlife. Invertebrates and amphibians are also found in playa lakes and important to wildlife. Waterfowl regularly utilize this water and food source during their regular migration patterns. These wetlands serve as a resting point and an opportunity to replace lost calories from their long flights. This region has a history of droughts and hard freezes, both of which may make playa lakes unavailable to migrating species. These birds will fly long distances daily to find suitable habitat. It is for this reason that conservation of these playa lakes is important (TPWD 2014a). Yellow house draw is an important riparian corridor. It also contains habitat important to wildlife.

None of the options seem to impact critical habitat areas as defined by USFWS.

1.9. Threatened and Endangered Species

The Endangered Species Act (ESA), passed in 1973, regulates activities affecting endangered and threatened plants and animals. ESA prohibits the importing and exporting, taking, possessing, delivering, carrying, transporting, shipping, receiving, and selling or offering for sale any endangered flora or fauna.

The Migratory Bird Treaty Act (MBTA) states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance with the act's policies and regulations. All of the bird species in Table XX are considered migratory. Further, there are other migratory bird species in addition to those listed above that could utilize the proposed project area.

Coordination with TPWD was initiated on March 20, 2014 for information from the Texas Natural Diversity Database (TXNDD) regarding state and federal threatened and endangered species. Information was requested from the Roundup, Wolfforth NW, Wolfforth NE, Wolfforth, Busterville, Slide, Woodrow, and Slaton USGS 7.5-minute topographical quadrangle maps which include the project area. Based on the March 30, 2014 response from TPWD, no threatened and endangered species were listed as an element of occurrence in the proposed project area, although the plains spotted skunk, which is being considered for federal endangered species listing and a prairie dog town are listed as elements of occurrence in the proposed project area (**Table F-6**) (TPWD 2014c).

Table F-6: Element Occurrences within 1.5 miles of Project

E OID	Scientific Name	Common Name	Status	Options Potentially Affected
7686	<i>Spilogale putorius interrupta</i>	Plains Spotted Skunk	None	1A, 1B, 1C, 1D
523	<i>Cynomys ludovicianus</i>	Black-tailed Prairie Dog	None	3C

Source: TPWD, Texas Natural Diversity Database, 2014

The plains spotted skunk element of occurrence record reports in 1963, one adult female plains spotted skunk was observed in a tree and trapped two nights later approximately 1.5 to 2 miles west of Shallowater. The element of occurrence shapefile shows the area in a 6-mile radius from that location. The plains spotted skunk prefers open fields, prairies, and

croplands. The plains spotted skunk is being considered for federal endangered species listing and could possibly be listed by the time construction begins.

The element of occurrence record for the black-tailed prairie dog town shows it located approximately 0.5 miles west of the intersection of FM 1585 and FM 1730. Segment 3C is within approximately 0.75 miles of the prairie dog town. Prairie dog towns are extensive underground burrows made by prairie dogs. It is recommended that the prairie dog town be avoided by not choosing Segment 3C; although no prairie dogs were observed at this site during the March 31 - April 2 field investigation. A prairie dog town was observed just north of Reese Technology Center, on the west side of County Road (CR) 1300. It would not be impacted by any of the options.

A review on May 28, 2014 of the TPWD Annotated County List of Rare Species for Lubbock County revealed 8 species listed as candidate, threatened, or endangered in Lubbock County (TPWD 2014d). Species from both lists are recorded in Table F-7.

Table F-7: Candidate, Threatened, or Endangered Species of Lubbock County

Species	State Status	Federal Status	Potential Habitat Present	Habitat
Birds				
American Peregrine Falcon <i>Falco peregrinus anatum</i>	ST	DL	No	Nests on high cliffs or tall buildings. Can be found on coastlines, mountains, or open areas near water during migration.
Arctic Peregrine Falcon <i>Falco peregrinus tundrius</i>	--	DL	No	Nests on high cliffs or tall buildings. Can be found on coastlines, mountains, or open areas near water during migration.
Bald Eagle <i>Haliaeetus leucocephalus</i>	ST	DL	No	Prefers tall trees, cliffs, coasts near large bodies of water.
Peregrine Falcon <i>Falco peregrinus</i>	ST	DL	No	Prefers tall trees, cliffs, coasts near large bodies of water, but could use project area for a brief stopover during migration.

Species	State Status	Federal Status	Potential Habitat Present	Habitat
Whooping Crane <i>Grus americana</i>	SE	FE	Yes (transient)	Prefers estuaries, prairie marshes savannah, grasslands, cropland pastures, but could use project area for a brief stopover during migration.
Mammals				
Black-footed ferret <i>Mustela nigripes</i>	--	FE	Yes	Extirpated from Texas.
Gray wolf <i>Canis lupus</i>	SE	FE	No	Extirpated from Texas.
Reptiles				
Texas Horned Lizard <i>Phrynosoma cornutum</i>	ST	--	Yes	Inhabit areas from open desert to grasslands and shrublands.
<p><i>TPWD</i> (DL = Delisted Taxon, FT = Federal threatened, FE = Federal endangered, FC = Federal Candidate species SE = State endangered, ST = State threatened, SC = State Candidate Species and -- = No regulatory status) Source: TPWD May 28, 2014</p>				

The whooping crane (*Grus Americana*) is federally listed as endangered. It breeds in Wood Buffalo National Park in northern Canada and winters in Texas on and near the Aransas National Wildlife Refuge between Rockport and Port Lavaca. Whooping cranes often stop overnight in wetlands and feed in agriculture fields during migration. This species could potential occur briefly in the project area during migration (TPWD 2014e).

No federal or state-listed candidate, threatened, or endangered, species were observed within the proposed project area during the March 31 - April 2 field visit. Nor was there any designated critical habitat at the project site. Although, the habitat on the study area could be suitable for brief use (i.e. transitory feeding, loafing, etc.) by the listed birds, it is unlikely that any of these species would use the site for any extended periods (i.e. nesting or lengthy roosting) (USFWS 2014b).

A review of the species listed as a Texas Conservation Action Plan's (TCAP) SGCN that occur in Lubbock County revealed 7 species. They include the ferruginous hawk (*Buteo regalis*), mountain plover (*Charadrius montanus*), snowy plover (*Charadrius alexandrinus*), Western burrowing owl (*Athene cunicularia*), black-tailed prairie dog (*Cynomys ludovicianus*), cave myotis bat (*Myotis velifer*), and swift fox (*Vulpes velox*) (TPWD 2014f). The TCAP "identifies fish and wildlife resources of the state, including SGCN and their habitats, outlines activities

to improve SGCN status and prevent federal threatened or endangered species listings where possible, and articulates conservation needs” (TxDOT and TPWD 2013).

Due to the possibility of SGCN and their habitats in the project area, a Tier I Site Assessment would be necessary, as stated in the TxDOT and TPWD Memorandum of Understanding signed in 2013, to determine possible impacts and the need for coordination with TPWD (TxDOT and TPWD 2013).

In a preliminary evaluation of possible impacts by the 4 segments and their corresponding options, it was found that segments 2, 3 and 4 did not impact any potential wildlife habitat. Segment 1’s options were found to have varying impacts on the acres of potential habitat with option 1A having the least impact at 310.4 acres, followed by option 1B at 312.6 acres, option 1C at 324.7 acres and option 1D had the greatest amount of impact at 326.5 acres.

1.10. Hazardous Materials

Hazardous waste sites are regulated by the 1980 Resource Conservation and Recovery Act (RCRA) and the 1980 Comprehensive Environmental Response and Recovery Act (CERCLA), as amended in 1986. CERCLA, generally referred to as the Superfund Act, is a federal law that provides remedies for uncontrolled and abandoned hazardous waste sites. The Environmental Protection Agency (EPA) administers and enforces CERCLA as well as RCRA in Texas, in cooperation with the Texas Commission on Environmental Quality (TCEQ). The EPA maintains several hazardous materials databases to aid in hazardous materials site classification, prioritization, and cleanup. These lists include facilities that generate, store, transport, treat, and/or dispose of hazardous wastes and sites with reported hazardous substance releases or spills with varying degrees of risk. For example the TCEQ maintains a list of State Superfund sites, as well as lists of Petroleum Storage Tanks (PSTs), including underground and above ground storage tanks, Leaking Petroleum Storage Tank (LPST) sites and a permit application list for municipal solid waste landfills. Clearly the LPSTs, landfills and Superfund sites pose a significantly greater risk than PSTs. Similarly, storage sites would include farm and ranch suppliers, dry cleaners and swimming pool supply stores listed as Resource Conservation & Recovery Act Generator Facilities, would pose less risk for impacts than sites that are actually contaminated, such as spills or landfills. The TCEQ also maintains a list of contaminated properties that are being or have been cleaned up under the Voluntary Cleanup Program (VCP), as well as a list of facilities or individuals that have been notified of violations observed during inspections (NOV). The agency records were obtained from a commercial source. Since hazardous materials sites such as gas stations with PSTs, and drycleaners and garden shops that use and store chemicals would not affect any transit alternatives, only sites such as LPSTs and toxic releases adjacent to the existing right of way were considered in the constraints analysis.

A review of federal and state regulatory databases was conducted to determine the potential for encountering hazardous materials and substances within the study area. In addition, a field investigation of the study area was conducted on March 31 - April 2 to confirm the location of selected listed facilities and to observe the general environmental conditions at these sites and within the study area. The regulatory listings are limited and include only those sites that were known to the regulatory agencies, at the time of publication, to be contaminated or in the process of evaluation for potential contamination. The databases were searched within the standard search radii of the project area per the American Society for Testing and Materials (ASTM) standard 1527-13 requirements. **Table F-8** summarizes the review of the hazardous materials sites identified.

Table F-8: Summary of Hazardous Material Sites from Regulatory Database Search

Database	Acronym	Number of Sites	Options Effected
Federal			
EPA Docket Data	DOCKETS	2	--
Emergency Response Notification System	ERNSTX	2	--
Facility Registry System	FRSTX	38	--
Integrated Compliance Information System	ICIS	5	--
PCB Activity Database System	PADS	2	--
RCRA Sites with Controls	RCRASC	1	--
No Longer Regulated RCRA Generator Facilities	NLRRCRAG	1	--
Resource Conservation & Recovery Act-Generator Facilities	RCRAGRO6	2	--
Comprehensive Environmental Response	CERCLIS	3	3C
No Further Remedial Action Planned Sites	NFRAP	3	--
Department of Defense Sites	DOD	1	--
Resource Conservation & Recovery Act-Corrective Action Facilities	RCRAC	1	--
State			
Notice of Violations	NOV	4	--
Spills Listing	SPILLS	9	--
Tier II Chemical Reporting Program Facilities	TIERII	4	--

Database	Acronym	Number of Sites	Options Effected
Industrial and Hazardous Waste Sites	IHW	5	--
Permitted Industrial Hazardous Waste Sites	PIHW	1	--
Petroleum Storage Tanks	PST	10	--
Closed & Abandoned Landfill Inventory	CALF	2	--
Leaking Petroleum Storage Tanks	LPST	10	3C
Recycling Facilities	WMRF	1	--
Industrial and Hazardous Waste Corrective Action Sites	IHWCA	2	--
		109	3
<i>Source: GeoSearch, Radius Report, 2014</i>			

Based on the regulatory database review and field observations of the study area, three sites identified were characterized as posing a risk to the proposed project area. Two leaking petroleum storage tanks (LPST) and one comprehensive environmental response, compensation, & liability information system (CERCLIS) site are in the study area. CELCLIS is the database containing information on Superfund sites. One LSPT is located at FM 1585 and FM 1730 and a LPST and CERCLIS are located at FM 1585 and US 87. Only Segment 3C could be affected by known hazardous materials sites. Prior to any acquisition a Phase 1 Environmental Site Assessment maybe needed for additional ROW to be acquired.

1.11. Cultural Resources

Introduction and Regulatory Requirements

The proposed project is in Lubbock County, approximately seven miles to the west and south of downtown Lubbock, and approximately four miles outside of Loop 289. The study area is largely comprised of rural, agricultural land, and three small towns, each with populations under 7,000, generally located at the proposed project intersections.

Projects that are federally permitted, licensed, funded, or partially funded with federal money must comply with Section 106 of the 1966 National Historic Preservation Act (NHPA) as amended. Section 106 requires that every federal agency consider the effects of their actions on historic properties. Historic properties are defined in 36 CFR 60 as including buildings, structures, objects, historic districts or sites at least 50 years old, and as listed on or eligible for inclusion in the National Register of Historic Places (NRHP). Section 106 also requires federal agencies to seek comments from an independent reviewing agency, the Advisory Council on Historic Preservation (ACHP). The ACHP has developed a process for carrying out the agency's Section 106 responsibilities which is defined in its regulations

entitled Protection of Historic Properties, 36 CFR 800. Historic properties are also protected by Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966. Section 4(f) requires the avoidance of public parks, recreation areas, wildlife and waterfowl refuges, and historic sites, unless avoidance is not feasible and prudent (FHWA 2012: 11). Review and coordination of this project followed approved procedures for compliance with federal laws.

Under the Antiquities Code of Texas, any historic or prehistoric property located on publicly-owned land may be determined eligible as a State Antiquities Landmark (SAL). Conditions for formal landmark designation are covered in Chapter 26 of the Texas Historical Commission's (THC) Rules of Practice and Procedure for the Antiquities Code of Texas. All groundbreaking activities affecting state land must be authorized by the THC's Department of Antiquities Protection. Authorization includes a formal Antiquities Permit, which stipulates the conditions under which survey, discovery, excavation, demolition, restoration, or scientific investigations would occur. The following sections describe both archeological and non-archeological historic properties.

1.12. Archaeology

This section of this report is a preliminary assessment of potential impacts to archeological historic resources. This study is intended to identify the types of archeological resources that could be encountered by various project alternatives and their locations to help minimize impacts during the early planning phase of the project. It examines area physiography, geology and soils focusing on their ability to preserve archeological deposits and known archeological sites, first to determine whether or not known sites are located within any of the proposed project alignments, and second by looking at the physiographic locations of known sites, it identifies patterns that could implicate specific physiographic settings as high probability for having archeological sites. This investigation examines known archeological and historical sites and reports the likelihood of finding historic and prehistoric archeological sites along proposed route options.

The research was conducted utilizing the THC's Archeological Sites Atlas and Historic Sites Atlas. A records search of the Historic Sites Atlas was conducted for any published and unpublished data on cultural resources sites listed on or determined eligible for listing on the NRHP, SAL, or as Recorded Texas Historic Landmarks (RTHL), Official Texas Historical Markers (OTHM), neighborhood survey sites and cemeteries. The Archeological Sites Atlas files include previously recorded archeological sites, including any archeological sites listed in the NRHP. These files do not contain a comprehensive listing of all sites; they list only known sites—mostly sites recorded for other projects under public agency jurisdiction.

1.12.1. Physiography

The project area is located on the Southern High Plains which is a homogeneous region of more than 30,000 square miles, located in northwest Texas and eastern New Mexico

(Newman 1974: 4Yellow House3). This portion of the Southern High Plains is known as the Llano Estacado, or "Staked Plains." The Llano Estacado extends from the Canadian River in the north to the Caprock Escarpment on the east, the Mescalero Escarpment on the west and the Edwards Plateau on the south. No major rivers cross the Llano Estacado as it is a relatively level undulating plain that is interrupted by numerous depressions called "playa lakes", and is bisected by shallow arroyos and canyons, such as Yellow House Draw, a tributary to the Double Mountain Fork of the Brazos River. Elevations in the project area range from about 3,250-feet at Yellow House Draw to 3,330 feet above mean sea level along the western section of the corridor.

According to the Geologic Atlas of Texas, Lubbock Sheet (Eifler et al. 1967) the Lubbock Outer Route project transverses an area comprised mostly of Pleistocene-age sediments. One of the largest surface deposits in the area is the Blackwater Draw Formation which is made up of sand with fine to medium-grained quartz and large caliche nodules. Other similar aged deposits present include Quaternary Alluvium floodplain deposits as well as playa deposits. Mostly the geologic deposits in this region are the result of eolian or windblown mass transportation processes. Other older deposits within the area consist of Pliocene to Miocene aged fluvial sand, silt, clay and gravel capped by caliche known as the Ogallala Formation. These deposits are only on the surface in areas where ephemeral streams have eroded away Quaternary deposits.

Underlying these surface deposits is the Ogallala Aquifer. The aquifer stretches across eight states from the Texas Panhandle to parts of southern South Dakota. This unconfined aquifer is a Tertiary Deposit containing fluvial sediments and fine grained eolian silts and clays (Mehta et al. 2000). The upper part of this aquifer is made up of hard, caliche-cemented beds known as the "caprock." Recharge in the project area occurs primarily through infiltration through the playa lakes which fill with water after periods of precipitation. This water stands for a considerable time where a portion is allowed to infiltrate into the underlying aquifer by percolating through the soil around the perimeter of the playa lake.

Beneath the aquifer lies low permeable shale from the Triassic and Cretaceous ages. Prior to the deposition of the sediment that now makes up the Ogallala Aquifer the area contained many hills and wide valleys. This topography was buried as it existed in the Cretaceous period and now forms a very irregular surface beneath the aquifer. Due to this irregular bottom the aquifer thickness can range anywhere from one foot to 1,300 feet (Guru et al. 2000).

The project area is in the Southern Great Plains, a region that experiences persistent high velocity winds and periodic droughts. Combined with a lack of natural vegetation due to anthropogenic land use (e.g. agriculture use) these factors contribute to the severe wind

erosion this region experiences. Most of the area around the optoins is a level plain with numerous enclosed depressions which make up the playa lakes.

The soils within the project area consist of several mollic soils that developed under grassland cover. They are deep, rich, calcareous eolian soils that are high in organic matter derived from plant roots typical of the Southern Great Plains. They are interspersed by alluvial or lacustrine soils along arroyos and playas. Generally, upland soils series are deep, nearly level to gently sloping, moderately permeable, loamy, slightly alkaline soils, with thick mollic A-horizons which fine downward to a B-horizon at 60-80 inches. Upland soil series include Acuff, Amarillo and Olton which make up about 70 percent of the project corridor. They are archeologically important because they grew the grasses that fed mass herds of bison and other animals since the late Pleistocene and Holocene ages, and were the basis for settlement of the south plains by ranchers and farmers during the late 19th and early 20th centuries.

Other important soil types are Estacado, Mansker and Randall. Estacado soils are deep, loamy soils that formed by eolian processes. They are found on plains, playa side slopes and foot slopes, and in valleys. These eolian soils form in calcareous loamy wind-borne sediments. The solum, or A-horizon would typically be shallow, about 16 inches thick, over a calcic B horizon with high clay content. Mansker soils are deep, loamy soils on playa slopes and draws formed from wind-blown sediments derived from the Blackwater Draw formation. These soils form on uplands in calcareous loamy material and may have a solum thickness of over 60 inches. Finally Randall clay and Randall silt make up the playa floors and the floors of smaller depressions called gilgai. They are poorly drained, clayey, lacustrine Quaternary-age deposits that may occur at the water table and may seasonally pond water as their permeability decreases and the soils become saturated. These last three soils are particularly important to regional archeology because they occur near playas and draws, which provide water not only for endemic fauna, but for Native American hunters, and early settlers until wells were drilled into the Ogallala to provide a reliable and permanent water source.

According to Vance Holiday (1985), who has conducted extensive studies of Holocene geomorphology in the south plains, “the primary settings for deposition in the Holocene are in draws, playas, dune fields, and dunes on the lee sides of playas” and these depositional environments are most likely to contain preserved archeological deposits representing the area’s prehistoric settlement.

1.12.2. Prehistoric Archeological Contexts

The archeology of the south plains is not well understood because the cultural paradigms are based on very few and disparate detailed archeological investigations. The study area within Lubbock County has not been subjected to detailed archeological studies, so the cultural background for the area has to be constructed from various regional sources related to south plains archeology. Although there has been disagreement in the literature

regarding nomenclature, archeologists typically divide the cultural chronology of the south plains Texas region into five periods: Paleo-Indian, Archaic, Late Prehistoric, Proto-Historic and Historic. While the three prehistoric periods tend to be characterized by technological adaptations to changing ecologies, the Proto-Historic and Historic period is defined by European exploration, immigration and settlement in the region and their effects on the native populations. Site types associated with these periods range from kill and butchering sites associated with hunting and processing of game to camps and villages, and lithic procurement or tool manufacturing sites. The site types would reflect the subsistence strategies of the inhabitants which changed over time. Historic-age resources are described as non-archeological historic resources. Prehistoric sites are usually identified by stone or pottery artifacts, but may include faunal remains and even human burials.

1.12.3. Paleo-Indian

The earliest human occupations in Texas, termed “Paleo-Indian”, have been dated to the late Pleistocene, from about 8,000 to 12,000 Before Present. Subsistence strategies included seasonal movement in small bands probably composed of several families. Archeological deposits reflect a broad, generalized adaptation to hunting and gathering as reflected in the wide distribution of Clovis points, a single parallel-flaked fluted projectile point type which occurs across the entire North American Continent (Wormington 1957). Prehistoric settlement in southern High Plains is supported by the presence of distinctively shaped dart points at the Lubbock Lake Landmark site, a stratified site along a bend of Yellow House Draw in Lubbock. This site has provided occupational evidence spanning over 10,000 years, as Clovis, Folsom, Firstview and other Paleo-Indian points also have been reported from the site in association with extinct Pleistocene megafauna (Johnson and Holiday 2010). Although the emphasis on large game hunting in the subsistence strategy during the Paleo-Indian stage is undeniable, it has been demonstrated that hunting societies obtain most of their caloric intake from plant materials (Lee 1968). The deficit of plant processing artifacts in the Paleo-Indian assemblage indicates that perishable materials, such as basketry, leather and wood were used for processing and storing plants, so the archeological record is dominated by stone artifacts.

1.12.4. Archaic

At the end of the Pleistocene, a warmer and drier climate ensued and archeological remains began to exhibit an increase in regional diversity. A warmer drier climate ensued during the early Holocene, known as the Altithermal. During this period, Bison evolved a reduction in body size, which appears to have concurred with the dominance of a short-grass ecosystem, as opposed to the tall greases of the late Pleistocene. Short grass is less nutritious, and dependence upon the abundant but less nutritious short grasses caused bison to become a smaller species as smaller mammals require fewer calories (Johnson 2004). Moreover, the tool kit reflects an increased reliance on plant gathering and processing. Although the change from a hunting-based society to a hunting-gathering society was gradual, over more than a thousand years, in the archeological record this change is reflected by localized

differences in tool type and morphology. Archaic culture, dating from about 8,000 years ago until about 800 years ago is usually subdivided into early, middle and late periods. This division is based on changes in projectile point morphology and the appearance of ground stone tools and burned rock in the Middle Archaic indicating a greater reliance on plant gathering and processing. In the early Archaic, a diversification of subsistence patterns and an increased reliance on modern game species (including bison) and gathering of edible plants occurred. Artifact types reflect this diversification as the tool kit reflected plant processing. Archeologists have developed a projectile point sequence which represents the chronology of the cultures of the southern plains (Black et al 1994). The South plains Archaic sites may show closer relationships to the cultures of Central Texas (Campbell and Judd 1977). Hughes (1991) clearly envisions a five-phase sequence of Initial, Early, Middle, Late and Terminal Archaic based on Frank Wier's (1976) postulation for the Central Texas Archaic, although their Early Archaic and Late Archaic complexes exhibit different artifact assemblages (Hughes 1991: 13). Although there are regional and temporal differences, Archaic people primarily lived along the major and minor stream valleys where they were able to hunt and gather native foods. The tool kit reflects an increased reliance on plant processing and regional stylistic differences in projectile point morphology. Large Archaic sites are generally located on terraces or ridges that overlook draws and rivers. Smaller lithic scatters have been recorded in upland areas throughout region near playas and in dunes. These sites appear to be Archaic in age, but cannot be dated because of limited artifact assemblages or they have not been thoroughly studied. By the end of the Archaic, human population had increased as reflected by the larger number of sites and localized stylistic artifact distinctions. The Lubbock Lake Landmark site includes strata that span the entire Archaic period.

1.12.5. Late Prehistoric or Ceramic Period

By about A.D. 700, horticultural practices were adopted along the tributaries of the upper Brazos River that cross the Llano Estacado, the Canadian River and the Red River Valley of North Central Texas, through the spread of technology, as suggested by Martin (1994, 108), or immigration, as postulated by Bell (1961, 58). Late Prehistoric sites are distinguished by the presence of arrow points and pottery. Ceramics show influences from the Southwest (Kreiger 1946: Crabb 1968). Human burials and associated grave goods appear for the first time in the local archeological record during the Late Prehistoric period.

Between A.D. 700 and A.D. 1250, semi-permanent villages began to appear near springs and on large terraces in North Central Texas (Prikryl 1990, 77), and along ridges and promontories overlooking the Canadian River, mesa tops, and small terraces with steep banks (Kreiger 1946, 72) and by around A.D. 1100, bison returned to the south plains (Dillehay 1974). The increased hunting efficiency afforded by the bow and arrow, the return of bison to the south plains, and the introduction of farming, facilitated not only an increase in population, but an increase in sedentary life, as village sites became more and more permanent and large seasonal villages were assembled along major rivers and streams. As

society became less mobile and more sedentary, a reliance on ceramics service and storage vessels increased. Pottery became more frequent toward the end of the Late Prehistoric period, as what is described as a “Southern Plains Village” lifestyle began to emerge which lasted from about A.D. 1250 until about A.D. 1700 (Prikryl 1990, 80). The horse was reintroduced to the south plains following European exploration. Diagnostic traits include an emphasis on bison hunting, Washita, Fresno and Harrell arrow points, bison scapula hoes, “Plains-like” lithic artifacts, and settlement on sandy terraces above the floodplains.

1.12.6. Proto-historic

In 1541 when Coronado’s expedition arrived in the Texas Panhandle, he described people living in the south plains area as nomadic “cow” hunters (the Spanish had never seen bison), and people who lived in skin tents and used dogs to pull their possessions as they followed the herds. The Indians Coronado encountered on the south plains were the Querecho Apache on the Llano Estacado, and the Teya Apache near the headwaters of the Brazos (Newcomb 1858, 11). The Apache spoke Athapaskan languages related to languages from Canada and Alaska. Apaches dominated the southern plains by the end of the 1500s.

The other dominant tribe on the south plains was the Comanche. The Comanches are a Shoshonean-speaking tribe related to the Indians of the Great Basin, and Nahuatl tribes of Mexico. The Comanche were the first Indians on the south plains to obtain guns, and as a result they pushed Apache southward or westward where they coalesced with other tribes (Newcomb 1958: 12). By the mid-1700s, the Comanches had driven the Apache tribes south out of the Texas Panhandle and the Llano Estacado. According to the historian S. C. Gwynne,

“Comanches were incredibly warlike. They swept everyone off the Southern plains. They nearly exterminated the Apaches. Because of their incredible military mastery, which derived from the horse – they were the prototype horse tribe, the tribe that could do more with the horse than any other tribe could. Because of that, it was a military community and their old way of life was supplanted by the new way of life which mainly had to do with war. So they pretty much hunted buffalo ... and started war (Gwynne 2011).”

The Comanches developed alliances with the Kiowa and together they dominated the south plains until they were finally displaced by white settlers and removed to reservations in the late 19th century. The Comanche had entered the plains as meager hunter-gatherers in the beginning of the 18th century—they adopted the horse and by the end of that century emerged as the dominant force whose empire reached from south Texas to Nebraska.

1.12.7. Previous Investigations

There have been numerous archeological studies of the Lubbock region, but the two that have best defined regional archeology are the Lubbock Lake Site, in Lubbock; and the Antelope Creek Site, located on a small Canadian River terrace of Antelope Creek in Hutchinson County. The Lubbock Lake Site, one of the most intensively researched archeological sites in the New World, was discovered in 1936, when City of Lubbock work crews were dredging for a municipal reservoir, and a group of boys found a parallel-flaked, fluted lanceolate projectile point in their excavation backdirt. They took the point to Professor W.C. Holden at Texas Technological College in Lubbock who identified it as a Folsom point, typical of the hunters of late Pleistocene megafauna. In light of this important discovery, only limited excavations of the site were conducted until 1972.

Beginning that year, researchers on the Lubbock Lake project set out to explore and study the strata systematically. The site surpassed their expectations, yielding information on 12,000 years of natural history. It contained five major stratigraphic units: five different soils revealed that the area was once cool and marshy and that gradual warming and drying followed, with periods of blowing dust and the steady reduction of vegetation throughout. The bones of mammoths and extinct species of bear, bison, reptiles, and various aquatic creatures and artifacts of cultural interaction offered clues to animal and human adaptation of the changing climate and ecosystem on the Southern High Plains (Johnson 1987).

Lubbock Lake was declared a National Historic Landmark in 1977 and a State Archeological Landmark (now called "State Antiquities Landmarks") in 1981. In 1992, the City of Lubbock, who had owned the land since the early 1900s, transferred possession of over 300 acres of Yellow House Draw to Texas Tech University so that it could be preserved in perpetuity. The Landmark is now owned and operated as a research and learning center by the University as a unit of the Museum of Texas Tech University (Bigness 2005).

In 1946, Alex D. Krieger of the University of Texas published information derived from excavations of the Antelope Creek Site to define the Antelope Creek Culture and what he termed the Antelope Creek Focus. Antelope Creek Focus sites contain Pueblo Painted pottery, and ruins dating from about 1300 to 1450 A.D. Ruins are composed of from 6 to as many as 80 multi-roomed one-story houses of stone and adobe, with circular, slab-lined storage cists, plaster-lined walls and floors, and often with flexed or semi-flexed burials under house floors (Kreiger 1946, 72). Kreiger believed that Antelope Creek Focus was a combination of Plains and Puebloan cultures with a subsistence based on both maize agriculture and hunter-gathering. Antelope Creek Focus artifacts reflected this joint dependence and included small triangular side-notched arrow points, bone hoes, other artifacts of bone, antler, and chipped stone, carved elbow pipes of stone, and the fingernail punctate utilitarian and cord-marked pottery typical of plains cultures (Kreiger 1946, 73). However, because there were a few pieces of pueblo-style pottery typical of New Mexico's

Pueblo Indians, he believed that there was selective borrowing between the two cultures (Kreiger 1946, 73). Antelope Creek sites are usually situated on ridges and promontories overlooking the Canadian River, mesa tops and small terraces with steep banks (Kreiger 1946, 72), and appear to date to the mid-14th century, or about 650 years ago (Tunnel 2000, 14). Several other village sites in the Texas Panhandle exhibit similar structural and artifactual characteristics, with Puebloan trade ware, along with locally-made ceramics that date to the same general period (Crabb 1968).

1.12.8. Archaeological Sites

There are a total of 140 previously-recorded archeological sites in Lubbock County; however, none of those sites are within any of the examined options. The 37 sites closest to the corridor were identified to characterize the archeological sites that might be found within any of the proposed alternatives (Table F-13). These sites represent occupations that range in age from Paleo-Indian through Historic periods, and represent over 50 years of research and regulatory compliance.

Overall, the known archeological resources of the project corridor vicinity are very significant. Of the 37 known archeological sites, only ten have been determined ineligible for state and/or federal listing (Table F-13). This means that over 1 in 4 (27 percent) of known sites possesses potential or is shown to have the ability to contribute to our understanding of prehistory (NRHP eligibility Criterion D). Site recommendations for “SAL and/or NRHP eligibility” (Table F-13) includes numerous sites that are included in the Lubbock Lake National Historic Landmark or the Canyon Lake National Register District. Additionally, there are sites such as 41LU94, for which the THC has made a determination of eligibility even though there is no site record in the files.

Other site records do not include recommendations. For example, two sites (41LU33 and 41LU34) lack any recommendation and the records do not contain enough data to determine what kind of information the site might contain; therefore, there is not enough information to determine potential site significance. One site (41LU6) was a cache of stone material for tool-making. Once the cache was collected, the site contained no more information, so it would not meet NRHP eligibility Criterion D, for information toward understanding history or prehistory.

1.12.9. Corridor Evaluation

Since no archeological sites are known to exist within any of any of the proposed corridors area site records were examined to provide clues as to the relationship of settlement patterns to the landscape. Prehistoric sites are mostly campsites or bison kill and butchering sites. Physiographically, they tend to be located either along Yellow House Draw or other tributaries, or beside playa lakes. Therefore, the primary determinant for finding Native American archeological sites is proximity to water. This water would have been used by both the bison that were endemic to the area, as well as the people who hunted them, from the end of the Pleistocene, until the Indians were extricated in the late 19th century.

Since the correlation between archeology and water is so strong, it can be said that anticipated prehistoric site impacts would be greater for project alignment alternatives that affect water resource environments including terraces, valley margins and talus along streams, and along draws and arroyos that might have offered a reliable water supply. Moreover, dunes and other land features, along the edges of playa lakes are also highly probable to contain archeological materials. Therefore, the GIS was used to create a 500-foot buffer around each type of salient water resource attribute, as described above. Although historically, ranchers and farmers were also just as dependent on water, they had the technology to extract groundwater, digging wells to provide their own water. Therefore, historic sites may be located anywhere on the landscape; however, they will often be detectable by analyzing aerial photographs and many non-archeological historic properties will be discernable on historic maps. Non-archeological historic contexts, and their associated sites and structures are addressed below in the Nono-Archeological Historic Age Resources section.

According to this analysis in Segment 1 Option A or Option C would have the greatest impact to archeological high probability areas while Option B and Option D would have fewer impacts (Table F-9). In Segment 2 there are relatively few acres of archeology high probability areas in any option. In Segment 3 Option B would have the greatest archeological impacts, while Options C and D would have the least high probability area archeological impacts. In Segment 4, Option A would impact some 20 acres of archeological high probability, while the remaining options would affect substantially less acreage, ranging from 21.2 acres in Option B, and 8.7 acres in Options D and E (Table F-9).

Table F-9: Number of Acres with Elevated Potential for Archaeological Resources

Criterion	Segments																	
	1				2				3					4				
	US 84 (North) to SH 114				SH 114 to US 62/82				US 62/82 to US 87					US 87 to US 84 (South)				
	A [Ew]	B [Ee]	C [Gw]	D [Ge]	A [Aw]	B [Ae]	C [Cw]	D [Ce]	A [G]	B [H]	C	D [I]	E [J]	A	B	C	D [E]	E [new]
Number of Acres with an Elevated Potential for Archaeological Resources	29.1	17.3	28.9	17.2	1.7	1.1	0.7	0.0	46.1	55.6	29.8	23.0	32.4	20.1	12.2	10.7	8.7	8.7

Source: Jacobs Engineering 2014.

1.13. Non-Archaeological Historic Age Resources

1.13.1. Methodology

The intention of this study is to consider non-archeological historic resources during early project planning. Historic resources can be identified by examining the historical contexts of a place. Historical contexts are trends in history involving themes, time periods, and/or geographical areas which are represented by different property types. This study does not include a complete inventory of historic properties or an assessment of significance for all the historic-age resources within the areas potentially affected by project alternatives. A

historic structures inventory and determination of historical significance would be made once a corridor alignment is recommended. A reconnaissance survey of the recommended corridor would be performed as part of the NEPA process.

A study area of one-half mile from the outermost options was chosen to foster historical contexts. It is estimated that the proposed project would begin construction of frontage roads in 2030; therefore, anything built in or before 1985 (45 years old or older) was identified as being “historic age.” A professional historian conducted a preliminary literature review and reviewed the Texas Historical Commission’s (THC) Atlas files online and the list of National Register properties for any previously recorded historic resources in the project area. Historical and recent aerial photographs and USGS maps of the study area were examined to help determine where historic-age resources are extant. A windshield survey was then performed on April 9, 2014, where photographs were taken of representative historic-age resources within the study area.

1.13.2. Previously Recorded Historic Resources

Previously recorded historic resources in the study area were identified by examining the THC’s Atlas online, the NRHP, and historical USGS maps and aerial photographs. There are two cemeteries within the study area: Peaceful Gardens Memorial Park located north of the community of Woodrow on Loop 493, and Wolfforth Cemetery located north of Wolfforth on the corner of CR 1300 and West 5th Street. Peaceful Gardens Memorial Park appears on historical aerials as early as 1978; Wolfforth Cemetery appears on 1958 topographic maps.

1.13.3. Historical Contexts

Historical contexts including Community Development; Railroads; Ranching; and Agriculture were identified and described in the *Lubbock Outer Route Feasibility Study Report* prepared in 2010 by MACTEC. Those contexts are still applicable to the current study area and therefore have not been rewritten here; however, they are summarized below. Based on the windshield survey, two additional contexts, Lubbock County during World War II (1941-45) and Lubbock County during the Cold War (1945-1991), were identified as also pertaining to the project area. The period of significance for the project area begins in the late nineteenth century when the area was settled, and ends in 1975 with this project’s 45-year cutoff date for historic age.

1.13.3.1. Community Development, Railroads, Ranching and Agriculture

Prior to European settlement, what is now Lubbock County was home to the Comanche Indians who used Yellow House Canyon for sustenance and as a trading point. In the 1870s, the Red River War resulted in their removal to an Oklahoma reservation. In 1890, white promoters settled the area and established Lubbock as the county seat. With three rail lines built by the 1920s, Lubbock became a regional marketing and shipping center. Additionally, several towns were established between 1909 and 1925 around the railroads including Monroe, Shallowater, Hurlwood, Wolfforth, Slaton, Posey and Idalou. Texas

Technological College (now Texas Tech) was established in 1925 and an Air Force base – the Lubbock Army Air Corps Advanced Flying School (now Reese AFB)—was established west of the city in 1941. In the 1940s Lubbock was the second fastest growing city in the country and by 1980, Lubbock was the eighth largest city in the state (MACTEC 2010).

Cattle ranching began in the Lubbock region as early as 1884 with the establishment of the IOA Ranch which occupied most of the southern part of the county. Several other ranches were established throughout the latter part of the century. After the turn of the nineteenth century, ranching began to shift to agriculture. Increased access to markets made possible by the railroads, as well as large amounts of available land from former ranches, and the initiation of irrigation, all primed the area for agriculture. The Ogallala Aquifer was first tapped in the 1920s and irrigated land in the High Plains. Agricultural activity increased throughout the twentieth century with cotton as the main crop (MACTEC 2010).

1.13.3.2. Lubbock County during World War II (1941-45)

The establishment of the South Plains Army Airfield and Reese Air Force Base (AFB) in Lubbock County during World War II (WWII) stimulated growth in the region's population and economy. The South Plains Army Airfield was a glider flight school during the war and is now part of Lubbock International Airport. In 1941, the City of Lubbock donated two thousand acres approximately six miles west of the city limits to establish the Lubbock Army Air Corps Advanced Flying School (later renamed Reese AFB). Along with Texas Technological College (now Texas Tech University) (1923), Reese AFB was a large employer which provided steady income for the Lubbock economy (Abbe and Carlson 2008). The AFB closed in December 1945 after training and graduating over 7,000 pilots as cadets.

In addition to military endeavors, a booming oil industry and an increase in agricultural crops helped create a diverse, stable economy within Lubbock County during and after the War (City of Lubbock 1993). Mechanized farming, expanded energy capabilities, irrigation from the Ogallala Aquifer, the conversion of cropland, and rising labor costs all influenced the replacement of hundreds of small farm operations with large industrial farms. Agricultural production in the county rose 1,500 percent between 1940 and 1960 (Abbe and Carlson 2008). Meanwhile, county population grew from 51,000 in 1940 to 101,000 in 1950, including a rise in minority population (Abbe and Carlson 2008).

Within the study area, the small towns of Shallowater, Wolfforth, and Slaton, also prospered and grew during WWII (as discussed in the *Lubbock Outer Route Feasibility Study Report*). The unincorporated community of Hurlwood, established immediately south of the Reese AFB in 1924, boasted a population of fifty and contained a post office (1926) a school (1928), two gins, two grocery stores, a grain elevator, a blacksmith shop and auto garage, a poultry store and a church all by 1940 (Abbe and Carlson 2008). The community grew along with Reese AFB, housing a large number of Reese personnel (Department of the Air Force n.d.). According to an article published in July 2013 in the *Lubbock Avalanche-Journal* online

(www.lubbockonline.com) a fertilizer plant still exists about two miles west of Hurlwood, and the Hurlwood School foundation is extant.

1.13.3.3. Lubbock County during the Cold War (1945-1991)

From the end of WWII in 1945 to the breakup of the Soviet Union in 1991, the US was in a state of hostile political and economic opposition with Russia, referred to as the Cold War. During this time, many former US WWII military bases were converted to Department of Defense sites which trained men and women for active duty (Texas Historical Commission n.d.). The former Lubbock flying school was one of these. It reopened in 1949 as the Reese Air Force Base named after First Lieutenant Augustus Frank Reese Jr. (1917–1943) from Shallowater, Texas, who was killed in action. Shortly after reopening, the community of Reese Village was developed across from the AFB as housing for military personnel. The village housed up to 2,600 service personnel and their families until the mid-1990s. A school was built across 4th Street from the village in 1954.

In addition to military infrastructure, states also began to make drastic transportation improvements during this time. The farm-to-market system was completed throughout Lubbock County in the mid-1960s (Abbe and Carlson 2008) making it easier to live in rural areas. Manufacturing production increased to include a wide variety of products (Department of the Air Force n.d.). The county population rose from 156,271 in 1960 to 179,295 in 1970. Much of the growth took place in the city of Lubbock; however, the communities of Shallowater, Wolfforth and Slaton also continued to grow during this era.

According to the *Lubbock Avalanche-Journal* online (July 2013), in the early 1980s, the Air Force implemented a 3,000-foot clear zone around Reese AFB runways. The community of Hurlwood was razed at this time since it was directly in line with one of the runways, according to the Air Installation Compatible Use Zone published by the Air Force. USGS maps from 1985 also confirm this.

At the end of the Cold War, reduced federal spending and base closures negatively impacted cities throughout the Great Plains including Lubbock. When Reese AFB closed in the mid-1990s, an estimated \$82 million a year was lost to the local economy (Wishart 2004). Further consequences affected local residents: Reese Village officials moved housing off site and the population dropped to zero. Years later, the Lubbock Reese Redevelopment Authority converted the base into a research and technology business park named Reese Technology Center with Texas Tech University and South Plains College as two major tenants (Gamble, Steven G. 2010).

1.13.3.4. Historic Resources in the Project Area

The project area is mostly rural consisting of large agricultural farms as well as some smaller residences near Wolfforth and Shallowater; one educational facility (and former military base), the Reese Technology Center; and irrigation infrastructure including wells and pump systems throughout the corridor. Using GIS software to analyze parcel data gleaned from

Lubbock County, over 177 historic-age resources (built in 1985 or before) occupy a parcel in or abutting one of the project alignments. None of these have been assessed for historical significance as this preliminary screening relies on structures meeting the 50-year age criterion; therefore, a “historic-age resource” could be *any* structure on a parcel that was built on or before 1985 to include residential, commercial, agricultural, or any other type of structure. Table F-10 lists the number of historic-age resources by decade abutting all of the proposed alternatives in the project area (the area is assessed by option in the *Alternatives Analysis* section below).

Table F-10 Number of Historic-Age Resources by Decade in or Abutting the Proposed Options Alignments

Decade	1920s	1930s	1940s	1950s	1960s	1970s	1980-85
Total	9	4	28	33	34	41	28

Source: Lubbock County Parcel Data

Temporally, the data reveals a surge of building in Lubbock during the 1940s which was typical of the nation as a whole in the post-WWII economic boom propelled by growth in industry, population, and technical innovation (Woods 2005). Before the end of WWII in 1945, there were 25 residential buildings in or abutting the proposed project corridor built in a 15-year period. The next 15-year period following the War experienced a 140 percent increase in building with the construction of 60 residences throughout the proposed project corridor. The 1960s and 70s were fairly steady, while the 1980s experienced a 31 percent decrease in building in the project corridor as the nation entered a financial and building recession.

Spatially, the data reveals that the oldest homes, dating to the 1940s and before, were mostly built along the southern extent of the project corridor, on or near FM 1585 (130th Street) between US 62 (Marsha Sharp Freeway) and US 84. The western extent of the project corridor experienced the majority of building after the War beginning in 1945, along CR 1300 between Shallowater and Wolfforth. The 1960s -80s saw infill along both extents, with slight concentrations around the intersections of TX 114 (19th Street) and CR 1300 and US 87.

1.13.3.5. Community Development; Railroad; Ranching, and Agricultural Resources

Specific resource types that represent the Community Development; Railroads; Ranching; and Agricultural historical contexts are fully discussed in the *Lubbock Outer Route Feasibility Study Report* (MACTEC 2010). In summary, the Community Development and Railroad contexts are represented by domestic, commercial, social, government, educational, religious, industrial, and transportation resources that are likely grouped within the limits of historic-age towns and communities within the project area. Ranching and Agricultural

resources are likely to be scattered throughout the study area and could include domestic, religious, industrial and agricultural resources.

Based on the recent windshield survey, historic-age domestic properties in the project area include mostly single-family homes on farms including barns and other associated agricultural outbuildings. There are also some smaller residential parcels in the project area that are of historic age. The average acreage size of a parcel is 57 acres. Most were built in the 1970s; however, several were built as far back as the 1920s. Figures F-2 to F-5 below show a range of typical residences in the project area. The houses are of a 1930s-50s vintage, with simple plans, some with agricultural outbuildings.

Figure F-2: 1950s residences on large agricultural fields with outbuildings.



Figure F-3: Brick bungalow-style residence ca. 1935, on a smaller parcel with no outbuildings.



Figure F-4: Ca. 1950s side-gabled residence.



Figure F-5: Stucco residence ca. 1930 with hipped, thatched roof.



Irrigation infrastructure is also discussed in the *Lubbock Outer Route Feasibility Study Report* (MACTEC 2010). According to the study, pre-WWII irrigation resources in the study area could include individual wells and windmills. After the war, water was drawn from wells and delivered to fields via irrigation ditches with aluminum pipes leading to individual crop rows. The High Plains irrigation systems consisted of a pump driven by internal combustion engines mounted on a concrete stand next to a well, and a network of aluminum pipes comprising the delivery system. Well and concrete stands might be extant in the project area, but according to MACTEC's Report, engines have usually been removed. Based on the windshield survey, much of the irrigation apparatus was parallel to existing roads that make up the proposed alignments.

Figure F-6: Typical irrigation pump and concrete engine stand. **Figure F-7:** typical well house and pump.



1.13.3.6. World War II and Cold War Resources

The World War II and Cold War historical contexts are represented by educational/commercial facilities in the project area. The Reese Technology Center combines educational and commercial/business uses. Formerly called Reese AFB, it was built in 1941 and is commemorated with an Official Texas Historical Marker (OTHM). It is now a research and technology business park. The original base was comprised of over 700 buildings including barracks, hangars, and other military facilities, as well as three runways forming a right triangle, aircraft parking apron, and associated taxiways.

The 1945 Army Airfields Directory described Lubbock AAF as a 1,631-acre rectangular property having 3 asphalt 6,500' runways, oriented north/south, east/west, and northeast/southwest. The field was said to have 3 metal hangars, measuring 184' x 100' each. Additional runways were added later.

Reese AFB was home to the very first female USAF pilot trainees in the late 1970s, and gained national notoriety in 1979 when the Crown Prince of Iran conducted his flight training

at the base (Freeman 2014). The Reese Education Center was constructed across 4th Street from the village in 1954 and appears to be extant. The general campus layout and air field appear to be intact; however the barrack housing at Reese Village across FM 1300 has been razed. This center and/or the school building could be eligible for the National Register under Criterion A and/or C.

Figure F-8: Entrance to Reese Technology Center.



Figure F-9: Reese AFB historical marker



1.13.4. Alternatives Analysis

Table F-11 shows the number of historic-age resources by alternative option. Option 3C contains the highest number of historic-age resources with 55, while Option 2D contains the least with 3.

All variations of Preliminary Route Option 1 appear to traverse some portion of Reese AFB and the Reese Education Center. Once a preferred alternative is chosen and a historic resources survey is completed, if either of these resources is found to be eligible as a historic district, then this would be an adverse effect under Section 106. It would also be protected by Section 4(f) of the DOT Act.

1.14. Parks (Section 4(f) and 6(f))

This section describes the process used to conduct an identification and screening analysis in order to avoid, minimize or mitigate impacts on parks that could result from the construction of the proposed

Table F-11: Number of Historic Resources by Option

Option	No. of Historic-Age Resources
1A	28
1B	22
1C	28
1D	20
2A	9
2B	4
2C	8
2D	3
3A	19
3B	23
3C	55
3D	30
3E	34
4A	34
4B	23
4C	9
4D	21
4E	11

project.

1.14.1. Regulatory Framework

The National Environmental Policy Act of 1969 (NEPA) requires consideration of project impacts on economic, social and environmental resources including community facilities and services. Federally funded transportation projects are prohibited from encroachment on Section 4(f) properties. Section 4(f) of the U.S. Department of Transportation (USDOT) Act of 1966 (Title 49 United State Code [USC] 1653(f) as amended and codified in 49 USC 303 in 1983) states the Secretary of Transportation may approve a transportation program or project requiring use of publicly owned land of a public park, recreation area, wildlife/waterfowl refuge, or land of a historic site of national, state, or local significance (as determined by the officials having jurisdiction over the park, recreation area, refuge, or site) only if there is no prudent and feasible alternative to such use and the project includes all planning to minimize harm (historic sites and wildlife refuges are addressed elsewhere in this document). Section 4(f) properties should be identified as early as practicable in the planning and project development process in order that complete avoidance of the protected resource/s can be given full and fair consideration (see 23 CFR 774.9(a)).

The State of Texas Parks and Wildlife Code, Title 3, Chapter 26 contains similar language concerning the taking of park and recreational lands. Texas Parks and Wildlife Department (TPWD) restricts the use or taking of any public land designated and used as a park (recreation area, scientific area, wildlife refuge, or historic site) unless the agency, political subdivision, county, or municipality determines there is no feasible and prudent alternative and that the project/program includes all reasonable planning to minimize harm to the land.

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965 requires that any outdoor recreational facilities acquired with U.S. Department of the Interior (USDIO) financial assistance under the LWCF Act, as allocated by the TPWD, may not be converted unless approval is granted by the Director of the National Park Service (NPS). If no practical alternative exists, replacement property of reasonably equivalent usefulness and location must be provided. State and local governments often obtain grants through the Section 6(f) of LWCF Act to acquire parkland and/or make improvements. TPWD is responsible for managing state parks and state wildlife and recreation areas, and is responsible for administering LWCA funds for the state. If any potentially affected parkland is determined to be regulated under Section 6(f), coordination with the NPS and the TPWD would be required.

1.14.2. Methodology

Both direct and indirect impacts were analyzed to determine which segments would best avoid adversely effecting parks. Under both Sections 4(f) and 6(f), direct impacts would occur if land from a 4(f) or 6(f)-designated park was incorporated or converted through acquisition of right of way, easements, or other methods. Under Section 4(f), indirect effects could also occur if a project implemented *constructive use* of a park. According to 23 CFR

774.15, “A constructive use occurs when...the project’s proximity impacts are so severe that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired [diminished].” The area of potential impact used to identify parks and recreation under the protection of Section 4(f) and/or 6(f) is a ½-mile buffer around each of the four proposed segments. Any park within or immediately adjacent to this buffer was identified and analyzed for direct and indirect effects.

1.14.3. Parks within the Area of Impact

There are two parks within a ½ mile of the four proposed segments (that could sustain either direct or indirect impacts from the proposed project). One is the Lubbock Youth Sports Complex, a city-owned sports facility located southwest of Lubbock on Milwaukee Avenue at FM 1585. As one of Lubbock’s largest public sports facilities, the complex is approximately 152 acres and contains 16 fields with 250 seats-per-field. It is used mainly for youth softball and baseball events and is home to the Lubbock Youth Softball League and South Plains Girls Fastpitch League (Sports Planning Guide 2014). The park is a city-owned, public recreation facility, and is therefore afforded protection under Section 4(f). It is unknown whether or not the Lubbock Youth Sports Complex would be protected under Section 6(f) as the park is not listed individually on the LWCF’s detailed listing of parks receiving 6(f) grants in Lubbock County, found online at <http://waso-lwcf.ncrc.nps.gov/public/index.cfm>. However, it could be included under the general listings of “Lubbock Parks” or “Lubbock Athletic Complex.” In order to verify the park’s 6(f) status, the City of Lubbock Parks Department should be contacted.

The second park is located at the corner of Research Boulevard and Mars Road, across from the Reese Technology Center. It is a former athletic field which appears to have been part of Reese Village which served as base housing for the Reese Air Force Base (AFB) beginning circa 1957 until the mid-1990s when it was razed. The park is currently owned by the Lubbock Reese Redevelopment Authority and appears to be nonfunctioning. It is approximately 122 acres with defunct tennis courts, basketball courts, at least three ball fields, and two parking lots. Because it is publically owned and even though it is nonoperational, it is could be either a Section 4(f) or 6(f) resource; however, the owner should be contacted for verification.

1.14.4. Project Impacts

Options 1B and 1D would cross the former park at Reese Village. Options 1A and 1C could take ROW.

Only Option 3C could take ROW from the Lubbock Youth Sports Complex. None of the other options would cross this facility.

1.14.5. Conclusions

Two parks were identified within a ½ mile of the four proposed project segments. The Lubbock Youth Sports Complex is a Section 4(f) resource and could also be a Section 6(f) resource. Option 3C proposes to take ROW from this facility. This is a direct impact. Under Section 4(f), the impacts could be considered *de minimis* if only minimal amounts of ROW are needed, the use of other alternatives is neither prudent nor feasible and acquisition is agreed upon by the City of Lubbock (owner) and the FHWA. However, if the impacts are not considered *de minimis*, a full Section 4(f) evaluation could be required. Furthermore, if the facility is indeed a Section 6(f) resource, coordination with the NPS and the TPWD would be required.

Although the former park at Reese Village is publically owned, it appears to be abandoned, therefore, the former park at Reese Village is likely neither a Section 4(f) nor a 6(f) resource. Further analysis under these two regulations would be necessary to determine if they would be protected; however, for the purpose analyzing project alternatives it is assumed that both sites are constraints.

Table F-12. Previously Recorded Archaeological Sites

Site No.	Occupation Period	Site Type	Material Manifestation	Setting	Project	Recorder	Water Source	Drainage Basin	Date Recorded	SAL/NRHP Eligibility Recommendation/Condition
41LU1	Paleo-Indian to Historic	Camp, kill and butchering	Folsom Points with bones of extinct mammoths, horses, bison, and camels	Terrace	Not Reported	Elton R Prewitt	Yellow House Creek	Brazos River	7/30/1970	Lubbock Lake National Historic Landmark
41LU4	Paleo-Indian		Flakes, one multipurpose tool, bone	Terrace	Not Reported	R. Gould	Yellow House Creek	Brazos River	6/4/1973	Lubbock Lake National Historic Landmark
41LU5	Prehistoric	Possible prehistoric house floor	Burnt caliche-concentration and scattered, bone concentration, covered soil maybe old floor	Dune	State School	D. Bannon	Yellow House Creek	Brazos River	6/4/1973	State Antiquities Landmark/ NRHP Eligible
41LU6	Archaic	Cache	Alibates material-flakes, utilized pieces, 1 possible Talouis flake and 8 gray chert flakes that may possibly be also alibates chert and 1 Marshall point in coyote burrow.	Terrace	Not Reported	Hoyt Jordan	Yellow House Creek	Brazos River	11/15/1974	Cache collected
41LU26	Late Historic (possible late 1800's)	Bison kill and butchering site	Bone bed (butchered)	Canyon floor	Lubbock Canyon Lakes Project	Hoyt Jordan	Yellow House Creek	Brazos River		Lubbock Lake National Historic Landmark (Destroyed)
41LU28	Late Historic (possible late 1800's)	Bison kill and butchering site	Bone bed (butchered)	Canyon floor	Lubbock Canyon Lakes Project	Hoyt Jordan	Yellow House Creek	Brazos River	4/3-6/1974	Lubbock Lake National Historic Landmark (Destroyed)
41LU29	Late Paleoindian to Ceramic	Bison kill and butchering site	Scattered chipping debris and worked stone tools and burnt caliche, Bison bones, Equus, coyote, duck, assorted lithics, 1 Bison tibia with a bullet wound	Canyon floor	Lubbock Canyon Lakes Project	Elaine Bernreuther and Charles Johnson	McCauley Well	Brazos River	11/11/1974	Lubbock Lake National Historic Landmark (Destroyed)
41LU30	Probably Archaic	Campsite	Worked stone and flakes	Terrace	Lubbock Canyon Lakes Project	Charles Johnson	Yellow House Creek	Brazos River	6/1/1974	Lubbock Lake National Historic Landmark

Site No.	Occupation Period	Site Type	Material Manifestation	Setting	Project	Recorder	Water Source	Drainage Basin	Date Recorded	SAL/NRHP Eligibility Recommendation/Condition
41LU31	Proto-historic	Probable campsite	Hearthstones, metate fragment and flakes	Terrace	Lubbock Canyon Lakes Project	Charles Johnson	Yellow House Creek	Brazos River	6/1/1974	Lubbock Lake National Historic Landmark
41LU33	Possibly ceramic	Campsites	Worked stone and flakes, tooth fragment and possible mano	Canyon floor	Lubbock Canyon Lakes Project	Charles Johnson	Yellow House Creek	Brazos River	11/1/1974	None given
41LU34	Possibly ceramic	Campsites	Tip of point, gastropods, worked stone, flakes, possible mano	Sand Dunes	Lubbock Canyon Lakes Project	Charles Johnson	Yellow House Creek	Brazos River	11/1/1974	None given
41LU35	Late Historic (possibly late 1800's)	Bison bone bed and butchering site	Bison bones, horse tooth, grey quartzite flake, 2 probably utilized silicified caliche chunks, black chert biface, Morrison quartzite hammerstone used on both ends with a large flake taken off one side	Canyon floor	Lubbock Canyon Lakes Project	Hoyt Jordan	Yellow House Creek	Brazos River	2/17/1975	Canyon Lakes National Register District (Destroyed)
41LU37	Prehistoric	Campsite	Flakes and raw stone material, chert flake (bones- bison- present but too destroyed to collect), burnt	Terrace	Lubbock Canyon Lakes Project	Jeb Scott	Yellow House Creek	Brazos River	2/18/1975	Canyon Lakes National Register District (Destroyed)
41LU38	Paleo-Indian	Bison kill and butchering site	Bison species skeletal elements, good preservation, very dark brown color; most of the bone seems to come from the black clayey silt the base of which is 5 m below the old valley floor; Bison antiquus	Canyon floor	Lubbock Canyon Lakes Project		Yellow House Creek	Brazos River	04//30/75	Canyon Lakes National Register District
41LU42	Paleo-Indian	Lithic scatter	Flakes and chips-one flake possibly fluted point	Terrace	Not Reported	Laura Graves Allen	Yellow House Creek	Brazos River	5/21/1975	Canyon Lakes National Register District

Site No.	Occupation Period	Site Type	Material Manifestation	Setting	Project	Recorder	Water Source	Drainage Basin	Date Recorded	SAL/NRHP Eligibility Recommendation/Condition
41LU44	Prehistoric	Lithic scatter	Lithics (flakes, chips, retouched flakes)	Terrace	Not Reported	Laura Graves Allen	Yellow House Creek	Brazos River	5/20/1975	Canyon Lakes National Register District
41LU45	Prehistoric	Lithic scatter	Flakes	Terrace	Not Reported	Shales Johnson	Yellow House Creek	Brazos River	6/3/1975	Canyon Lakes National Register District
41LU46	Prehistoric	Lithic scatter	Worked flakes, 1 projectile point tip, scrapers, 2 bullets	Terrace	Not Reported	M. Kathleen Malloway	Yellow House Creek	Brazos River	6/3/1975	Canyon Lakes National Register District
41LU62	Probably Late Prehistoric	Campsite	Hearths	Terrace	Not Reported	Robert Tucker	Yellow House Creek	Brazos River	7/23/1982	Lubbock Lake National Historic Landmark
41LU64	Prehistoric		Burned rock, 1 piece Edwards flake, 1 debitage of Tecovas chert, in roadway exposed by traffic.	Terrace	Not Reported	Robert Tucker and Jim Word	Yellow House Creek	Brazos River	7/23/1982	Lubbock Lake National Historic Landmark
41LU72	Paleo-Indian	Campsite	Chert tools, quarry blanks, bifaces, scrapers, and tertiary debitage. 7 Plainview Points	Upland		Eileen Johnson	Playa	Playa	8/20/86	Potentially Eligible
41LU73	Unknown	No Form on File								
41LU74	Unknown	No Form on File								
41LU75	Prehistoric	Open Campsite	Lithics: quartzites, cherts of Ogallala, Edwards Plateau, Tecovas, Alibates; obsidian; sandstones, hematite, 2 notched Harrill Points. Bone and pottery also present. Overlapping hearths; Black on white pottery	Upland	N/A	Claude Brown (Landowner) and W. T. Hartwell	Playa lake ca. 1/4 mi to W of site.	Playa	1/1/1966	Potentially Eligible
41LU76	Proto-historic	Open campsite	One complete projectile point, possibly Lott or Garza; one silver bracelet, with inlaid turquoise bear claws, one purple quartzite blade.	Upland margin	Lubbock Lake Landmark State Historic Site: Parks and	Ted Hartwell	Yellow House Draw	Brazos River	3/19/1991	Not Eligible

Site No.	Occupation Period	Site Type	Material Manifestation	Setting	Project	Recorder	Water Source	Drainage Basin	Date Recorded	SAL/NRHP Eligibility Recommendation/Condition
					Wildlife					
41LU83	Historic	Open campsite	Hearth comprised of burned caliche with rusted metal, tin cans, nails, hinges, plastic	Canyon floor	Not Reported	William T. Hartwell	Playa Lake	Brazos River	7/24/1990	Potential SAL
41LU94	Historic	No Form on File								Not Eligible
41LU101	Prehistoric	Open campsite	181 hearthstones (burned caliche), 7 lithic flakes, 7 cores	Canyon Rim	Lubbock Lake Landmark State Historic Site: Parks and Wildlife	Briggs Buchanan and Darcy Mathews	Yellow House Draw	Brazos River	6/26-30/1994	Potentially Eligible
41LU104	Historic/ Prehistoric	Historic: house, granary, and migrant worker barracks Prehistoric: open campsite	Archaic dart point, glass, earthenware, porcelain, crockery, marble	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	Not Eligible
41LU105	Historic	House site	Glass, earthenware, brick, crockery, porcelain, metal hardware	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	Not Eligible
41LU106	Prehistoric	Open campsite	6 pieces of burned caliche 1 Ogallala quartzite cobble (possible mano)	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	Not Eligible
41LU107	Prehistoric	Open campsite	10 pieces burned caliche 1 Ogallala quartzite fragment	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	Not Eligible
41LU108	Prehistoric	Open campsite	15 pieces burned caliche(1-5cm diameter)	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	Not Eligible
41LU109	Prehistoric	Open campsite	53 pieces of burned caliche(1 to 10cm dia.) 2 Edwards chert flakes 2 unknown source chert flakes 1 sanstone mano frag 2 small bone frags 2	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	NRHP and SAL Eligible

Site No.	Occupation Period	Site Type	Material Manifestation	Setting	Project	Recorder	Water Source	Drainage Basin	Date Recorded	SAL/NRHP Eligibility Recommendation/Condition
			Mammalia tooth fragments							
41LU110	Prehistoric	Open campsite	11 pieces burned caliche(less than 4cm) 1 Ogallala quartzite frag)	Upland	TDCJ Facility	Eric E. Schroeder	Yellow House Creek	Brazos River	7/13/1994	Not Eligible
41LU111	Aboriginal	Open campsite	Lithic debitage and ground stone, bone, modern metal, and one broken Washita projectile point of Alabates chert and a point tip made of Edwards chert	Upland	Reese AFB Survey	J. Kent Hicks and Luc Litwinionek	Playa	Playa	9/7/1994	Not Eligible
41LU112	Prehistoric	Open campsite	Thin lithic scatter and burned caliche	Upland	FM 3431	William Weaver	Playa	Playa	4/12/1995	Not Eligible

Site No.	Occupation Period	Site type	Material Manifestation	Setting	Project	Recorder	Water Source	Drainage Basin	Date Recorded	Elegibility Recommendation/Condition
41LU1	Paleo-Indian to Historic	Camp, kill and butchering	Folsom Points with bones of extinct mammoths, horses, bison, and camels	Terrace	Not Reported	Elton R Prewitt	Yellowhouse Creek	Brazos River	7/30/1970	Lubbock Lake National Historic Landmark
41LU4	Paleo-Indian		Flakes, one multipurpose tool, bone	Terrace	Not Reported	R. Gould	Yellowhouse Creek	Brazos River	6/4/1973	Lubbock Lake National Historic Landmark
41LU5	Prehistoric	Possible prehistoric house floor	Burnt caliche-concentration and scattered, bone concentration, covered soil maybe old floor	Dune	State School	D. Bannon	Yellowhouse Creek	Brazos River	6/4/1973	State Antiquities Landmark/ NRHP Eligible
41LU6	Archaic	Cache	Alibates material-flakes, utilized pieces, 1 possible Talouis flake and 8 gray chert flakes that may	Terrace	Not Reported	Hoyt Jordan	Yellowhouse Creek	Brazos River	11/15/1974	Cache collected

			possibly be also alibates chert and 1 Marshall point in coyote burrow.							
41LU26	Late Historic (possible late 1800's)	Bison kill and butchering site	Bone bed (butchered)	Canyon floor	Lubbock Canyon Lakes Project	Hoyt Jordan	Yellowhouse Creek	Brazos River		Distroyed
41LU28	Late Historic (possible late 1800's)	Bison kill and butchering site	Bone bed (butchered)	Canyon floor	Lubbock Canyon Lakes Project	Hoyt Jordan	Yellowhouse Creek	Brazos River	4/3-6/1974	Distroyed
41LU29	Late Paleoindian to Ceramic	Bison kill and butchering site	Scattered chipping debris and worked stone tools and burnt caliche, Bison bones, Equus, coyote, duck, assorted lithics, 1 Bison tibia with a bullet wound	Canyon floor	Lubbock Canyon Lakes Project	Elaine Bernreuther and Charles Johnson	McCauley Well	Brazos River	11/11/1974	Distroyed
41LU30	Probably Archaic	Campsite	Worked stone and flakes	Terrace	Lubbock Canyon Lakes Project	Charles Johnson	Yellowhouse Creek	Brazos River	6/1/1974	
41LU31	Protohistoric	Probable campsite	Hearthstones, metate fragment and flakes	Terrace	Lubbock Canyon Lakes Project	Charles Johnson	Yellowhouse Creek	Brazos River	6/1/1974	Part of Lubbock Lake Landmark
41LU33	Possibly ceramic	Campsites	Worked stone and flakes, tooth fragment and possible mano	Canyon floor	Lubbock Canyon Lakes Project	Charles Johnson	Yellowhouse Creek	Brazos River	11/1/1974	
41LU34	Possibly ceramic	Campsites	Tip of point, gastropods, worked stone, flakes, possible mano	Sand Dunes	Lubbock Canyon Lakes Project	Charles Johnson	Yellowhouse Creek	Brazos River	11/1/1974	
41LU35	Late Historic (possibly late 1800's)	Bison bone bed and butchering site	Bison bones, horse tooth, grey quartzite flake, 2 probably utilized silicified caliche chunks, black chert biface, Morrison quartzite hammerstone used on both ends with a large flake taken off one side	Canyon floor	Lubbock Canyon Lakes Project	Hoyt Jordan	Yellowhouse Creek	Brazos River	2/17/1975	Canyon Lakes National Register District (Distroyed)

41LU37	Unknown Prehistoric	Campsite	Flakes and raw stone material, chert flake (bones-bison- present but too destroyed to collect), burnt	Terrace	Lubbock Canyon Lakes Project	Jeb Scott	Yellowhouse Creek	Brazos River	2/18/1975	Canyon Lakes National Register District (Distroyed)
41LU38	Paleo-Indian	Bison kill and butchering site	Bison species skeletal elements, good preservation, very dark brown color; most of the bone seems to come from the black clayey silt the base of which is 5 m below the old valley floor; Bison antiquus	Canyon floor	Lubbock Canyon Lakes Project		Yellowhouse Creek	Brazos River	04//30/75	Canyon Lakes National Register District
41LU42	Paleo-Indian	Lithic scatter	Flakes and chips-one flake possibly fluted point	Terrace	Not Reported	Laura Graves Allen	Yellowhouse Creek	Brazos River	5/21/1975	Canyon Lakes National Register District
41LU44	Unknown Prehistoric	Lithic scatter	Lithics (flakes, chips, retouched flakes)	Terrace	Not Reported	Laura Graves Allen	Yellowhouse Creek	Brazos River	5/20/1975	Canyon Lakes National Register District
41LU45	Unknown Prehistoric	Lithic scatter	Flakes	Terrace	Not Reported	Shales Johnson	Yellowhouse Creek	Brazos River	6/3/1975	Canyon Lakes National Register District
41LU46	Unknown Prehistoric	Lithic scatter	Worked flakes, 1 projectile point tip, scrapers, 2 bullets	Terrace	Not Reported	M. kathleen Malloway	Yellowhouse Creek	Brazos River	6/3/1975	Canyon Lakes National Register District
41LU62	Probably Late Prehistoric	Campsite	Hearths	Terrace	Not Reported	Robert Tucker	Yellowhouse Creek	Brazos River	7/23/1982	Lubbock Lake National Historic Landmark

41LU64	Unknown Prehistoric		Burned rock, 1 piece Edwards flake, 1 debitage of Tecovas chert, in roadway exposed by traffic.	Terrace	Not Reported	Robert Tucker and Jim Word	Yellowhouse Creek	Brazos River	7/23/1982	Lubbock Lake National Historic Landmark
41LU72	Paleo-Indian	Campsite	Chert tools, quarry blanks, bifaces, scrapers, and tertiary debitage. 7 Plainview Points	Upland	Not Reported	Eileen Johnson	Playa	Brazos River	8/20/1986	Potentially Eligible
41LU73	Unknown	No Form on File								
41LU74	Unknown	No Form on File								
41LU75	Unknown Prehistoric	Open Campsite	Lithics: quartzites, cherts of Ogallala, Edwards Plateau, Tecovas, Alibates; obsidian; sandstones, hematite, 2 notched Harrills. Bone and pottery also present. Overlapping hearths; Black on white pottery	Upland	N/A	Claude Brown (Landowner) and W. T. Hartwell	Playa lake ca. 1/4 mi to W of site.	Playa	1/1/1966	Potentially Eligible
41LU76	Protohistoric	Open campsite	One complete projectile point, possibly Lott or Garza; one silver bracelet, with inlaid turquoise bear claws, one purple quartzite blade.	Upland	Lubbock Lake Landmark State Historic Site: Parks and Wildlife	Ted Hartwell	Yellow House Draw	Brazos River	3/19/1991	Not Eligible
41LU83	Historic	Open campsite	Hearth comprised of burned caliche with rusted metal, tin cans, nails, hinges, plastic	Canyon floor	Not Reported	William T. Hartwell	Playa Lake	Brazos River	7/24/1990	
41LU94	Historic	No Form on File								Not Eligible
41LU101	Prehistoric	Open campsite	181 hearthstones (burned caliche), 7 lithic flakes, 7 cores	Canyon Rim	Lubbock Lake Landmark State Historic Site: Parks and Wildlife	Briggs Buchanan and Darcy Mathews	Yellow House Draw	Brazos River	6/26-30/1994	Potentially Eligible
41LU104	Historic/ Prehistoric	Historic: house, granary, and migrant worker barracks	Archaic dart point, glass, earthenware, porcelain, crockery, marble	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	Not Eligible

		Prehistoric: open campsite								
41LU105	Historic	House site	Glass, earthenware, brick, crockery, porcelain, metal hardware	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	Not Eligible
41LU106	Prehistoric	Open campsite	6 pieces of burned caliche 1 Ogallala quartzite cobble (possible mano)	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	Not Eligible
41LU107	Prehistoric	Open campsite	10 pieces burned caliche 1 Ogallala quartzite fragment	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	Not Eligible
41LU108	Prehistoric	Open campsite	15 pieces burned caliche(1-5cm diameter)	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	Not Eligible
41LU109	Prehistoric	Open campsite	53 pieces of burned caliche(1 to 10cm dia.) 2 Edwards chert flakes 2 unknown source chert flakes 1 sanstone mano frag 2 small bone frags 2 mammalia tooth frags	Upland	TDCJ Facility	Eric E. Schroeder	Playa	Playa	7/13/1994	NRHP and SAL
41LU110	Prehistoric	Open campsite	11 pieces burned caliche(less than 4cm) 1 Ogallala quartzite frag)	Upland	TDCJ Facility	Eric E. Schroeder	Yellow House Creek	Brazos River	7/13/1994	Not Eligible
41LU111	Aboriginal	Open campsite	Lithic debitage and ground stone, bone, modern metal, and one broken Washita projectile point of Alabates chert and a point timp made of Edwards chert	Upland	Reese AFB	J. Kent Hicks and Luc Litwinionek	Playa	Playa	9/7/1994	Not Eligible

Source: Texas Historical Commission Archeological Sites Atlas



Appendix F-1

HazMat Report

Lubbock Outer Route Study



Preliminary Report

(Data in this report has not been verified)

Radius Report

<http://www.geo-search.net/QuickMap/index.htm?DataID=Prelim0000063891>

Click on link above to access the map and satellite view of current property

Target Property:
38 Mile Corridor
LUBBOCK, Lubbock County, Texas 79416

Prepared For:
Jacobs-Austin

Order #: 28622
Job #: 63891
Date: 09/17/2013

TARGET PROPERTY SUMMARY

38 Mile Corridor

LUBBOCK, Lubbock County, Texas 79416

USGS Quadrangle: **Wolfforth, TX**

Target Property Geometry: **Area**

Target Property Longitude(s)/Latitude(s):

(-101.663847, 33.437568), (-101.662717, 33.437412), (-101.661360, 33.436830), (-101.660669, 33.436277), (-101.660229, 33.435752), (-101.659908, 33.435171), (-101.659713, 33.434551), (-101.659652, 33.433911), (-101.659726, 33.433273), (-101.660084, 33.432361), (-101.660477, 33.431811), (-101.661267, 33.431115), (-101.661736, 33.430839), (-101.661902, 33.430759), (-101.662423, 33.430556), (-101.663728, 33.430320), (-101.666539, 33.430255), (-101.668421, 33.430360), (-101.670704, 33.430622), (-101.672961, 33.431012), (-101.675183, 33.431525), (-101.676887, 33.432011), (-101.679021, 33.432741), (-101.681030, 33.433558), (-101.683093, 33.434547), (-101.684541, 33.435338), (-101.686395, 33.436485), (-101.688102, 33.437692), (-101.689763, 33.439032), (-101.691359, 33.440508), (-101.692400, 33.441589), (-101.694060, 33.443562), (-101.695243, 33.445221), (-101.696050, 33.446392), (-101.697162, 33.448095), (-101.698362, 33.449728), (-101.699000, 33.450524), (-101.699661, 33.451306), (-101.700347, 33.452075), (-101.701418, 33.453198), (-101.702927, 33.454640), (-101.704523, 33.456015), (-101.706031, 33.457204), (-101.707076, 33.457871), (-101.708429, 33.458415), (-101.709334, 33.458626), (-101.710147, 33.458723), (-102.009000, 33.457985), (-102.013184, 33.458302), (-102.015131, 33.458690), (-102.016937, 33.459200), (-102.018598, 33.459805), (-102.020355, 33.460608), (-102.021862, 33.461449), (-102.023424, 33.462498), (-102.024731, 33.463548), (-102.026049, 33.464811), (-102.027627, 33.466712), (-102.028539, 33.468114), (-102.029336, 33.469653), (-102.029933, 33.471170), (-102.030368, 33.472725), (-102.030627, 33.474228), (-102.030738, 33.475822), (-102.030780, 33.489505), (-102.031213, 33.631870), (-102.030739, 33.634845), (-102.029941, 33.637403), (-102.028807, 33.639871), (-102.027395, 33.642161), (-102.025598, 33.644418), (-102.024271, 33.645787), (-102.022882, 33.647023), (-102.021330, 33.648217), (-102.019894, 33.649344), (-102.018379, 33.650767), (-102.017061, 33.652322), (-102.015959, 33.653989), (-102.015083, 33.655748), (-102.014446, 33.657578), (-102.014158, 33.658825), (-102.013981, 33.660087), (-102.013916, 33.661354), (-102.014057, 33.685671), (-102.014019, 33.687350), (-102.013963, 33.688760), (-102.013862, 33.690437), (-102.013612, 33.692469), (-102.013445, 33.693609), (-102.013261, 33.694453), (-102.012909, 33.695367), (-102.012282, 33.696172), (-102.011423, 33.696811), (-102.010395, 33.697239), (-102.009268, 33.697426), (-102.008122, 33.697360), (-102.007037, 33.697045), (-102.006089, 33.696503), (-102.005344, 33.695772), (-102.004855, 33.694903), (-102.004656, 33.693957), (-102.004880, 33.692428), (-102.005199, 33.689970), (-102.005290, 33.688487),

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TARGET PROPERTY SUMMARY

(-102.005342, 33.687181), (-102.005378, 33.685661), (-102.005240, 33.661280), (-102.005336, 33.659475),
(-102.005591, 33.657680), (-102.006004, 33.655906), (-102.006549, 33.654226), (-102.007265, 33.652521),
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(-102.022081, 33.475949), (-102.021948, 33.474515), (-102.021591, 33.473113), (-102.021016, 33.471761),
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(-101.698986, 33.461620), (-101.698007, 33.460819), (-101.696126, 33.459156), (-101.694349, 33.457414),
(-101.692648, 33.455560), (-101.691128, 33.453712), (-101.690011, 33.452215), (-101.688669, 33.450217),
(-101.687473, 33.448441), (-101.686070, 33.446611), (-101.684456, 33.444906), (-101.682649, 33.443344),
(-101.680666, 33.441941), (-101.678525, 33.440709), (-101.676251, 33.439662), (-101.673862, 33.438810),
(-101.671385, 33.438160), (-101.668844, 33.437720), (-101.666398, 33.437510), (-101.663847, 33.437568)

County/Parish Covered:

Zipcode(s) Covered:

State(s) Covered:

DATABASE FINDINGS SUMMARY

DATABASE	ACRONYM	LOCA- TABLE	UNLOCA- TABLE	SEARCH RADIUS (miles)
<u>FEDERAL</u>				
AEROMETRIC INFORMATION RETRIEVAL SYSTEM / AIR FACILITY SUBSYSTEM	AIRSAFS	0	0	Target Property
BIENNIAL REPORTING SYSTEM	BRS	0	0	Target Property
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	Target Property
EPA DOCKET DATA	DOCKETS	2	0	Target Property
FEDERAL ENGINEERING INSTITUTIONAL CONTROL SITES	EC	0	0	Target Property
EMERGENCY RESPONSE NOTIFICATION SYSTEM	ERNSTX	2	0	Target Property
FACILITY REGISTRY SYSTEM	FRSTX	38	0	Target Property
HAZARDOUS MATERIALS INCIDENT REPORTING SYSTEM	HMIRSR06	0	0	Target Property
INTEGRATED COMPLIANCE INFORMATION SYSTEM (FORMERLY DOCKETS)	ICIS	5	0	Target Property
INTEGRATED COMPLIANCE INFORMATION SYSTEM NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	ICISNPDES	0	0	Target Property
LAND USE CONTROL INFORMATION SYSTEM	LUCIS	0	0	Target Property
MATERIAL LICENSING TRACKING SYSTEM	MLTS	0	0	Target Property
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	NPDES06	0	0	Target Property
PCB ACTIVITY DATABASE SYSTEM	PADS	2	0	Target Property
PERMIT COMPLIANCE SYSTEM	PCSR06	0	0	Target Property
RCRA SITES WITH CONTROLS	RCRASC	1	0	Target Property
CERCLIS LIENS	SFLIENS	0	0	Target Property
SECTION SEVEN TRACKING SYSTEM	SSTS	0	0	Target Property
TOXICS RELEASE INVENTORY	TRI	0	0	Target Property
TOXIC SUBSTANCE CONTROL ACT INVENTORY	TSCA	0	0	Target Property
NO LONGER REGULATED RCRA GENERATOR FACILITIES	NLRRCRAG	1	0	Target Property and Adjoining
RESOURCE CONSERVATION & RECOVERY ACT - GENERATOR FACILITIES	RCRAGR06	2	0	Target Property and Adjoining
HISTORICAL GAS STATIONS	HISTPST	0	0	0.2500
BROWNFIELDS MANAGEMENT SYSTEM	BF	0	0	0.5000
COMPREHENSIVE ENVIRONMENTAL RESPONSE,	CERCLIS	3	0	0.5000



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DATABASE FINDINGS SUMMARY

DATABASE	ACRONYM	LOCA- TABLE	UNLOCA- TABLE	SEARCH RADIUS (miles)
COMPENSATION & LIABILITY INFORMATION SYSTEM				
DELISTED NATIONAL PRIORITIES LIST	DNPL	0	0	0.5000
NO FURTHER REMEDIAL ACTION PLANNED SITES	NFRAP	3	0	0.5000
NO LONGER REGULATED RCRA NON-CORRACTS TSD FACILITIES	NLRRCRAT	0	0	0.5000
OPEN DUMP INVENTORY	ODI	0	0	0.5000
RESOURCE CONSERVATION & RECOVERY ACT - TREATMENT, STORAGE & DISPOSAL FACILITIES	RCRAT	0	0	0.5000
DEPARTMENT OF DEFENSE SITES	DOD	1	0	1.0000
FORMERLY USED DEFENSE SITES	FUDS	0	0	1.0000
NO LONGER REGULATED RCRA CORRECTIVE ACTION FACILITIES	NLRRCRAC	0	0	1.0000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
PROPOSED NATIONAL PRIORITIES LIST	PNPL	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - CORRECTIVE ACTION FACILITIES	RCRAC	1	0	1.0000
RECORD OF DECISION SYSTEM	RODS	0	0	1.0000
SUB-TOTAL		61	0	

STATE (TX)

GROUNDWATER CONTAMINATION CASES	GWCC	0	0	Target Property
HISTORIC GROUNDWATER CONTAMINATION CASES	HISTGWCC	0	0	Target Property
TCEQ LIENS	LIENS	0	0	Target Property
MUNICIPAL SETTING DESIGNATIONS	MSD	0	0	Target Property
NOTICE OF VIOLATIONS	NOV	4	0	Target Property
STATE INSTITUTIONAL/ENGINEERING CONTROL SITES	SIEC01	0	0	Target Property
SPILLS LISTING	SPILLS	9	0	Target Property
TIER II CHEMICAL REPORTING PROGRAM FACILITIES	TIERII	4	0	Target Property
DRY CLEANER REGISTRATION DATABASE	DCR	0	0	0.2500
INDUSTRIAL AND HAZARDOUS WASTE SITES	IHW	5	0	0.2500



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DATABASE FINDINGS SUMMARY

DATABASE	ACRONYM	LOCA- TABLE	UNLOCA- TABLE	SEARCH RADIUS (miles)
PERMITTED INDUSTRIAL HAZARDOUS WASTE SITES	PIHW	1	0	0.2500
PETROLEUM STORAGE TANKS	PST	10	0	0.2500
AFFECTED PROPERTY ASSESSMENT REPORTS	APAR	0	0	0.5000
BROWNFIELDS SITE ASSESSMENTS	BSA	0	0	0.5000
CLOSED & ABANDONED LANDFILL INVENTORY	CALF	2	0	0.5000
DRY CLEANER REMEDIATION PROGRAM SITES	DCRPS	0	0	0.5000
INNOCENT OWNER / OPERATOR DATABASE	IOP	0	0	0.5000
LEAKING PETROLEUM STORAGE TANKS	LPST	10	0	0.5000
MUNICIPAL SOLID WASTE LANDFILL SITES	MSWLF	0	0	0.5000
RAILROAD COMMISSION VCP AND BROWNFIELD SITES	RRCVCP	0	0	0.5000
RADIOACTIVE WASTE SITES	RWS	0	0	0.5000
VOLUNTARY CLEANUP PROGRAM SITES	VCP	0	0	0.5000
RECYCLING FACILITIES	WMRF	1	0	0.5000
INDUSTRIAL AND HAZARDOUS WASTE CORRECTIVE ACTION SITES	IHWCA	2	0	1.0000
STATE SUPERFUND SITES	SF	0	0	1.0000
SUB-TOTAL		48	0	
TRIBAL				
UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	USTR06	0	0	0.2500
LEAKING UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	LUSTR06	0	0	0.5000
OPEN DUMP INVENTORY ON TRIBAL LANDS	ODINDIAN	0	0	0.5000
INDIAN RESERVATIONS	INDIANRES	0	0	1.0000
SUB-TOTAL		0	0	
TOTAL		109	0	



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LOCATABLE DATABASE FINDINGS

ACRONYM	SEARCH RADIUS (miles)	Target Property	1/8 Mile (> TP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
FEDERAL								
AIRSAFS	.0200	0	NS	NS	NS	NS	NS	0
BRS	.0200	0	NS	NS	NS	NS	NS	0
CDL	.0200	0	NS	NS	NS	NS	NS	0
DOCKETS	.0200	2	NS	NS	NS	NS	NS	2
EC	.0200	0	NS	NS	NS	NS	NS	0
ERNSTX	.0200	2	NS	NS	NS	NS	NS	2
FRSTX	.0200	38	NS	NS	NS	NS	NS	38
HMIRSR06	.0200	0	NS	NS	NS	NS	NS	0
ICIS	.0200	5	NS	NS	NS	NS	NS	5
ICISNPDES	.0200	0	NS	NS	NS	NS	NS	0
LUCIS	.0200	0	NS	NS	NS	NS	NS	0
MLTS	.0200	0	NS	NS	NS	NS	NS	0
NPDES06	.0200	0	NS	NS	NS	NS	NS	0
PADS	.0200	2	NS	NS	NS	NS	NS	2
PCSR06	.0200	0	NS	NS	NS	NS	NS	0
RCRASC	.0200	1	NS	NS	NS	NS	NS	1
SFLIENS	.0200	0	NS	NS	NS	NS	NS	0
SSTS	.0200	0	NS	NS	NS	NS	NS	0
TRI	.0200	0	NS	NS	NS	NS	NS	0
TSCA	.0200	0	NS	NS	NS	NS	NS	0
NLRRCRAG	.1250	1	0	NS	NS	NS	NS	1
RCRAGR06	.1250	0	2	NS	NS	NS	NS	2
HISTPST	.2500	0	0	0	NS	NS	NS	0
BF	.5000	0	0	0	0	NS	NS	0
CERCLIS	.5000	2	0	0	1	NS	NS	3
DNPL	.5000	0	0	0	0	NS	NS	0
NFRAP	.5000	2	0	0	1	NS	NS	3



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LOCATABLE DATABASE FINDINGS

ACRONYM	SEARCH RADIUS (miles)	Target Property	1/8 Mile (> TP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
NLRRCRAT	.5000	0	0	0	0	NS	NS	0
ODI	.5000	0	0	0	0	NS	NS	0
RCRAT	.5000	0	0	0	0	NS	NS	0
DOD	1.000	1	0	0	0	0	NS	1
FUDS	1.000	0	0	0	0	0	NS	0
NLRRCRAC	1.000	0	0	0	0	0	NS	0
NPL	1.000	0	0	0	0	0	NS	0
PNPL	1.000	0	0	0	0	0	NS	0
RCRAC	1.000	0	1	0	0	0	NS	1
RODS	1.000	0	0	0	0	0	NS	0
SUB-TOTAL		56	3	0	2	0	0	61

STATE (TX)

GWCC	.0200	0	NS	NS	NS	NS	NS	0
HISTGWCC	.0200	0	NS	NS	NS	NS	NS	0
LIENS	.0200	0	NS	NS	NS	NS	NS	0
MSD	.0200	0	NS	NS	NS	NS	NS	0
NOV	.0200	4	NS	NS	NS	NS	NS	4
SIEC01	.0200	0	NS	NS	NS	NS	NS	0
SPILLS	.0200	9	NS	NS	NS	NS	NS	9
TIERII	.0200	4	NS	NS	NS	NS	NS	4
DCR	.2500	0	0	0	NS	NS	NS	0
IHW	.2500	2	2	1	NS	NS	NS	5
PIHW	.2500	0	1	0	NS	NS	NS	1
PST	.2500	7	2	1	NS	NS	NS	10
APAR	.5000	0	0	0	0	NS	NS	0
BSA	.5000	0	0	0	0	NS	NS	0
CALF	.5000	0	2	0	0	NS	NS	2



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LOCATABLE DATABASE FINDINGS

ACRONYM	SEARCH RADIUS (miles)	Target Property	1/8 Mile (> TP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
DCRPS	.5000	0	0	0	0	NS	NS	0
IOP	.5000	0	0	0	0	NS	NS	0
LPST	.5000	5	1	0	4	NS	NS	10
MSWLF	.5000	0	0	0	0	NS	NS	0
RRCVCP	.5000	0	0	0	0	NS	NS	0
RWS	.5000	0	0	0	0	NS	NS	0
VCP	.5000	0	0	0	0	NS	NS	0
WMRF	.5000	0	0	0	1	NS	NS	1
IHWCA	1.000	0	1	0	1	0	NS	2
SF	1.000	0	0	0	0	0	NS	0
SUB-TOTAL		31	9	2	6	0	0	48

TRIBAL

USTR06	.2500	0	0	0	NS	NS	NS	0
LUSTR06	.5000	0	0	0	0	NS	NS	0
ODINDIAN	.5000	0	0	0	0	NS	NS	0
INDIANRES	1.000	0	0	0	0	0	NS	0
SUB-TOTAL		0	0	0	0	0	0	0

TOTAL	87	12	2	8	0	0	109
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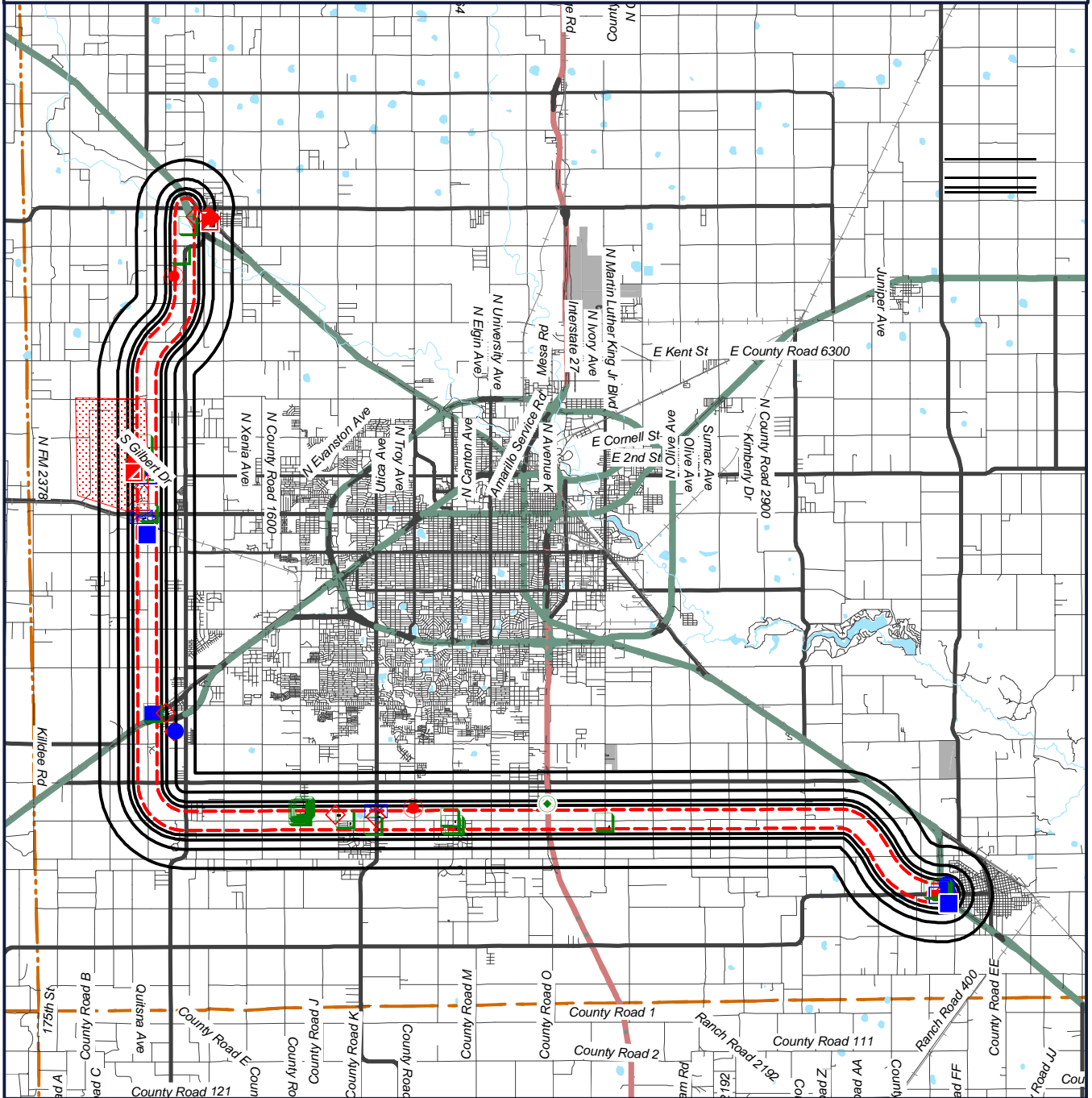
NOTES:

NS = NOT SEARCHED



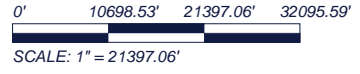
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LOCATION MAP



38 Mile Corridor LUBBOCK, Texas 79416

- | | |
|----------------------|--------|
| Target Property (TP) | DOD |
| PST | ERNSTX |
| LPST | CALF |
| NOV | RCRAC |
| NLRRCRAG | IHW |
| FRSTX | IHWCA |
| RCRASC | |
| TIERII | |
| CERCLIS | |



REPORT SUMMARY OF LOCATABLE SITES

MAP ID#	DATABASE NAME	SITE ID#	DISTANCE FROM SITE	SITE NAME	ADDRESS	CITY, ZIP CODE	PAGE #
1	PST	11800	0.001 S	SMITH FORD MERCURY	1700 W DIVISION ST	SLATON, 79364	--
1	FRSTX	110005088902	0.001 SE	SMITH FORD MERCURY LTD	1700 W DIVISION ST	SLATON, 79364	--
1	IHW	70275	0.001 S	SMITH FORD MERCURY	1700 W DIVISION ST	SLATON, 79364	--
2	LPST	103213	0.001 SW	E Z MART STORE 243	2200 DIVISION ST	SLATON, 79364	--
3	FRSTX	110034460189	0.001 NW	ELM GROVE MOBILE HOME PARK	2201 RESEARCH BLVD	LUBBOCK, 794072912	--
3	NOV	RN101438380	0.001 NW	ELM GROVE MOBILE HOME PARK	2201 RESEARCH BLVD	LUBBOCK, 79407-2912	--
4	NOV	RN101057891	0.001 SW	ALL AMERICAN CHEVROLET	2005 W DIVISION ST	SLATON, 79364-3652	--
4	PST	48686	0.001 SW	MC GINNIS CHEVROLET & GEO	2005 W DIVISION ST	SLATON, 79364	--
4	NLRRCRAG	TXD988044798	0.001 SW	ALL AMERICAN CHEVROLET INC	2005 W DIVISION ST	SLATON, 79364	--
4	IHW	77937	0.001 SW	ALL AMERICAN CHEVEROLET	2005 W DIVISION ST	SLATON, 79364	--
5	FRSTX	110013230306	0.001 NW	PECAN GROVE MOBILE HOME PARK	9601 19TH ST LOT 59	LUBBOCK, 79407	--
5	ICIS	628649856	0.001 NW	PECAN GROVE MOBILE HOME PARK	9601 19TH ST LOT 59	LUBBOCK, 79407	--
5	NOV	RN102692167	0.001 NW	PECAN GROVE MOBILE HOME PARK	9601 19TH ST	LUBBOCK, 79407-6208	--
6	NOV	RN104569454	0.001 W	BRYANS SHILOH	14104 FM 1730	LUBBOCK, 79424-6657	--
7	FRSTX	110034981045	0.001 W	TUCKER ENTERPRISES INC	14310 COUNTY ROAD 1800	LUBBOCK, 794246504	--
7	PST	52016	0.001 W	TUCKER ENTERPRISES 1	14310 COUNTY ROAD 1800	LUBBOCK, 79424	--
8	PST	66107	0.001 W	KFYO RADIO STATION	14302 SLIDE RD	LUBBOCK, 79424	--
9	PST	14353	0.001 NW	MACKENZIE PARK PLAYGROUND	PARK	LUBBOCK	--
10	ICIS	1609315038	0.001 NW	WINDSTREAM HUNTWOOD CENTRAL OFFICE	411 RESEARCH BLVD	LUBBOCK, 79414	--
10	PST	50145	0.001 NW	HURLWOOD CENTRAL OFFICE	411 QUITNA AVE	LUBBOCK, 79416	--
11	FRSTX	110005139242	0.001 SW	ALL AMERICAN CHEVROLET INC	2005 W DIVISION ST	SLATON, 79364	--
12	PST	70296	0.001 S	UNITED SUPERMARKETS 511	HWY 84 & DIVISION	SLATON	--
13	SPILLS	65993	0.001 NW		9801 REESE BLVD, LUBBOCK, TX	LUBBOCK, 79416	--



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REPORT SUMMARY OF LOCATABLE SITES

MAP ID#	DATABASE NAME	SITE ID#	DISTANCE FROM SITE	SITE NAME	ADDRESS	CITY, ZIP CODE	PAGE #
13	SPILLS	74145	0.001 NW		9801 REESE BLVD, LUBBOCK, TX	LUBBOCK, 79416	--
13	SPILLS	74194	0.001 NW		9801 REESE BLVD, LUBBOCK, TX	LUBBOCK, 79416	--
13	SPILLS	74444	0.001 NW		9801 REESE BLVD, LUBBOCK, TX	LUBBOCK, 79416	--
13	SPILLS	89817	0.001 NW		9801 REESE BLVD, LUBBOCK, TX	LUBBOCK, 79416	--
13	SPILLS	89872	0.001 NW		9801 REESE BLVD, LUBBOCK, TX	LUBBOCK, 79416	--
13	SPILLS	121964	0.001 NW		9801 REESE BLVD	LUBBOCK, 79416	--
13	SPILLS	45907	0.001 NW		9801 REESE BLVD, LUBBOCK, TX	LUBBOCK, 79416	--
13	RCRASC	TX8571524091	0.001 NW	US DEPT AIR FORCE REESE EDUCATION TRAINI	9801 REESE BLVD N	LUBBOCK, 79416	--
13	SPILLS	65716	0.001 NW		9801 REESE BLVD, LUBBOCK, TX	LUBBOCK, 79416	--
14	TIERII	79FH4L02R2YC	0.001 W	CITY OF WOLFFORTH-WELL 5	920 MAIN STREET	WOLFFORTH, 79382	--
15	TIERII	9177MQ0540RJ	0.001 NW	WINDSTREAM LUBBOCK HURLWOOD CENTRAL OFFI	411 RESEARCH BLVD.	LUBBOCK, 79407	--
16	DOCKETS	06-1989-0443	0.001 S	MAX LEE SPRAYING INC	1555 TERRY DR	SLATON, 79364	--
16	DOCKETS	06-1989-0460	0.001 S	MAX LEE SPRAYING INC	1555 TERRY DR	SLATON, 79364	--
16	ICIS	4237793063	0.001 S	MAX LEE SPRAYING INC	1555 TERRY DR	SLATON, 79364	--
16	NFRAP	TXD081086035	0.001 S	MAX LEE SPRAYING, INC	1555 TERRY DRIVE	SLATON, 79364	--
16	CERCLIS	TXD081086035	0.001 S	MAX LEE SPRAYING, INC	1555 TERRY DRIVE	SLATON, 79364	--
17	NFRAP	TXD981057045	0.001 E	DAVID GOSSETT	1575 W. CROSBY	SLATON, 79364	--
17	CERCLIS	TXD981057045	0.001 E	DAVID GOSSETT	1575 W. CROSBY	SLATON, 79364	--
18	DOD	46088	0.001 NW	REESE AIR FORCE BASE (CLOSED)		, 79416	--
19	ERNSTX	1307583229	0.001 NW		REESE AFB	LUBBOCK, 79408	--
20	FRSTX	110036552450	0.001 NW	REESE EDUCATIONAL CTR	9421 4TH ST	LUBBOCK, 794161901	--
21	FRSTX	110035023471	0.001 NW	US AIR FORCE AIR EDUCATION & TRAINING CO	9801 REESE BLVD N	LUBBOCK, 794162100	--
21	FRSTX	110034928078	0.001 NW	REESE AIR FORCE BASE	9801 REESE BLVD N STE 300	LUBBOCK, 794162107	--
21	FRSTX	110033914012	0.001 NW	LRRA CARETAKERS	9801 REESE BLVD N STE 20	LUBBOCK, 79416-2100	--
22	FRSTX	110033500281	0.001 W	BILL FOWLER WINDSOR PARK	6404 COUNTY ROAD 7470	LUBBOCK, 794246435	--
23	FRSTX	110033729357	0.001 W	HENRY MIRABAL RENTAL PROPERTY	150TH & SLIDE RD	LUBBOCK, 79423	--
24	FRSTX	110033744349	0.001 W	JIM FISHER LOT 185 WINDSOR PARK ADDITION	6407 COUNTY ROAD 7460	LUBBOCK, 794246432	--



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REPORT SUMMARY OF LOCATABLE SITES

MAP ID#	DATABASE NAME	SITE ID#	DISTANCE FROM SITE	SITE NAME	ADDRESS	CITY, ZIP CODE	PAGE #
25	FRSTX	110033828650	0.001 W	JIM FISHER LOT 167 WINDSOR PARK ADDITION	6308 COUNTY ROAD 7475	LUBBOCK, 794246437	--
25	FRSTX	110033983198	0.001 W	JIM FISHER LOT 155 WINDSOR PARK	6307 COUNTY ROAD 7475	LUBBOCK, 794246438	--
25	FRSTX	110033774388	0.001 W	FISHER LOT 156 WINDSOR PARK ADDITION	6405 COUNTY ROAD 7475	LUBBOCK, 794246440	--
26	FRSTX	110033836464	0.001 W	JIM FISHER CONSTRUCTION LOT 153 WINDSOR	6303 COUNTY ROAD 7475	LUBBOCK, 794246438	--
27	FRSTX	110033950393	0.001 W	JIM FISHER LOT 143 WINDSOR PARK ADDITION	6304 COUNTY ROAD 7460	LUBBOCK, 794246429	--
27	FRSTX	110033884777	0.001 W	FISHER LOT 142 WINDSOR PARK ADDITION	6306 COUNTY ROAD 7460	LUBBOCK, 794246429	--
28	FRSTX	110010723958	0.001 S	MAX LEE SPRAYING INC	1555 TERRY DR	SLATON, 79364	--
29	FRSTX	110033915887	0.001 W	LUBBOCK QUALITY HOMES II TIMBERRIDGE EST	ON THE INTEX OF COUNTY RD 7500 AND	LUBBOCK, 79424	--
30	FRSTX	110033368530	0.001 W	ALLEN BUTLER ASPHALT PLANT 1 PORTABLE	PORTABLE	LUBBOCK, 79464	--
31	FRSTX	110033545242	0.001 S	AUTOZONE 3501	615 HIGHWAY 84	SLATON, 79364	--
32	FRSTX	110035397077	0.001 NW	SPADE COOP SHALLOWATER	7908 N FM 179	SHALLOWATER, 793633628	--
33	FRSTX	110035184172	0.001 NW	WESTGATE VILLAGE MHP	9378 20TH ST	LUBBOCK, 79407-2901	--
34	FRSTX	110005184692	0.001 NW	REESE TECHNOLOGY CENTER	9801 REESE BLVD	LUBBOCK, 79416-2100	--
34	FRSTX	110042005344	0.001 NW	US DEPARTMENT OF THE AIR FORCE	9801 REESE BLVD	LUBBOCK, 79416-2100	--
35	FRSTX	110040156318	0.001 W	HIGHLAND OAKS ADDITION	14604 COUNTY ROAD 1835	LUBBOCK, 79424	--
36	FRSTX	110034064152	0.001 NW	HURLWOOD CO	411 QUITNA AVE	LUBBOCK, 794161814	--
37	FRSTX	110033956976	0.001 W	JIM FISHER LOT 183 WINDSOR PARK	6403 COUNTY ROAD 7460	LUBBOCK, 794246432	--
38	FRSTX	110034050087	0.001 W	JIM FISHER LOT 139 WINDSOR PARK ADDITION	6406 COUNTY ROAD 7460	LUBBOCK, 794246431	--
38	FRSTX	110033960934	0.001 W	JIM FISHER CONSTRUCTION LOT 140 WINDSOR	6404 COUNTY ROAD 7460	LUBBOCK, 794246431	--
39	FRSTX	110034020137	0.001 W	JIM FISHER 6303 CR 7450	6303 COUNTY ROAD 7450	LUBBOCK, 794248435	--



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REPORT SUMMARY OF LOCATABLE SITES

MAP ID#	DATABASE NAME	SITE ID#	DISTANCE FROM SITE	SITE NAME	ADDRESS	CITY, ZIP CODE	PAGE #
40	FRSTX	110034032151	0.001 W	JIM FISHER LOT 157 WINDSOR PARK ADDITION	6311 COUNTY ROAD 7475	LUBBOCK, 794246438	--
41	FRSTX	110034338287	0.001 W	EDGE CONCEPTS LOTS 1-57 TIMBER RIDGE ADD	3314 COUNTY ROAD 7520	LUBBOCK, 794236371	--
42	FRSTX	110034202431	0.001 NW	DUIINCK BROTHERS	NW OF FM 179 ON US HWY 84 INTERSECT	LUBBOCK, 79363	--
43	FRSTX	110034806262	0.001 W	TEXAS TECH UNIVERSITY	9TH & INDIANA	LUBBOCK, 79409	--
44	FRSTX	110034201316	0.001 W	C & N GROUP TIMBER RIDGE	ON SEC OF INTX OF 146TH ST & INDIAN	LUBBOCK, 79426	--
45	LPST	094395	0.010 NW	REESE AIR FORCE BASE	BASE SERVICE STATION IHW 62005	LUBBOCK, 79489	--
45	LPST	102262	0.010 NW	REESE AFB	64 CES DEV REESE AFB IHW 62005 H	LUBBOCK, 79489	--
45	LPST	104957	0.010 NW	REESE AFB	BUILDING 504 IHW 62005 HW PERMIT	LUBBOCK, 79489	--
45	TIERII	4XR6XJ00NTXV	0.010 NW	WORSHAM	10 MILES SE OF PECOS OFF HWY 1450	PECOS, 79489	--
45	ERNSTX	820976641	0.010 NW		ROUTE 8	LUBBOCK, 794895047	--
45	ICIS	1385659865	0.010 NW	DRMO-II REESE AFB TX	5 MI W OF LUBBOCK TX ON F	LUBBOCK, 79489	--
45	ICIS	4123335524	0.010 NW	DRMO-II REESE AFB TX	5 MI W OF LUBBOCK TX ON FM 2255	LUBBOCK, 79489	--
45	PADS	TX8571524091	0.010 NW	REESE AFB	64 CIVIL ENGINEERING SQUADRON/DEV	REESE AFB, 79489-5000	--
45	PADS	TX4971524091	0.010 NW	DRMO-II REESE AFB, TX	5 MI WEST OF LUBBOCK, TX ON FM 2255	REESE AFG, 79489	--
45	LPST	092302	0.010 NW	REESE AIR FORCE BASE	SOUTH END TAXIWAY ON EAST SIDE OF T	LUBBOCK, 79489	--
46	FRSTX	110034071910	0.010 W	JIM FISHER LOT 160 WINDSOR PARK ADDITION	6312 COUNTY ROAD 7450	LUBBOCK, 794248434	--
47	TIERII	93G7SE00PUF7	0.020 S	WEST TEXAS AGRIPLEX - SLATON	805 SOUTH HWY 84	SLATON, 79364	--
48	LPST	107703	0.040 NW	REESE AFB	452 SOUTH GILBERT AVENUE 462	LUBBOCK, 79489	--
49	CALF	1894	0.040 NW	LARRY JARNAGIN	S OF SHALLOWATER 1M N OF FM179 AND		--
50	PST	76189	0.050 NW	SOUTHWEST MILK LOGISTICS	901 AVENUE E	SHALLOWATER, 79363	--
51	CALF	1915	0.050 W	DR. STEVEN S. LEMLEY	W SIDE OF S QUAKER .7M S OF FM1585		--
52	IHW	62005	0.070 NW	US DEPT AIR FORCE	9801 REESE BLVD N	LUBBOCK, 79416	--



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REPORT SUMMARY OF LOCATABLE SITES

MAP ID#	DATABASE NAME	SITE ID#	DISTANCE FROM SITE	SITE NAME	ADDRESS	CITY, ZIP CODE	PAGE #
				REESE EDUCATION TRAINI			
52	IHWCA	62005	0.070 NW	FORMER REESE AIR FORCE BASE	9801 REESE BLVD N	LUBBOCK, 79416	--
52	PIHW	62005	0.070 NW	US DEPT AIR FORCE REESE EDUCATION TRAINI	9801 REESE BLVD N	LUBBOCK, 79416	--
52	PST	4215	0.070 NW	REESE AIR FORCE BASE	9801 REESE BLVD N STE 300	LUBBOCK, 79416	--
52	RCRAC	TX8571524091	0.070 NW	US DEPT AIR FORCE REESE EDUCATION TRAINI	9801 REESE BLVD N	LUBBOCK, 794162100	--
52	RCRAGR06	TXR000031393	0.070 NW	TEXAS TECH UNIVERSITY - REESE TECHNOLOGY	9801 REESE BLVD N	LUBBOCK, 79416	--
52	RCRAGR06	TX8571524091	0.070 NW	US DEPT AIR FORCE REESE EDUCATION TRAINI	9801 REESE BLVD N	LUBBOCK, 794162100	--
52	IHW	86090	0.070 NW	REESE TECHNOLOGY CENTER	9801 REESE BLVD N	LUBBOCK, 79416	--
53	IHW	62042	0.190 W	RENFROW HARD CHROME PLATING	13804 HIGHWAY 87	LUBBOCK, 79423	--
54	PST	44351	0.250 W	JJS FAST STOP	1002 FLINT AVE	WOLFFORTH, 79382	--
55	LPST	104647	0.350 NW	THOMPSON ANTIQUES REED IMPLEMENT	806 CLOVIS ROAD	SHALLOWATER, 79363	--
56	WMRF	448	0.440 NW	CITY OF SHALLOWATER		SHALLOWATER	--
56	IHWCA	39880	0.440 NW	ACID DELINTERS SHALLOWATER			--
57	LPST	101339	0.460 W	NEW HOME CO OP GIN LAKEVIEW	8 MI W OF NEW HOPE ON STATE ROAD 21	NEW HOME, 79382	--
57	LPST	098445	0.460 W	SCOTT MFG CO INC	HWY 1585 3 MILES SW OF WOLFFORTH	WOLFFORTH, 79382	--
58	LPST	094611	0.460 NW	PCT 4 R & B MAINTENANCE FACILITY	801 8TH ST	SHALLOWATER, 79363	--
59	NFRAP	TXD027242510	0.490 W	FARMER SERVICE COMPANY	1/2 MI W OF HWY 62/82 & FM 179	WOLFFORTH, 79382	--
59	CERCLIS	TXD027242510	0.490 W	FARMER SERVICE COMPANY	1/2 MI W OF HWY 62/82 & FM 179	WOLFFORTH, 79382	--

ENVIRONMENTAL RECORDS DEFINITIONS - FEDERAL

AIRSAFS Aerometric Information Retrieval System / Air Facility Subsystem

VERSION DATE: 8/2012

The United States Environmental Protection Agency (EPA) modified the Aerometric Information Retrieval System (AIRS) to a database that exclusively tracks the compliance of stationary sources of air pollution with EPA regulations: the Air Facility Subsystem (AFS). Since this change in 2001, the management of the AIRS/AFS database was assigned to EPA's Office of Enforcement and Compliance Assurance.

BF Brownfields Management System

VERSION DATE: 7/2013

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. The United States Environmental Protection Agency maintains this database to track activities in the various brown field grant programs including grantee assessment, site cleanup and site redevelopment.

BRS Biennial Reporting System

VERSION DATE: 12/2011

The United States Environmental Protection Agency (EPA), in cooperation with the States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. The Biennial Report captures detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage and disposal facilities. Currently, the EPA states that data collected between 1991 and 1997 was originally a part of the defunct Biennial Reporting System and is now incorporated into the RCRAInfo data system.

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 3/2013

The U.S. Department of Justice ("the Department") provides this information as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments. The Department does not establish, implement, enforce, or certify compliance with clean-up or remediation standards for contaminated sites; the public should contact a state or local health department or environmental protection agency for that information.



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CERCLIS Comprehensive Environmental Response, Compensation & Liability Information System

VERSION DATE: 4/2013

CERCLIS is the repository for site and non-site specific Superfund information in support of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). This United States Environmental Protection Agency database contains an extract of sites that have been investigated or are in the process of being investigated for potential environmental risk.

DNPL Delisted National Priorities List

VERSION DATE: 4/2013

This database includes sites from the United States Environmental Protection Agency's Final National Priorities List (NPL) where remedies have proven to be satisfactory or sites where the original analyses were inaccurate, and the site is no longer appropriate for inclusion on the NPL, and final publication in the Federal Register has occurred.

DOCKETS EPA Docket Data

VERSION DATE: 12/2005

The United States Environmental Protection Agency Docket data lists Civil Case Defendants, filing dates as far back as 1971, laws broken including section, violations that occurred, pollutants involved, penalties assessed and superfund awards by facility and location. Please refer to ICIS database as source of current data.

DOD Department of Defense Sites

VERSION DATE: 12/2005

This information originates from the National Atlas of the United States Federal Lands data, which includes lands owned or administered by the Federal government. Army DOD, Army Corps of Engineers DOD, Air Force DOD, Navy DOD and Marine DOD areas of 640 acres or more are included.

EC Federal Engineering Institutional Control Sites

VERSION DATE: 4/2013

This database includes site locations where Engineering and/or Institutional Controls have been identified as part of a selected remedy for the site as defined by United States Environmental Protection Agency official remedy decision documents. A site listing does not indicate that the institutional and engineering controls are currently in place nor will be in place once the remedy is complete; it only indicates that the decision to include either of them in the remedy is documented as of the completed date of the document. Institutional controls are actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use. Engineering controls include caps, barriers, or other device engineering to prevent access, exposure, or continued migration of contamination.



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ERNSTX Emergency Response Notification System

VERSION DATE: 12/2012

This National Response Center database contains data on reported releases of oil, chemical, radiological, biological, and/or etiological discharges into the environment anywhere in the United States and its territories. The data comes from spill reports made to the U.S. Environmental Protection Agency, U.S. Coast Guard, the National Response Center and/or the U.S. Department of Transportation.

FRSTX Facility Registry System

VERSION DATE: 3/2013

The United States Environmental Protection Agency's Office of Environmental Information (OEI) developed the Facility Registry System (FRS) as the centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. The Facility Registry System replaced the Facility Index System or FINDS database.

FUDS Formerly Used Defense Sites

VERSION DATE: 2/2013

The 2011 FUDS inventory includes properties previously owned by or leased to the United States and under Secretary of Defense jurisdiction. The remediation of these properties is the responsibility of the Department of Defense.

HISTPST Historical Gas Stations

VERSION DATE: 7/1930

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

HMIRSR06 Hazardous Materials Incident Reporting System

VERSION DATE: 7/2013

The HMIRS database contains unintentional hazardous materials release information reported to the U.S. Department of Transportation located in EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

ICIS Integrated Compliance Information System (formerly DOCKETTS)

VERSION DATE: 8/2012

ICIS is a case activity tracking and management system for civil, judicial, and administrative federal Environmental Protection Agency enforcement cases. ICIS contains information on federal administrative and federal judicial cases under the following environmental statutes: the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Emergency Planning



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and Community Right-to-Know Act - Section 313, the Toxic Substances Control Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Safe Drinking Water Act, and the Marine Protection, Research, and Sanctuaries Act.

ICISNPDES Integrated Compliance Information System National Pollutant Discharge Elimination System
VERSION DATE: 8/2012

In 2006, the Integrated Compliance Information System (ICIS) - National Pollutant Discharge Elimination System (NPDES) became the NPDES national system of record for select states, tribes and territories. ICIS-NPDES is an information management system maintained by the United States Environmental Protection Agency's Office of Compliance to track permit compliance and enforcement status of facilities regulated by the NPDES under the Clean Water Act. ICIS-NPDES is designed to support the NPDES program at the state, regional, and national levels.

LUCIS Land Use Control Information System
VERSION DATE: 9/2006

The LUCIS database is maintained by the U.S. Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

MLTS Material Licensing Tracking System
VERSION DATE: 1/2013

MLTS is a list of approximately 8,100 sites which have or use radioactive materials subject to the United States Nuclear Regulatory Commission (NRC) licensing requirements.

NFRAP No Further Remedial Action Planned Sites
VERSION DATE: 4/2013

This database includes sites which have been determined by the United States Environmental Protection Agency, following preliminary assessment, to no longer pose a significant risk or require further activity under CERCLA. After initial investigation, no contamination was found, contamination was quickly removed or contamination was not serious enough to require Federal Superfund action or NPL consideration.

NLRRCRAC No Longer Regulated RCRA Corrective Action Facilities
VERSION DATE: 6/2013

This database includes RCRA Corrective Action facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements.



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NLRRCRAG No Longer Regulated RCRA Generator Facilities

VERSION DATE: 6/2013

This database includes RCRA Generator facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly generated hazardous waste.

Large Quantity Generators: Generate 1,000 kg or more of hazardous waste during any calendar month; or Generate more than 1 kg of acutely hazardous waste during any calendar month; or Generate more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste during any calendar month; or Generate 1 kg or less of acutely hazardous waste during any calendar month, and accumulate more than 1kg of acutely hazardous waste at any time; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulated more than 100 kg of that material at any time.

Small Quantity Generators: Generate more than 100 and less than 1000 kilograms of hazardous waste during any calendar month and accumulate less than 6000 kg of hazardous waste at any time; or Generate 100 kg or less of hazardous waste during any calendar month, and accumulate more than 1000 kg of hazardous waste at any time.

Conditionally Exempt Small Quantity Generators: Generate 100 kilograms or less of hazardous waste per calendar month, and accumulate 1000 kg or less of hazardous waste at any time; or Generate one kilogram or less of acutely hazardous waste per calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste during any calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste.

NLRRCRAT No Longer Regulated RCRA Non-CORRACTS TSD Facilities

VERSION DATE: 6/2013

This database includes RCRA Non-Corrective Action TSD facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly treated, stored or disposed of hazardous waste.

NPDES06 National Pollutant Discharge Elimination System

VERSION DATE: 4/2007

Information in this database is extracted from the Water Permit Compliance System (PCS) database which is used by United States Environmental Protection Agency to track surface water permits issued under the Clean Water Act. This database includes permitted facilities located in



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EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. The NPDES database was collected from December 2002 until April 2007. Refer to the PCS and/or ICIS-NPDES database as source of current data.

NPL National Priorities List

VERSION DATE: 4/2013

This database includes United States Environmental Protection Agency (EPA) National Priorities List sites that fall under the EPA's Superfund program, established to fund the cleanup of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action.

ODI Open Dump Inventory

VERSION DATE: 6/1985

The open dump inventory was published by the United States Environmental Protection Agency. An "open dump" is defined as a facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944) and which is not a facility for disposal of hazardous waste. This inventory has not been updated since June 1985.

PADS PCB Activity Database System

VERSION DATE: 6/2013

The PCB Activity Database System (PADS) is used by the United States Environmental Protection Agency to monitor the activities of polychlorinated biphenyls (PCB) handlers.

PCSR06 Permit Compliance System

VERSION DATE: 8/2012

The Permit Compliance System is used in tracking enforcement status and permit compliance of facilities controlled by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act and is maintained by the United States Environmental Protection Agency's Office of Compliance. PCS is designed to support the NPDES program at the state, regional, and national levels. This database includes permitted facilities located in EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

PNPL Proposed National Priorities List

VERSION DATE: 4/2013

This database contains sites proposed to be included on the National Priorities List (NPL) in the Federal Register. The United States Environmental Protection Agency investigates these sites to determine if they may present long-term threats to public health or the environment.



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RCRAC Resource Conservation & Recovery Act - Corrective Action Facilities

VERSION DATE: 6/2013

This database includes hazardous waste sites listed with corrective action activity in the RCRAInfo system. The Corrective Action Program requires owners or operators of RCRA facilities (or treatment, storage, and disposal facilities) to investigate and cleanup contamination in order to protect human health and the environment. The United States Environmental Protection Agency defines RCRAInfo as the comprehensive information system which provides access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS).

RCRAGR06 Resource Conservation & Recovery Act - Generator Facilities

VERSION DATE: 6/2013

This database includes sites listed as generators of hazardous waste (large, small, and exempt) in the RCRAInfo system. The United States Environmental Protection Agency defines RCRAInfo as the comprehensive information system which provides access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). This database includes sites located in EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

Large Quantity Generators: Generate 1,000 kg or more of hazardous waste during any calendar month; or Generate more than 1 kg of acutely hazardous waste during any calendar month; or Generate more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste during any calendar month; or Generate 1 kg or less of acutely hazardous waste during any calendar month, and accumulate more than 1kg of acutely hazardous waste at any time; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulated more than 100 kg of that material at any time.

Small Quantity Generators: Generate more than 100 and less than 1000 kilograms of hazardous waste during any calendar month and accumulate less than 6000 kg of hazardous waste at any time; or Generate 100 kg or less of hazardous waste during any calendar month, and accumulate more than 1000 kg of hazardous waste at any time.

Conditionally Exempt Small Quantity Generators: Generate 100 kilograms or less of hazardous waste per calendar month, and accumulate 1000 kg or less of hazardous waste at any time; or Generate one kilogram or less of acutely hazardous waste per calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous waste; or Generate 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, or acutely hazardous



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waste during any calendar month, and accumulate at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste.

RCRASC RCRA Sites with Controls

VERSION DATE: 6/2012

This list of Resource Conservation and Recovery Act sites with institutional controls in place is provided by the U.S. Environmental Protection Agency.

RCRAT Resource Conservation & Recovery Act - Treatment, Storage & Disposal Facilities

VERSION DATE: 6/2013

This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste in the RCRAInfo system. The United States Environmental Protection Agency defines RCRAInfo as the comprehensive information system which provides access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRAInfo replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS).

RODS Record of Decision System

VERSION DATE: 7/2013

These decision documents maintained by the United States Environmental Protection Agency describe the chosen remedy for NPL (Superfund) site remediation. They also include site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, and scope and role of response action.

SFLIENS CERCLIS Liens

VERSION DATE: 6/2012

A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which United States Environmental Protection Agency has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. This database contains those CERCLIS sites where the Lien on Property action is complete.

SSTS Section Seven Tracking System

VERSION DATE: 12/2009

The United States Environmental Protection Agency tracks information on pesticide establishments through the Section Seven Tracking System (SSTS). SSTS records the registration of new



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establishments and records pesticide production at each establishment. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires that production of pesticides or devices be conducted in a registered pesticide-producing or device-producing establishment. ("Production" includes formulation, packaging, repackaging, and relabeling.)

TRI Toxics Release Inventory

VERSION DATE: 12/2011

The Toxics Release Inventory, provided by the United States Environmental Protection Agency, includes data on toxic chemical releases and waste management activities from certain industries as well as federal facilities. This inventory contains information about the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on the quantities of toxic chemicals sent to other facilities for further waste management.

TSCA Toxic Substance Control Act Inventory

VERSION DATE: 12/2006

The Toxic Substances Control Act (TSCA) was enacted in 1976 to ensure that chemicals manufactured, imported, processed, or distributed in commerce, or used or disposed of in the United States do not pose any unreasonable risks to human health or the environment. TSCA section 8(b) provides the United States Environmental Protection Agency authority to "compile, keep current, and publish a list of each chemical substance that is manufactured or processed in the United States." This TSCA Chemical Substance Inventory contains non-confidential information on the production amount of toxic chemicals from each manufacturer and importer site.

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APAR Affected Property Assessment Reports

VERSION DATE: 8/2013

As regulated by the Texas Commission on Environmental Quality, an Affected Property Assessment Report is required when a person is addressing a release of chemical of concern (COC) under 30 TAC Chapter 350, the Texas Risk Reduction Program (TRRP). The purpose of the APAR is to document all relevant affected property information to identify all release sources and COCs, determine the extent of all COCs, identify all transport/exposure pathways, and to determine if any response actions are necessary. The Texas Administrative Code Title 30 §350.4(a)(1) defines affected property as the entire area (i.e. on-site and off-site; including all environmental media) which contains releases of chemicals of concern at concentrations equal to or greater than the assessment level applicable for residential land use and groundwater classification.

BSA Brownfields Site Assessments

VERSION DATE: 8/2013

The Brownfields Site Assessments database is maintained by the Texas Commission on Environmental Quality (TCEQ). The TCEQ, in close partnership with the U.S. Environmental Protection Agency (EPA) and other federal, state, and local redevelopment agencies, and stakeholders, is facilitating cleanup, transferability, and revitalization of brownfields through the development of regulatory, tax, and technical assistance tools.

CALF Closed & Abandoned Landfill Inventory

VERSION DATE: 11/2005

The Texas Commission on Environmental Quality, under a contract with Texas State University, and in cooperation with the 24 regional Council of Governments (COGs) in the State, has located over 4,000 closed and abandoned municipal solid waste landfills throughout Texas. This listing contains "unauthorized sites". Unauthorized sites have no permit and are considered abandoned. The information available for each site varies in detail and this historical information is not updated. Please refer to the specific regional COG for the most current information.

DCR Dry Cleaner Registration Database

VERSION DATE: 7/2013

The database includes dry cleaning drop stations and facilities registered with the Texas Commission on Environmental Quality.

DCRPS Dry Cleaner Remediation Program Sites

VERSION DATE: 3/2013

This list of DCRP sites is provided by the Texas Commission on Environmental Quality (TCEQ). According to the TCEQ, the Dry Cleaner Remediation Program (DCRP) establishes a prioritization



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list of dry cleaner sites and administers the Dry Cleaning Remediation fund to assist with remediation of contamination caused by dry cleaning solvents.

GWCC Groundwater Contamination Cases

VERSION DATE: 12/2011

This report contains a listing of groundwater contamination cases which were documented for the 2011 calendar year. Texas Water Code, Section 26.406 requires the annual report to describe the current status of groundwater monitoring activities conducted or required by each agency at regulated facilities or associated with regulated activities. The agencies reporting these contamination cases include the Texas Commission on Environmental Quality, Railroad Commission of Texas, Texas Alliance of Groundwater Districts, and Department of State Health Services.

HISTGWCC Historic Groundwater Contamination Cases

VERSION DATE: NR

This historic report contains all agency groundwater contamination cases documented from 1994 to 2010. The agencies that reported these contamination cases included the Texas Commission on Environmental Quality, Railroad Commission of Texas, Texas Alliance of Groundwater Districts, and Department of State Health Services.

IHW Industrial and Hazardous Waste Sites

VERSION DATE: 8/2013

Owner and facility information is included in this database of permitted and non-permitted industrial and hazardous waste sites. Industrial waste is waste that results from or is incidental to operations of industry, manufacturing, mining, or agriculture. Hazardous waste is defined as any solid waste listed as hazardous or possesses one or more hazardous characteristics as defined in federal waste regulations. The IHW database is maintained by the Texas Commission on Environmental Quality.

IHWCA Industrial and Hazardous Waste Corrective Action Sites

VERSION DATE: 7/2013

This database is provided by the Texas Commission on Environmental Quality (TCEQ). According to the TCEQ, the mission of the industrial and hazardous waste corrective action program is to oversee the cleanup of sites contaminated from industrial and municipal hazardous and industrial nonhazardous wastes. The goals of this program are to: Ensure that sites are assessed and remediated to levels that protect human health and the environment; Verify that waste management units or facilities are taken out of service and closed properly; and to Facilitate revitalization of contaminated properties.



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IOP Innocent Owner / Operator Database

VERSION DATE: 8/2013

Texas Innocent Owner / Operator (IOP), created by House Bill 2776 of the 75th Legislature, provides a certificate to an innocent owner or operator if their property is contaminated as a result of a release or migration of contaminants from a source or sources not located on the property, and they did not cause or contribute to the source or sources of contamination. The IOP database is maintained by the Texas Commission on Environmental Quality.

LIENS TCEQ Liens

VERSION DATE: 5/2013

Liens filed upon State and/or Federal Superfund Sites by the Texas Commission on Environmental Quality.

LPST Leaking Petroleum Storage Tanks

VERSION DATE: 8/2013

The Leaking Petroleum Storage Tank listing is derived from the Petroleum Storage Tank (PST) database and is maintained by the Texas Commission on Environmental Quality. This listing includes aboveground and underground storage tank facilities with reported leaks.

MSD Municipal Setting Designations

VERSION DATE: 4/2013

The Texas Commission on Environmental Quality defines an MSD as an official state designation given to property within a municipality or its extraterritorial jurisdiction that certifies that designated groundwater at the property is not used as potable water, and is prohibited from future use as potable water because that groundwater is contaminated in excess of the applicable potable-water protective concentration level. The prohibition must be in the form of a city ordinance, or a restrictive covenant that is enforceable by the city and filed in the property records. The MSD property can be a single property, multi-property, or a portion of property.

MSWLF Municipal Solid Waste Landfill Sites

VERSION DATE: 8/2013

The municipal solid waste landfill database is provided by the Texas Commission on Environmental Quality. This database includes active landfills and inactive landfills, where solid waste is treated or stored.



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NOV Notice of Violations

VERSION DATE: 7/2013

This database containing Notice of Violations (NOV) is maintained by the Texas Commission on Environmental Quality. An NOV is a written notification that documents and communicates violations observed during an inspection to the business or individual inspected.

PIHW Permitted Industrial Hazardous Waste Sites

VERSION DATE: 8/2013

Owner and facility information is included in this database of all permitted industrial and hazardous waste sites. Industrial waste is waste that results from or is incidental to operations of industry, manufacturing, mining, or agriculture. Hazardous waste is defined as any solid waste listed as hazardous or possesses one or more hazardous characteristics as defined in federal waste regulations. Permitted IHW facilities are regulated under 30 Texas Administrative Code Chapter 335 in addition to federal regulations. The IHW database is maintained by the Texas Commission on Environmental Quality.

PST Petroleum Storage Tanks

VERSION DATE: 8/2013

The Petroleum Storage Tank database is administered by the Texas Commission on Environmental Quality (TCEQ). Both Underground storage tanks (USTs) and Aboveground storage tanks (ASTs) are included in this report. Petroleum Storage Tank registration has been a requirement with the TCEQ since 1986.

RRCVCP Railroad Commission VCP and Brownfield Sites

VERSION DATE: 4/2013

According to the Railroad Commission of Texas, their Voluntary Cleanup Program (RRC-VCP) provides an incentive to remediate Oil & Gas related pollution by participants as long as they did not cause or contribute to the contamination. Applicants to the program receive a release of liability to the state in exchange for a successful cleanup.

RWS Radioactive Waste Sites

VERSION DATE: 7/2006

This Texas Commission on Environmental Quality database contains all sites in the State of Texas that have been designated as Radioactive Waste sites.



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SF State Superfund Sites

VERSION DATE: 7/2013

The state Superfund program mission is to remediate abandoned or inactive sites within the state that pose an unacceptable risk to public health and safety or the environment, but which do not qualify for action under the federal Superfund program (NPL - National Priority Listing). As required by the Texas Solid Waste Disposal Act, Texas Health and Safety Code, Chapter 361, the Texas Commission on Environmental Quality identifies and evaluates these facilities for inclusion on the state Superfund registry. This registry includes any recent developments and the anticipated action for these sites.

SIEC01 State Institutional/Engineering Control Sites

VERSION DATE: 8/2013

The Texas Risk Reduction Program (TRRP) requires the placement of institutional controls (e.g., deed notices or restrictive covenants) on affected property in different circumstances as part of completing a response action. In its simplest form, an institutional control (IC) is a legal document that is recorded in the county deed records. In certain circumstances, local zoning or ordinances can serve as an IC. This listing may also include locations where Engineering Controls are in effect, such as a cap, barrier, or other engineering device to prevent access, exposure, or continued migration of contamination. The sites included on this list are regulated by various programs of the Texas Commission on Environmental Quality (TCEQ).

SPILLS Spills Listing

VERSION DATE: 7/2013

This Texas Commission on Environmental Quality database includes releases of hazardous or potentially hazardous materials into the environment.

TIERII Tier II Chemical Reporting Program Facilities

VERSION DATE: 12/2012

The Texas Tier II Chemical Reporting Program in the Department of State Health Services (DSHS) is the state repository for EPCRA-required Emergency Planning Letters (EPLs), which are one-time notifications to the state from facilities that have certain extremely hazardous chemicals in specified amounts. The Program is also the state repository for EPCRA/state-required hazardous chemical inventory reports called Texas Tier Two Reports. This data contains those facility reports for the 2005 through the 2012 calendar years.

VCP Voluntary Cleanup Program Sites

VERSION DATE: 8/2013

The Texas Voluntary Cleanup Program (VCP) provides administrative, technical, and legal incentives to encourage the cleanup of contaminated sites in Texas. Since all non-responsible



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parties, including future lenders and landowners, receive protection from liability to the state of Texas for cleanup of sites under the VCP, most of the constraints for completing real estate transactions at those sites are eliminated. As a result, many unused or underused properties may be restored to economically productive or community beneficial uses. The VCP database is maintained by the Texas Commission on Environmental Quality.

WMRF Recycling Facilities

VERSION DATE: 11/2012

This listing of recycling facilities is provided by the Texas Commission on Environmental Quality's Recycle Texas Online service. The company information provided in this database is self-reported. Since recyclers post their own information, a facility or company appearing on the list does not imply that it is in compliance with TCEQ regulations or other applicable laws. This database is no longer maintained and includes the last compilation of the program participants before the Recycle Texas Online program was closed.



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ENVIRONMENTAL RECORDS DEFINITIONS - TRIBAL

INDIANRES Indian Reservations

VERSION DATE: 1/2000

The Department of Interior and Bureau of Indian Affairs maintains this database that includes American Indian Reservations, off-reservation trust lands, public domain allotments, Alaska Native Regional Corporations and Recognized State Reservations.

LUSTR06 Leaking Underground Storage Tanks On Tribal Lands

VERSION DATE: 2/2013

This database, provided by the United States Environmental Protection Agency (EPA), contains leaking underground storage tanks on Tribal lands located in EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

ODINDIAN Open Dump Inventory on Tribal Lands

VERSION DATE: 11/2006

This Indian Health Service database contains information about facilities and sites on tribal lands where solid waste is disposed of, which are not sanitary landfills or hazardous waste disposal facilities, and which meet the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944).

USTR06 Underground Storage Tanks On Tribal Lands

VERSION DATE: 2/2013

This database, provided by the United States Environmental Protection Agency (EPA), contains underground storage tanks on Tribal lands located in EPA Region 6. This region includes the following states: Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.



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