

**SKYLINE LANDFILL
CITY OF FERRIS
DALLAS AND ELLIS COUNTIES, TEXAS
TCEQ PERMIT NO. MSW 42D**

PERMIT AMENDMENT APPLICATION

**PART II
EXISTING CONDITIONS AND
CHARACTER OF THE FACILITY AND SURROUNDING AREA**

Prepared for
Waste Management of Texas, Inc.

April 2012

Revised August 2012



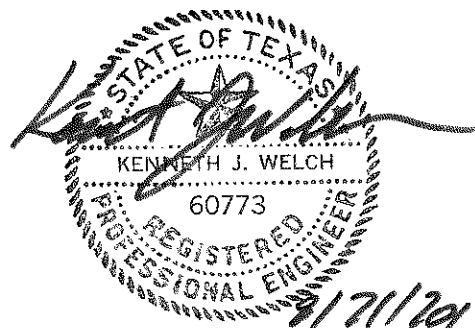
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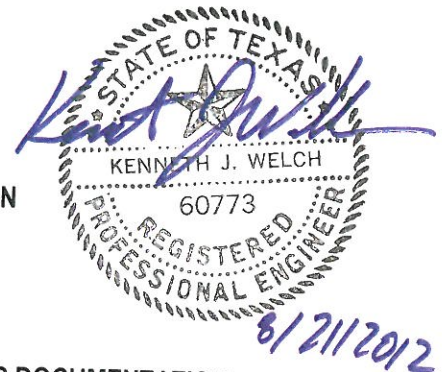


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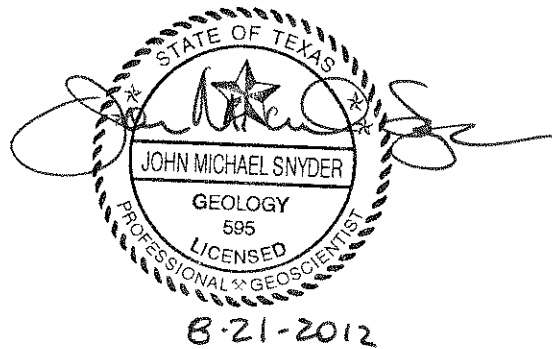
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For Section 10.5



1 EXISTING CONDITIONS SUMMARY

30 TAC §330.61(a)

1.1 Existing Conditions

The Skyline Landfill is an existing 666.95-acre (667 acres), Type I municipal solid waste disposal facility owned and operated by Waste Management of Texas, Inc. (WMTX). The Skyline Landfill is located in Dallas and Ellis Counties, on the north side of the city of Ferris within the city limits of Ferris, Texas and west of Old U.S. Highway 75 (Business IH 45). The Skyline Landfill provides waste disposal capacity for residences and businesses in Dallas and Ellis Counties and surrounding Texas counties.

The Skyline Landfill was originally permitted by the state of Texas in 1976 as Permit No. MSW 42. Trinity Valley Reclamation was issued a permit amendment in 1979 as Permit No. MSW 42A, expanding the permit boundary to 73 acres. The facility was acquired by WMTX from Trinity Valley Reclamation in 1987. The landfill permit boundary was expanded from 73 acres to a total of about 667 acres through a permit amendment issued by the Texas Natural Resources Conservation Commission (TNRCC) on April 18, 1995 as Permit No. MSW 42C. The Skyline Landfill is currently operating under the 1995 permit requirements and any subsequent modifications or authorizations.

The current permitted Skyline Landfill consists of a permit boundary of about 667 acres. The area within the permit boundary consists of 286.4 acres of permitted Subtitle D waste disposal footprint (Phase 1, 2, 3, 4, and 5); 68.3 acres of Pre-Subtitle D waste disposal area with constructed final cover, and 312.3 acres of buffer and other areas. The Subtitle D waste disposal footprint (Phase 1, 2, 3, 4, and 5) includes approximately 146.5 acres of active waste disposal area and approximately 139.9 acres of future disposal area. There are approximately 68.3 acres of Pre-Subtitle D area that have received final cover and will not accept additional waste. The remaining site is currently active and all future development is under Subtitle D standards and requirements.

The permit amendment application will reduce the current permit boundary by 5.21 acres. The Skyline Landfill proposed permit boundary is 661.74 (662) acres. The proposed landfill expansion will remove approximately 20.1 acres and add approximately 22.3 acres of waste footprint for a net increase of 2.2 acres of waste disposal footprint. The maximum final contour elevation will remain at 688 feet-msl., ~~and the permit boundary will remain at approximately 667 acres.~~ The waste disposal footprint will be increased to approximately 284.4 acres for Phases 1, 2, and 3. The Phase 4 designation will not be used for phases with this expansion. Phase 5 consists of 4.2 acres.

~~Locations Located outside the permitted waste disposal areas that are used for buffer distance~~ between waste disposal areas and the permit boundary include are entrance facilities, a Type IX Beneficial Landfill Gas Recovery Facility (Type IX Registration No. 48018), a citizen's convenience center, a leachate storage facility, a mud grate facility, a

maintenance facility, access roads, and surface water drainage facilities. Waste processing and storage facilities located within the waste disposal footprint include a large item storage area, ~~a construction and demolition recycling and re-use~~reusable materials staging area, a liquid stabilization area, and a bioremediation treatment pad. There are several easements that exist within the permit boundary. These include existing TXU Electric, Atmos Energy, and TRA Sanitary Sewer easements that do not impact the development or operation of the facility. There is an existing TXU Transmission line easement that is located along the east side of Phase 3 that will be relocated prior to development in this area.

In accordance with §330.141(a) and §330.543, solid waste unloading, storage, disposal, and processing operations will not occur within any easement, buffer zone, or right-of-way that crosses the site. The distance from the permit boundary to all solid waste unloading, storage, disposal, and processing operations exceed the minimum buffer zone distance of 125 feet. Refer to Appendix IIA, Drawing IIA.21 for a drawing that depicts the locations of these facilities and the distances from the permit boundary.

Refer to Appendix IIA, Drawings IIA.13, IIA.14, IIA.20, and IIA.21 for drawings that depict the Skyline Landfill. These drawings, collectively as a group, depict the current and proposed permit conditions, including the permit boundary and waste disposal footprint. In addition, these drawings depict solid waste unloading, storage, disposal, and processing operations as well as buffer zones and easements. There are no right-of-ways within the facility.

1.2 Special Conditions

Sections 8 through 15 of Part II include detailed discussion of site-specific conditions that potentially require special design considerations as set forth in §330.61(a), including impact on surrounding area, transportation, geology, soils, groundwater, surface water, abandoned oil and water wells, floodplains, wetlands, endangered or threatened species, and Texas Historical Commission review. As documented, there are no existing site-specific conditions that require special design considerations or possible mitigation of conditions.

2 WASTE ACCEPTANCE PLAN

30 TAC §330.61(b)

2.1 Properties and Characteristics of Waste

The major classifications of solid waste to be accepted at the Skyline Landfill include municipal solid waste, special waste in accordance with §330.171, and Class 2 and 3 industrial wastes in accordance with §330.173. Included among these are wastes resulting from or incidental to municipal, community, commercial, institutional and recreational activities, including putrescible wastes, rubbish, ashes, brush, construction-demolition debris, and inert material. Regulated asbestos containing material (RACM) and non-regulated asbestos containing material (non-RACM) will be accepted for disposal. Petroleum contaminated soil is accepted and treated in accordance with the approved bioremediation treatment pad as authorized by TCEQ. Industrial nonhazardous wastes in Class 2 and 3 are also accepted at the facility.

The facility has not in the past accepted, and will not accept, Class 1 industrial solid waste, except RACM that has been designated Class 1 industrial waste only because of its asbestos content. There are no existing Class 1 cells at the facility.

Consistent with §330.15, the facility will not accept for disposal ~~Class 1 nonhazardous industrial waste~~; lead acid storage batteries; used motor vehicle oil; used oil filters; whole used or scrap tires; refrigerators, freezers, air conditioners or other items containing chlorinated fluorocarbon (CFC); bulk or noncontainerized liquid waste from nonhousehold sources; regulated hazardous waste; polychlorinated biphenyls (PCB) waste; radioactive materials; or other wastes prohibited by TCEQ regulations.

2.2 Volume and Rate of Disposal

The Skyline Landfill serves individuals, businesses, and communities in Dallas and Ellis Counties and surrounding Texas counties. The landfill receives approximately 1,040,000 tons of incoming waste annually (approximately 3,333 tons per day). The waste acceptance rate will vary over the life of the facility depending on market conditions.

The estimated maximum annual waste acceptance rate for the Skyline Landfill projected for five years is as follows:

Year	Estimated Maximum Annual Waste Acceptance Rate
1	1,040,000 tons
2	1,054,560 tons
3	1,069,324 tons
4	1,084,294 tons
5	1,099,474 tons

As population and economic conditions and available landfill disposal capacity change within the region, the volume of incoming waste could vary considerably. WMTX will maintain records to document the annual waste acceptance rate for the facility. If the rate exceeds the estimated rate and is not due to a temporary occurrence, WMTX will file a permit modification application consistent with §330.125(h). The modification would propose any needed changes in the site operating plan to properly manage the increased waste acceptance rate. Consistent with §330.125(h), the executive director may require permit conditions that are different from or absent in the existing permit, due to the increased waste acceptance rate. As provided by §330.125(h), the estimated waste acceptance rate is not a limiting parameter of the permit.

Once expanded the landfill will have a total remaining waste disposal capacity of approximately 55,051,000 53,505,000 cubic yards of waste and daily cover (or approximately 42,400,000 41,198,850 tons), based on the aerial survey flown March 6, 2011 March 4, 2012.

The TCEQ defines population equivalent as "the hypothetical population that would generate an amount of solid waste equivalent to that actually being managed based on a generation rate of five pounds per capita per day and applied to situations involving solid waste not necessarily generated by individuals." Based on this definition, the approximate current and projected population equivalents of the areas capable of being served were calculated as follows:

$$\text{Current Annual Average} = 3,333 \text{ tons/day} \times \frac{6 \text{ days}}{\text{week}} \times \frac{52 \text{ weeks}}{\text{year}} = 1,040,000 \text{ tons/year}$$

Population Equivalent:	<u>2012</u>	<u>2044</u>
	= 1,040,000 tons/year	= 1,600, 330 <u>331</u> tons/year
	÷ 365 days/year	÷ 365 days/year
	x 2,000 lb/ton	x 2,000 lb/ton
	÷ 5 lb/person/day	÷ 5 lb/person/day
	= 1,139,726 persons	= 1,753, 786 <u>787</u> persons

The Skyline Landfill currently receives approximately 1,040,000 tons of waste annually (about 3,333 tons per day). The facility accepts waste the equivalent of six days per week (approximately 312 days per year). The landfill projects that the waste acceptance rate will increase at an annual rate of 1.4 percent for the life of the facility based on the North Central Texas Council of Governments' population projections for the combined population of Dallas and Ellis counties. Refer to Part III, Attachment D4 – Site Life for the capacity and site life calculations and projections.

Facility Operating Hours

The existing Skyline Landfill (Permit No. MSW 42C) is authorized for waste acceptance between the hours of 5:00 a.m. and 7:00 p.m. Monday through Friday, and 5:00 a.m. through 3:00 p.m. on Saturday. The facility is closed on Sunday. The existing Skyline Landfill is authorized for site operations (i.e., transportation of materials and heavy equipment operation) between the hours of 3:00 a.m. and 9:00 p.m. Monday through Friday, and 3:00 a.m. and 5:00 p.m. on Saturday.

With the proposed expansion of the Skyline Landfill (Permit No. MSW 42D), the facility's operating hours are proposed to increase. The Skyline Landfill proposes authorization for waste acceptance 24 hours per day, Monday through Friday, and until 3:00 p.m. on Saturday. The facility will post on the site entrance sign the hours for waste acceptance from public and private haulers. The Skyline Landfill also proposes to increase site operations (i.e. transportation of materials and heavy equipment operation) to 24 hours per day, 7 days per week.

3 GENERAL LOCATION MAPS

30 TAC §330.61(c)

Consistent with §330.61(c), the general location maps are provided in Appendix IIA – Maps and Drawings. These general location maps are provided in addition to the maps in Part I, Appendix IA – General Location Maps. These maps, collectively as a group, accurately show the proximity of the facility to surrounding features and specifically show the items identified in §330.61(c)(1) – (12). Refer to Appendix IIA, Drawing IIA.1 through Drawing IIA.11 for the general location maps.

4 FACILITY LAYOUT MAPS

30 TAC §330.61(d)

Consistent with §330.61(d), the facility layout maps are provided in Appendix IIA – Maps and Drawings. These facility layout maps, collectively as a group, specifically show the items identified in §330.61(d)(1)-(9). Refer to Appendix IIA, Drawing IIA.12 through Drawing IIA.~~20~~21 for the facility layout maps.

5 GENERAL TOPOGRAPHIC MAP

30 TAC §330.61(e)

The United States Geological Survey (USGS) General Topographic Map is included in Appendix IIA – Maps and Drawings as Drawing IIA.2 – General Topographic Map. The topographic map consists of the 7-1/2 minute quadrangle sheets for Ferris, Texas. Drawing IIA.2 is at a scale of 1 inch equals 2,000 feet, as required by §330.61(e).

6 AERIAL PHOTOGRAPH

30 TAC §330.61(f)

Consistent with §330.61(f), the aerial photograph of the site and surrounding area is presented in Appendix IIA as Drawing IIA.7 – Aerial Photograph. This aerial photograph represents conditions as flown March 6, 2011. The aerial photograph shows the area within at least a 1-mile radius of the permit boundary. In addition, the permit boundary and limits of waste are shown.

7 LAND USE MAP

30 TAC §330.61(g)

Consistent with §330.61(g), a land use map is included in Appendix IIB – Land Use Analysis as Drawing IIB.3 Figure LU-3 – Land Use Map, page IIB-14. This land use map has been prepared based on the land use analysis conducted by John Worrall Consulting. The land use features identified and depicted on this drawing, as required by §330.61(g), include the facility permit boundary, uses within the permit boundary, and existing uses such as agricultural, industrial, and residential use within 1 mile of the permit boundary. Locations of residences, commercial establishments, schools, licensed day care facilities, churches, cemeteries, ponds or lakes, and recreational areas within 1 mile of the permit boundary are shown. In addition, a land use map is included within the group of general location maps in Appendix IIA – Maps and Drawings to further depict the overall requirements of §305.45. Refer to the facility layout maps, Drawings IIA.13 and IIA.2021, for drainage, pipeline, and utility easements within the permit boundary.

8 IMPACT ON SURROUNDING AREA

30 TAC §330.61(h)

Consistent with §330.61(h), an evaluation of the impact on the area surrounding the facility was conducted by John Worrall Consulting. Refer to Appendix IIB – Land Use Analysis for a detailed land use analysis and discussion regarding impact on the surrounding area. The land use analysis addresses zoning within 2 miles of the facility, character of surrounding land uses within 1 mile of the facility, growth trends within 5 miles of the facility, and proximity to residences and other uses within 1 mile of the facility.

8.1 Wells Within 500 Feet

Consistent with §330.61(h)(5), a description of known wells within 500 feet of the facility has been prepared. A water well search was compiled for a one-mile radius around the site. The search identified 3 wells within 500 feet of the site permit boundary. The search included a review of records and maps on file at the TWDB WIID Water Well Database (<http://wiid.twdb.state.tx.us/>) and the TCEQ Water Well Report Viewer (<http://tceq.state.tx.us/waterwellview.html>). A water well search was conducted to locate any water wells on the site and within 1 mile of the permit boundary. The water well search included a search of state records and a windshield search for water wells. The water well search details and the state well numbering system identification number cross reference table may be found with additional information about each of the wells in Part III, Attachment E – Geology Report, Table E-3 and Appendix E1. Consistent with §330.61(c)(2), the water wells located within 500 feet of the proposed permit boundary are shown on Drawing IIA.4 – Water Well Location Map.

One well identified in the TWDB database as 33-27-501 was plugged in 1992 by Waste Management; it is within the permit boundary but outside the limits of the waste disposal area and outside the groundwater monitoring system. Another well identified in the TWDB database as 33-27-601 was abandoned and plugged in 1965; it is within 500 feet of the permit boundary. Although both of these wells may appear to be active wells as listed in the TWDB database, the wells have been confirmed to have been plugged and abandoned. The plugging report for 33-27-501 is located in Part III, Attachment E, Appendix E1, Figure E1-11 and the records for 33-27-601 begin on Figure E1-17. The records for the third well located within 500 feet, 33-27-602, begin on Figure E1-23.

Skyline Landfill
Water Wells Within 500-Foot Radius of the Site

Well Locator	Well ID No.	Depth (ft)	Completion Date	Completion Formation	Well Use	Longitude	Latitude
501	33-27-501	1,500	1933	Woodbine	Plugged	-96.66888	32.553055
601	33-27-601	1,408	1914	Woodbine	Plugged	-96.665	32.546388
602	33-27-602	1,362	6/1/63	Woodbine	P	-96.664722	32.546944

*No wells were identified within 500 feet of the facility boundary during a windshield search conducted in October, 2011.

P = Public

An oil and gas well search of state records was conducted in August 2011 to locate any oil and gas wells on the site and within 1 mile of the permit boundary. The search included a review of records and maps on file at the Texas Railroad Commission. The oil and gas search details are included in Part III, Attachment E – Geology Report. Consistent with §330.61(h)(5), there are no known existing or abandoned crude oil or natural gas wells or other wells associated with mineral recovery within the Skyline Landfill permit boundary no producing oil and gas wells located or within 500 feet of the permit boundary, as shown on Drawing IIA.5 – Locations of Oil and Gas Producing Wells. If any abandoned crude oil or natural gas wells or other wells associated with mineral recovery are located during facility development they will be handled as described in Part 12.2 – Oil & Gas wells of this narrative and in Part IV – Site Operating Plan, Section 8.16 – Oil, Gas, and Water Wells.

9 TRANSPORTATION

30 TAC §330.61(i)

Consistent with §330.61(i)(1) through (4), a transportation study prepared by HDR Engineering, Inc. is included as Appendix IIC – Transportation Study. The transportation study provides information on the availability and adequacy of access roads, provides data on the existing and expected vehicular traffic on access roads within 1 mile of the facility during the expected site life of the facility, and projects the volume of traffic expected to be generated by the facility on the access roads within 1 mile of the facility. Documentation of coordination with the Texas Department of Transportation (TxDOT) is also included in Appendix IIC. Appendix IIC – Transportation Study has been prepared consistent with the requirements of §330.61(i)(1)-(4).

9.1 Airport Impact

Consistent with §330.61(i)(5), an evaluation of the facility impact on surrounding airports was conducted in accordance with §330.545. Refer to Appendix IIA – Maps and Drawings, Drawing IIA.6 – Airport Map for the location of the facility in relationship to area airports. The airport map uses the FAA Sectional Aeronautical Chart, Dallas-Ft. Worth, 75th Edition, dated March 10, 2011 as the base drawing. The map depicts the location of the facility, a 5,000-foot radius, a 10,000-foot radius, and a 6-mile radius from the facility permit boundary. As depicted on Drawing IIA.6, the closest airport is the Lancaster Airport, located approximately 2 miles from the Skyline Landfill. The Lancaster Airport is classified as a small general service airport.

TCEQ defines an airport (§330.3(5)) as a public-use airport open to the public without prior permission and without restrictions within the physical capabilities of available facilities; this definition is used for all references to airports in this section unless otherwise stated.

Section 330.545 requires a demonstration that landfill units will be designed and operated so that the landfill unit does not pose a bird hazard to aircraft if new landfill units are located within 10,000 feet of any airport runway end used by turbojet aircraft or within 5,000 feet of any airport runway end used by only piston-type aircraft. Further, §330.545 requires that new landfill units within a 6-mile radius of any small general service airport runway end used by turbojet or piston-type aircraft or 5-mile radius of a large general service public-use airport runway end used by turbojet or piston-type aircraft notify the FAA and the airport.

The evaluation of the facility impact on surrounding airports conducted in accordance with §330.545 consisted of compiling information related to airport type, airport location, and distance from the Skyline Landfill for all airports within a 6-mile radius of the Skyline Landfill. In accordance with §330.545, the Skyline Landfill is not located within: 1) 10,000 feet of any airport runway end used by turbojet aircraft, or 2) 5,000 feet of any

1) 10,000 feet of any airport runway end used by turbojet aircraft, or 2) 5,000 feet of any airport runway end used by only piston-type aircraft, or 3) a 5-mile radius of a large general service public-use airport runway end used by turbojet or piston-type aircraft.

The Skyline Landfill is located within a 6-mile radius of a small general service airport runway end used by turbojet or piston-type aircraft. Refer to Appendix IIH for documentation that has been provided to the Lancaster Airport notifying them of the proposed expansion.

WMTX coordinated and met with the Lancaster Regional Airport on March 3, 2011 to confirm the proposed landfill expansion horizontal and vertical design parameters. The horizontal limits of the proposed landfill footprint are decreased on the northwest corner of the landfill, resulting in an increased distance between the end of the airport runway and the landfill footprint. The proposed landfill expansion does not increase the currently permitted landfill height. The maximum landfill elevations for the proposed permitted expansion configuration will not exceed the maximum landfill elevations for the existing permitted configuration.

In accordance with the existing landfill's TCEQ permit that was issued in April 1995, WMTX has adopted a "Bird Control Plan" at the Skyline Landfill to eliminate bird hazards to aircraft. WMTX conducts daily bird control activities. WMTX submits monthly and annual reports to TCEQ and FAA, documenting bird activity within the existing landfill boundary. The monthly and annual bird monitoring activity reports demonstrate that the landfill does not pose bird hazards to aircrafts. The Skyline Landfill will continue to follow the Bird Control Plan.

Refer to Appendix IIH for documentation of coordination with FAA regarding location of the facility in relation to airports in the designated areas as required by §330.61(i)(5) and §330.545. FAA has confirmed that they have no objection from the standpoint of potential wildlife hazards to aircraft.

10 GENERAL GEOLOGY AND SOILS STATEMENT

30 TAC §330.61(j)

Consistent with §330.61(j)(1) – (4), a general discussion of the geology and soils of the site has been prepared. Detailed discussion of the geology of the site can be found in Part III, Attachment E of this application.

10.1 General Geology

The project site is in the regional physiographic subdivision known as the Blackland Prairie. This north-south trending belt is underlain by the Eagle Ford, Austin, Taylor, and Navarro formations of the Cretaceous System. Topography of the Blackland Prairie is typically flat to rolling and has a gentle slope to the east. The Blackland Prairie is poorly drained with sparse timber (Nordstrom, 1982).

The Eagle Ford Group outcrops in the extreme western portion of ~~the two~~ Dallas and Ellis counties and consists primarily of bluish-black and gray shales of marine origin with a maximum thickness of 300 feet. East and above the Eagle Ford is the Austin Chalk Group, which is made up of chalks and marls up to 500 feet thick. Above the Austin Chalk lies the Taylor Group. This group has an overall thickness estimated to be approximately 500 feet. Locally, the thickness is estimated at approximately 250 feet. The Woodbine Group, stratigraphically situated beneath the Eagle Ford and composed of clay and permeable sandstone up to 250 feet thick, is the first major water bearing zone beneath the counties. The regional dip of the Cretaceous in Dallas and Ellis Counties is approximately 50 feet to the mile and trends to the southeast. The site varies in elevation from about 505 feet above mean sea level (msl) in the center of the property to about 450 feet above msl along the west and east property boundaries. There is no unfavorable topography that would limit the facility present on the site.

The nearest surface water body in the area, Ten Mile Creek, is located several hundred feet north of the site.

Regional Stratigraphy and Lithology

Formations of the Cretaceous System were deposited by northward advancing seas over extensively eroded Paleozoic strata. The Comanche and Gulf Series of the Cretaceous System represent two major transgressions of Cretaceous seas. The project site is underlain by strata deposited during the late Cretaceous Gulf Series. Toward the end of the Cretaceous period, marine deposition ceased after a general uplift to the west resulted in regression of the seas gulfward. Subsequent erosion of the Cretaceous deposits continued through the Cenozoic era to the present.

Regional stratigraphy includes geologic units of the Cretaceous System from the lower Comanche Series Trinity Group to the upper Gulf Series Navarro Group. The site is on the outcrop of the Taylor Formation (lower Taylor Marl).

Regional cross sections indicate that the Cretaceous System forms a southeastward-thickening wedge extending into the East Texas Basin structural feature. Outcrops of Cretaceous geologic formations generally trend north-northeastward with the regional dip to the east-southeast ranging from about 15 to 40 feet per mile (Nordstrom, 1982).

Table II-10.1
Skyline Landfill
General Regional Stratigraphic Column

System	Series	Group	Formation	Maximum Thickness (ft)	
Upper Cretaceous	Gulf	Navarro	Kemp Clay	400	
			Corsicana Marl	20	
			Nacatoch Sand	450	
			Neylandville Marl	125	
		Taylor		600	← SITE
		Austin		400	
		Eagle Ford		400	
		Woodbine		400	
Lower Cretaceous	Comanche	Fredericksburg & Washita		1000	
		Groups undifferentiated		250	
		Trinity	Paluxy	100	
			Glen Rose	600	
			Twin Mountains	500	
			Antler	100	

Source: Barnes, 1972

Please refer to Attachment E for more detailed information.

Site Stratigraphy

The facility is located on the outcrop of the Taylor Marl. The Taylor Marl is a very dense, low permeability formation consisting of calcareous clays. More than 150 borings have been drilled and sampled on the site and were examined to characterize site stratigraphic conditions. Four geologic cross sections are presented in Appendix E3 that incorporate historic and newly drilled borings. For identification purposes, the interpreted units have been labeled Stratum I and Stratum II. These sections illustrate

the stratigraphy and lithology present beneath the site. Detailed descriptions of these strata are included in the following sections.

Stratum I – Weathered Taylor Marl

The weathered Taylor consists of 40 feet of brown to yellow to light gray stiff to hard, clay weathered from the marl. The average thickness is about 45 feet. The samples range from dry and friable where they are above the water table to moist where they occur below the top of the water table. The weathered Taylor contains occasional calcareous and iron nodules and some silt and sand partings. Near vertical fracturing occurs as a result of the weathering process. Occasional angular jointing is present. Fractures and joints may be filled with calcite or gypsum. Fracture frequency decreases with depth. Slug testing of the material shows permeabilities ranging from 5.44×10^{-10} to 1.59×10^{-8} cm/sec. The geometric mean of calculated permeabilities is 4.23×10^{-9} cm/sec. A structural contour map of the top of the unweathered Taylor (base of the weathered Taylor) is shown on Figure E3-6. The previous stratigraphic description in the 1993 permit application for the site had divided this stratum into two strata, Stratum I and Stratum II. However, from a hydrogeologic perspective, this identification is not ultimately useful in describing the hydrogeology of the site.

Stratum I, as defined in this application, includes the uppermost groundwater zone at the site, which occurs in shallow, fractured, weathered Taylor Marl under unconfined, water table conditions. Groundwater in Stratum I is characterized by fracture flow. In the weathered marl, fracturing is abundant due to weathering processes and expansion from the release of overburden pressure. The groundwater movement in the weathered marl is characterized by flow through the interconnected vertical and horizontal fractures and bedding planes that have hydraulic characteristics of normally porous medium such as a sand or silt. The flow is generally topographically controlled.

Stratum II – Unweathered Taylor Marl

The unweathered Taylor consists of several hundred feet of dark gray to blue gray, hard clayey shale (marl) with iron stains, gypsum seams, and occasional fossils. The surface of the unweathered Taylor is the contact between the weathered and the unweathered Taylor. This surface is a result of the depth of weathering created by shrinking and swelling as a result of alternating rainfall and drying. Fifty-six soil borings penetrate into this unit at a minimum of 10 feet into this stratum. Geotechnical testing performed on samples from this stratum concludes that this unit is primarily a clay. Some investigators refer to this material and this part of the Taylor as claystone.

As stated above, the stratigraphy of the site has been defined by the degree of weathering. To illustrate the unweathered surface of the Taylor Marl, a structural contour map of the top of the unweathered Taylor was prepared using information obtained from the borings (Figure E3-6). This map indicates that the unweathered unit (~~Layer IV~~ Stratum II) surface mimics the original surface topography and slopes to the north-northwest, as does the surface topography. These maps and the generalized cross sections (Figures E3-2 through E3-5) support the conclusion that the geologic

units generally parallel the surface and are thus related to weathering processes, not to depositional processes.

Fracture density and fracture aperture decreases significantly in the unweathered marl. This decrease in fracturing with depth was observed in the samples from site borings and in excavations in the unweathered zone at this and other sites within the areas of Dallas and Ellis Counties. This decreased fracture density with depth corresponds to the lower permeability seen in permeability tests conducted in the unweathered zone compared to the permeability results for the weathered zones. Geologic and hydrogeologic characteristics observed in the deeper, unweathered Taylor Marl (Stratum II-Layer IV) indicate that this unit functions as an aquiclude or lower confining unit to the uppermost groundwater zone at the site.

10.2 General Soils

The information from the field investigations included in Attachment E indicates that the subsurface materials at the site consist of the two general soil units that have been identified at the site, and are summarized as:

**Table II-10.2
Skyline Landfill
Generalized Site Stratigraphy**

Geologic Unit	Lithology	Average Depth to Top of Unit (ft)	Average Thickness of Unit (ft)	Hydrogeologic Unit
Stratum I Weathered Taylor Marl	Clay and Weathered Shale	Surface Outcrop	45	Uppermost Aquifer*
Stratum II Unweathered Taylor Marl	Shale, Clayey	40	400	Aquiclude

*The Taylor Marl is not recognized by the State of Texas as an aquifer, but has been recognized by the TCEQ as such for groundwater monitoring purposes.

The laboratory test results are included in Part III, Attachment E, Appendix E5 – Laboratory Tests. These test results were reviewed along with the boring logs to develop generalized soil properties for use in the analysis. As shown on the cross sections in Attachment E, appendix E3, the landfill excavation will be in clay.

10.3 Fault Areas

~~Consistent with §330.61(j)(2) and §330.555, fault areas documentation was prepared as part of this application to demonstrate that the Skyline Landfill meets the location restriction for fault areas.~~

~~The property on which Skyline Landfill is located was examined for the presence of faulting according to §330.555 criteria. A fault study was conducted that included reviewing aerial photographs for the site, reviewing available geologic literature and maps of the area, conducting site reconnaissance, and examining the subsurface boring data from the site.~~

~~More detailed information is provided in Part III, Attachment E — Geology Report, Section 2.1 — Fault Areas Appendix E8 — Fault Study. The property on which Skyline Landfill is located was examined for the presence of faulting according to §330.555 criteria. A fault study was conducted by reviewing aerial photographs for the site, reviewing available geologic literature and maps of the area, conducting site reconnaissance, and examining the subsurface boring data from the site.~~

~~Aerial photographs of the site were reviewed for indications of faults in the area of the site. The Geologic Atlas of Texas, Dallas Sheet shown in Figure E1-1 shows no surface evidence of surface faulting in the area.~~

~~A site walkover was conducted by an experienced geologist familiar with both faulting and solid waste disposal facilities. No unusual scarps or topographic breaks were interpreted within 200 feet of the site. No evidence of faulting was found associated with formation outcrops; no evidence of faulting was found by examination of area roadways; no structural influence of stream courses was found; and no unusual relief or topographic features, such as sag ponds or truncated alluvial spurs, were observed on the site. No evidence of structural damage to buildings on the property was identified.~~

~~Cores retrieved from exploration borings revealed no evidence of faulting. Fractures seen in the cores showed no evidence of displacement.~~

~~No oil and gas wells were identified within one mile of Skyline Landfill. Accordingly, there is no apparent differential subsidence or faulting potential of shallow sediments associated with oil and gas withdrawal.~~

~~In summary, no fault scarps were observed at the surface within 200 feet of the site and there was no evidence of vertical subsidence on any outcrops of geologic materials. No vertical displacement or stratigraphic offset indicative of faults was observed in outcrops or in any of the cores from the site borings. There is no active faulting within 200 feet of the site; therefore, the site complies with §330.555.~~

10.4 Seismic Impact Zones

~~Consistent with §330.61(j)(3) and §330.557, seismic impact zones documentation was prepared as part of this application to demonstrate that the Skyline Landfill meets the location restriction for seismic impact zones.~~

~~TCEQ regulations state that no new MSWLF units or lateral expansions shall be located in seismic impact zones, unless the owner or operator demonstrates that all containment structures including liners, leachate collection systems, and surface water control systems are designed to resist the maximum horizontal acceleration in lithified earth material for the site.~~

~~The seismic impact zone, as defined by §330.557, is an area with a 10 percent or greater probability that the maximum horizontal acceleration in lithified earthen material, expressed as a percentage of the earth's gravitational pull, will exceed 0.10g in 250 years. The existing Skyline Landfill site and proposed expansion area are not located within a seismic impact zone. The location criterion in TAC §330.557 requires that new MSWLF units and lateral expansions shall not be located in seismic impact zones, unless the owner or operator demonstrates to the executive director that all containment structures (including liners, leachate collection systems, and surface water control systems) are designed to resist the maximum horizontal acceleration in lithified earth material for the site. A seismic impact zone is defined as an area with a probability of 10 percent or greater than the maximum horizontal acceleration in rock, expressed as a percentage of the earth's gravitational pull, will exceed 0.10g in 250 years. If the maximum horizontal acceleration is less than 0.10g, then the design of the unit will not be required to incorporate an evaluation of seismic effects.~~

~~Areas within the United States where seismic effects need to be evaluated, as determined by the USGS interactive website (<http://earthquake.usgs.gov/research/hazmaps>), are shown on Figure IIA.10. As indicated on this figure, the Skyline Landfill is not located within a seismic impact zone.~~

10.5 Unstable Areas

Consistent with §330.61(j)(4) and §330.559, unstable areas documentation was prepared as part of this application to demonstrate that the Skyline Landfill meets the location restriction for unstable areas.

An unstable area is defined by the TCEQ as a location that is susceptible to natural or human-induced events or forces capable of impairing the integrity of some or all of the landfill's structural components responsible for preventing releases from a landfill. An unstable area can exhibit poor foundation conditions, areas susceptible to mass movement, and karst terrains.

The determination of potential unstable areas at the landfill site is based on site observations and a review of existing documentation for the site by a licensed professional engineer. Based on this review, the foundation conditions and the

geological formations are stable. In addition, there is no evidence to suspect mass movement of natural formations of earthen material on or in the vicinity of this site. No foundation problems exist at the site. The proposed landfill components were evaluated with respect to settlement, heave, and slope stability. The detailed analysis is included in Part III, Attachment D5 – Geotechnical Design. Based on the results of these analyses, the existing and proposed human-made features have been predicted to have adequate factors of safety with respect to stability.

Based on site observations, a review of existing geological data, and geotechnical analysis of the structural components of landfill development, the site is not located in an unstable area and the integrity of the landfill is not expected to become impaired by natural, surface, or subsurface human-made features or events.

11 GROUNDWATER AND SURFACE WATER

30 TAC §330.61(k)

11.1 Groundwater

Consistent with §330.61(k)(1), a discussion of groundwater conditions at or near the facility has been prepared. A groundwater investigation report is included in Part III, Attachment E, Section 4. The groundwater monitoring system proposed for the site is discussed in Part III, Attachment F, Section 5.

Groundwater conditions at the site were determined using data from a combination of piezometers and monitoring wells that are a part of the approved site Subtitle D groundwater monitoring system. Details and logs of the borings, monitoring wells and piezometers are provided in Part III, Attachment E, Appendix E2.

11.2 Regional Aquifers

Regional Cretaceous aquifers that supply groundwater to wells in Dallas and Ellis counties are the Paluxy and Woodbine formations. Groundwater is obtained for public supply primarily from municipal wells tapping the Woodbine formations. The largest users of groundwater in Ellis County include the cities of Waxahachie, Ennis, Ferris, and Midlothian.

The Woodbine Aquifer is the uppermost aquifer beneath this site. It is separated from the surface by approximately 300 feet of Taylor, Austin, and Eagle Ford formations. This stratigraphic section forms a regional confining system. The low permeability rocks of these formations retard the vertical and lateral flow of groundwater and separate the underlying aquifers from the surficial groundwater-bearing unit (weathered Ozan) (Dutton et al., 1994). The Dutton et al. (1994) report is a comprehensive geologic/hydrogeologic study conducted in Ellis County in conjunction with the Superconducting Super Collider. That project included boring large-scale tunnels within the Ozan Formation.

11.2.1 Paluxy Formation

Outcrops of the Paluxy Formation are located in northwestern Tarrant County and in western Johnson County, almost 60 miles west of the site. Depth to the top of the Paluxy ranges from about 830 feet in northwestern Ellis County to more than 2,950 feet to the east. Depth to the top of the Paluxy in the landfill area is approximately ~~640~~ 1,600 feet (Thompson, 1967). Although the thickness of the Paluxy is irregular, the formation generally thickens northward with thicknesses in Ellis County ranging from 77 to 160 feet. Regional dip of the formation is eastward at approximately 42 feet per mile in west Ellis County and 85 feet per mile in east-central Ellis County (Thompson, 1967).

A few wells in the county tap the Paluxy Formation and yield small to moderate quantities of slightly saline water. The chemical quality of the water deteriorates downdip, resulting in moderately saline groundwater in the eastern part of the county (Thompson, 1967).

11.2.2 Woodbine Formation

The Woodbine Formation crops out in eastern Tarrant and Johnson counties and in northwestern Ellis County. The site location spans the north central boundary line of Ellis County where it adjoins Dallas County, approximately 30 miles east of the Woodbine outcrop. The top of the formation in the southeastern part of Ellis County is at a depth of approximately 1,980 feet. Depth to the Woodbine in the vicinity of the landfill is approximately 300 feet (Thompson, 1967). Thicknesses of the Woodbine vary greatly in Ellis County with ranges from 190 to 405 feet. The formation dips east-southeast at an average of about 60 feet per mile (Thompson, 1967). The Woodbine Aquifer is confined by the overlying Eagle Ford, Austin, and Taylor formations in the Ellis County area (Dutton et al., 1994).

The lower part of the Woodbine in the western three-quarters of Ellis County is an important source of groundwater for domestic, livestock, and public-supply use (Thompson, 1967).

11.2.3 Taylor Group

The Taylor Marl (Ozan Formation) crops out in a north-northwestward trending belt across Ellis County; maximum thickness is about 625 feet. Skyline Landfill is located on the outcrop of the Ozan. This formation is not considered an aquifer but in effect is an aquitard to overlying water-bearing sediments. In areas east of the site where the Taylor Marl (Ozan) is overlain by water-bearing formations, it effectively serves as the lower confining unit. Only a few shallow domestic and livestock wells tap the weathered Taylor Marl in Ellis County and yield small quantities of fresh to slightly saline hard water (Thompson, 1967).

Table II-11.2
Skyline Landfill
Hydraulic Properties of Regional Aquifer
Compiled from Texas Water Department Board (TWDB), 1999

Parameters	Woodbine	Paluxy
Composition	Sand, sandstone	Sand and shale
Hydraulic Conductivity	44 gal/d/ft ²	78 gal/d/ft ²
Water Table/Confined	Confined	Confined
Groundwater Flow Rate	15 ft/yr	2 ft/yr
Water Quality:		
Total Dissolved Solids	877.39	606.7
Total Dissolved Chlorides	85.88	36.08
Recharge Zones	West	West
Regional Water Table	See Part III, Attachment E, Figure E1-4	See Part III, Attachment E, Figure E1-5
Present Use of Water	Municipal, Industrial, and Irrigation	Municipal, Industrial, and Irrigation
Identification of Water Wells Within One Mile	See Part III, Attachment E, Table E-3 and Figure E1-6	See Part III, Attachment E, Table E-3 and Figure E1-6

*Regional groundwater potentiometric surface map(s) are included in [Part III, Attachment E, Appendix E-1, Figures E1-4 and E1-5](#).

11.3 Surface Water

Consistent with §330.61(k)(2), a discussion of surface water at and near the site has been developed. The surface water drainage evaluation and design is included in Part III, Attachment C – Facility Surface Water Drainage Report.

The Skyline Landfill is located in the Ten Mile Creek watershed which is part of the Trinity River Basin. Ten Mile Creek is immediately north of the facility permit boundary with two ~~unmanned-unnamed~~ tributaries flowing south to north. There is also an ~~unmanned-unnamed~~ tributary flowing southward in the southwestern corner of the area. Within the permitted boundary, there are numerous isolated ponds concentrated on the eastern side of the site.

The Ten Mile Creek drainage area adjacent to the facility includes areas north and west of the Skyline Landfill. Surface water runoff from the facility enters Ten Mile Creek at several discharge points. Surface water is routed to these discharge points through existing perimeter drainage channels, ~~and~~ detention ponds, and retention ponds. The detention and retention ponds are designed to provide the necessary storage and outlet control to mitigate impacts to the receiving channels downstream of the Skyline Landfill.

11.4 Stormwater Permitting

The facility has been designed to prevent the discharge of pollutants into waters of the state of Texas or waters of the United States, as defined by the Texas Water Code and the Federal Clean Water Act, respectively. WMTX submitted a notice of intent (NOI) to comply with TPDES General Permit No. TXR050000 relating to stormwater discharge associated with industrial activity (Multi-Sector General Permit) and received Permit No. TXR05U147. A copy of the permit is included in Appendix IIG – TPDES Permit.

12 ABANDONED OIL AND WATER WELLS

30 TAC §330.61(l)

12.1 Water Wells

One known water well (33-27-501) that was abandoned and plugged in 1992 is within the permit boundary of the Skyline Landfill but it was located outside the waste disposal footprint and the groundwater monitoring system. The plugging record for this well is provided in Part III, Attachment E, Appendix E1, on pages E1-11. However, should any unknown abandoned water wells be discovered during facility development, Skyline Landfill will immediately provide written notification to the TCEQ executive director of their location.

A copy of the well plugging report for any found well will be submitted to the appropriate state agency and executive director within 30 days after the well is plugged. A permit modification will be submitted to the executive director if revisions to the liner installation plan are required as the result of well abandonment.

12.2 Oil and Gas Wells

There are no known existing or abandoned crude oil or natural gas wells or other wells associated with mineral recovery within the Skyline Landfill permit boundary. If any abandoned crude oil or natural gas wells or other wells associated with mineral recovery are located, the landfill will provide written notification to the TCEQ's executive director of their location within 30 days of their discovery. For any abandoned crude oil or natural gas wells, or other wells associated with mineral recovery, the landfill will provide the executive director of the TCEQ with written certification that all such wells have been properly capped, plugged, and closed in accordance with all applicable rules and regulations of the Railroad Commission of Texas.

A copy of the well plugging report to be submitted to the appropriate state agency will also be submitted to the executive director of the TCEQ within 30 days after the well has been plugged. A permit modification will be submitted to the executive director if revisions to the liner installation plan are required as the result of well abandonment. Any producing crude oil or natural gas well that does not affect or hamper landfill operations may be installed or remain in its current state if identified in the permit for the landfill.

13 FLOODPLAINS AND WETLANDS

30 TAC §330.61(m)

13.1 Floodplains

Consistent with §330.61(m) (1) and §330.547, an evaluation of the 100-year floodplain has been conducted for the Skyline Landfill. Skyline Landfill's current and proposed waste disposal operations will be conducted outside the 100-year floodplain. Refer to Part III, Attachment C2 – Regional Drainage Evaluation and Flood Control Analysis for documentation and approvals received from FEMA for development of Skyline Landfill.

The 100-year floodplain elevations for Ten Mile Creek adjacent to the Skyline Landfill are from the FEMA Flood Insurance Rate Map (FIRM) of Dallas County, Texas and Unincorporated Areas Community Panel Number 48113C0670J, revised August 23, 2001. However, the hydrologic and hydraulic modeling of Ten Mile Creek to determine the 100-year floodplain elevations was performed in 1979. Subsequent Flood Insurance Studies (FIS) since 1979 have only revised the limits of the 100-year floodplain based upon the topography. Hydrologic and hydraulic calculations have not been performed to revise the 100-year floodplain elevations.

FEMA has defined the limits of the 100-year floodplain in the vicinity of the landfill as Zone AE; base flood elevations have been determined by FEMA. The limits of the floodplain are depicted on Drawing IIA.11, which is a drawing compiled from the FIRM, Community Panel Number 48113C0670J, with a revision date of August 23, 2001. As depicted on Drawing IIA.11, portions of the permit boundary along Ten Mile Creek are located within the FEMA defined 100-year floodplain.

The current permitted 100-year floodplain is updated based on information from the FEMA Map Modification Program (2010). Drawing IIA.12 is provided to depict the most current floodplain data which updates the 100-year floodplain of Ten Mile Creek in the vicinity of the landfill.

The proposed expansion of the Skyline Landfill requires fill within the 100-year floodplain removing approximately 2,500 cubic yards (1.55 acre-feet) of temporary floodplain storage volume. The removed volume will be replaced with approximately 2,600 cubic yards (1.61 acre-feet) of temporary floodplain storage volume. These improvements are not within the 100-year floodway of Ten Mile Creek. The City of Ferris, the FEMA designated Floodplain Administrator for the portion of Ten Mile Creek adjacent to the Skyline Landfill, has approved the placement of the fill within the 100-year floodplain thereby removing this area from the 100-year floodplain. Based on these improvements to the 100-year floodplain, the postdeveloped landfill footprint will not be located within the limits of the 100-year floodplain and no disposal operations will be conducted within the 100-year floodplain. Refer to Drawing IIA.19 for the landfill completion plan and the limits of the 100-year floodplain.

As stated on the FEMA publication, *Application Forms for Conditional and Final Letters of Map Amendment and Letters of Map Revision based on Fill*, OMB Control Number 1660-0015, which expires Feb 28, 2014, "The NFIP regulations do not require that a CLOMA or CLOMR-F be requested and issued for a proposed project." Waste Management of Texas, Inc., at the time of development within the 100-year floodplain, will submit certified as-built information to the FEMA through the City of Ferris for a LOMR-F to be issued. Once issued, the LOMR-F will officially modify the National Flood Insurance Program (NFIP) map. Refer to Appendix IIK – FEMA Approval for approval from the City of Ferris, as the FEMA designated Floodplain Administrator, to encroach into the 100-year floodplain. Refer to Part III, Attachment C2 for the detailed evaluation of the 100-year floodplain of Ten Mile Creek in the vicinity of the Skyline Landfill.

13.2 Wetlands

Consistent with §330.61(m)(2) and (3) and §330.553, a wetlands determination under applicable federal, state, and local laws has been prepared. The wetlands determination was conducted to evaluate areas subject to jurisdiction under Section 404 of the federal Clean Water Act and areas subject to determination under state designation, as defined in 30 TAC 307.3(81). There are no local laws related to wetland areas. Further, if the state definition of wetland conflicts with the federal definition in any manner, the state regulations provide that the federal definition prevails. A wetlands determination was conducted for the currently permitted Skyline Landfill (facility) boundary, as defined by Permit No. MSW 42C. Based on this wetlands determination and the development of Skyline Landfill, the United States Army Corps of Engineers, Ft. Worth District (CESWF) issued Nationwide Permit 39 (SWF-2009-00138). The construction of Skyline Landfill (Permit No. MSW 42C) was conducted consistent with this authorization. A copy of Nationwide Permit No. 39 (SWF-2009-00138) is included in Appendix IID – Wetlands Documentation.

A wetlands determination for the proposed Skyline Landfill expansion area was conducted by Halff Associates, Inc. and is included as Appendix IID – Wetlands Documentation. The wetlands determination identified jurisdictional waters of the United States, including wetlands. As such, coordination with the United States Army Corps of Engineers, Ft. Worth District (CESWF) has resulted in an Individual Permit application submittal for the Skyline landfill expansion. Refer to Appendix IID – Wetlands Documentation for a copy of the Individual Permit, as submitted to CESWF, and subsequent documentation. A copy of the Individual Permit (IP) (SWF-2009-00371) issued January 18, 2012 is included in Appendix IID.

13.2.1 Wetlands Delineation Study

Environmental investigations and wetlands delineation for the proposed Skyline Landfill expansion area were conducted in September 2008 with a jurisdictional determination released in October 2008. An update to the October 2008 jurisdictional determination of the study area was conducted in July 2009.

The proposed expansion of Skyline Landfill results in 5.22 acres of wetlands, 6 acres of open water and 610 linear feet (0.07 acres) of jurisdictional waters of the U.S. to be filled and/or excavated permanently. 4.57 acres of jurisdictional wetlands will be impacted temporarily. Approximately ~~9.38 acres of jurisdictional wetlands~~ 9.33 acres of open water and 10.58 acres of wetlands, and 1,550 linear feet (0.13 acres) of jurisdictional waters of the U.S. will be avoided due to the facility design. To the extent practicable, the proposed landfill expansion has been designed to avoid waters of the U.S., including wetlands. The following table details proposed impacts to waters of the U.S., including wetlands.

**Wetlands and Other Waters of the U.S.
Identified within the Skyline Landfill Expansion Area
Dallas and Ellis Counties, Texas**

Feature ID	Length of Impact (feet)	Area of Impact (acres)	Activity Description	Impact Type
Streams				
Ephemeral Stream (ES-2)	610	0.07	Excavation and Backfill	Permanent
Emergent Wetlands				
Emergent Wetland (EW-1)	-	4.77	Excavation and Backfill	Permanent
Emergent Wetland (EW-4)	-	0.45	Excavation and Backfill	Permanent
Emergent Wetland (EW-5)	-	4.57	Excavation and Backfill	Temporary
Open Water				
Open Water (OW-2)	-	4.46	Excavation and Backfill	Permanent
Open Water (OW-3)	-	1.54	Excavation and Backfill	Permanent

13.2.2 Permits Required

Unavoidable impacts to jurisdictional wetlands and waters of the U.S., including those that cannot be avoided by facility design, will be mitigated for within a CESWF approved mitigation bank. WMTX will purchase credits from the Bunker Sands Mitigation Bank (BSMB) located in the Upper Trinity River Drainage Basin in Kaufman County, Texas and the Trinity River Mitigation Bank (TRMB) located in the Upper Trinity River Basin in Dallas County, Texas for construction impacts to approximately 15.79 acres and 610 linear feet of ~~wetlands~~ waters of the U.S. An IP for impacts to waters of the U.S., including wetlands, ~~was~~ submitted to the CESWF in May 2011. ~~is currently undergoing review.~~ The IP was placed on public notice in August 2011. Receipt of the IP will be obtained prior to disturbance or development within streams and wetland areas. The mitigation plan accompanying the IP will satisfy all CESWF requirements for mitigation of impacts to wetlands. The IP (SWF-2009-00371) was issued on January 18, 2012.

13.2.3 Demonstration of Compliance with Location Restrictions

New MSWLF units and lateral expansions shall not be located in wetlands unless the owner or operator submits each of the demonstrations identified in §330.553(b)(1)-(5) to the executive director. Accordingly, the remainder of this section provides the required demonstrations by listing each paragraph of §330.553(b)(1)-(5), followed by information on how the facility will comply with each of these requirements to meet the wetlands

location restrictions. A certification of compliance with the wetlands location restrictions is included in Appendix IIJ.

- (1) *Where applicable under the Clean Water Act, §404 or applicable State wetlands laws, the presumption that a practicable alternative to the proposed landfill is available that does not involve wetlands shall be clearly rebutted.*

~~As detailed above, a~~ Approximately 20.37 acres of wetlands, 15.33 acres of open water and 2,160 linear feet (0.2 acres) of waters of the U.S. are present within the proposed project area. Approximately 15.79 acres of jurisdictional wetlands and 610 linear feet (0.07 acres) of jurisdictional waters that cannot practicably be avoided would be filled and/or excavated. Approximately ~~9.38 acres of wetlands~~ 9.33 acres of open water and 10.58 acres of wetlands are proposed to be avoided as a result of reducing the proposed landfill expansion footprint and incorporation of BMP devices. Additionally, approximately 1,550 linear feet (0.13 acres) of perennial and ephemeral stream will be avoided through facility design.

Project design has exercised environmental sequencing (avoidance, minimization, compensation) with respect to potential impacts to waters of the U.S., including wetlands, as defined in TCEQ regulations. Methods of development, while avoiding jurisdictional wetlands, were analyzed. As a result, all wetland areas within the 100-year floodplain will be avoided during this expansion. These areas comprise approximately 1.2 acres. The facility can meet the project goals while avoiding these jurisdictional areas.

A comprehensive evaluation of wetland areas was completed as part of the design to analyze and minimize impacts to jurisdictional waters. Goals of the landfill expansion could not feasibly be achieved without impacting, to some degree, certain wetland areas. Given the central location of impacted wetlands in the expansion area, the landfill could not be sized or shifted in a manner that could practicably avoid these areas and continue to meet the expansion goals for this facility.

WMTX will provide compensatory mitigation to BSMB and TRMB for construction impacts to approximately 15.79 acres and 610 linear feet of wetlands.

- (2) *The construction and operation of the MSWLF unit shall not:*
 - (A) *cause or contribute to violations of any applicable State water quality standard;*

During all phases of construction activities, WMTX will incorporate BMP devices to assist in the control of erosion, sedimentation, and post-construction total suspended soils. A BMP is defined by the CESWF as: policies, practices, procedures, or structures implemented to mitigate adverse environmental effects on surface water quality resulting from development. BMP devices are categorized as structural or non-structural. Such BMP devices to be used singularly or in combination will include avoidance, minimization, and/or the construction of barricade fences, silt fences, filter

socks, and straw bale dikes. The Facility Surface Water Drainage Report is presented in Part III, Attachment C. The surface water design includes an Erosion and Sediment Control Plan for all phases of landfill operation. Also, the Site Operating Plan (SOP), Part IV, Section 8.18 addresses operational requirements to provide adequate cover over the waste, and to inspect, maintain, and repair erosion at the site.

- (B) *violate any applicable toxic effluent standard or prohibition under of the Clean Water Act, §307;*

The facility will operate a landfill gas collection and control system with flare, a leachate/contaminated water collection and storage system, and storm water management detention basins on the site. Such control measures are for compliance with Clean Water Act §307. No effluent violations are anticipated at this facility.

- (C) *jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of a critical habitat, protected under the Endangered Species Act of 1973; and*

The Skyline Landfill development and operation will not result in the destruction or adverse modification of the critical habitat of endangered or threatened species, or cause or contribute to the taking of any endangered or threatened species.

Team members conducted reviews of the Texas Parks and Wildlife Department (TPWD) Natural Diversity Database (NDD) in 2008 and again in 2009 for records regarding threatened and endangered species, candidates for listing as threatened or endangered species, sensitive natural communities, and other features of concern known or suspected to occur in the expansion area. The USFWS annotated county lists of rare species were referenced. The expansion area was once again evaluated for federal and state-listed threatened and endangered species and their associated habitats during the detailed field surveys. Again, based on literature review and initial and subsequent field evaluations, no federal or state-listed threatened or endangered species or their critical habitat were observed, nor could the habitat within the expansion area support these species. Therefore, no impact to threatened or endangered species is anticipated as a result of the construction or operation of Skyline Landfill. The threatened/endangered species assessment and related agency correspondence is presented in Appendix IIE.

- (D) *violate any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary.*

The facility is designed and will be operated to prevent discharges of waste. Furthermore, the facility neither abuts nor is it located adjacent to any marine or coastal area, and therefore is not expected to violate any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972.

- 3) *The MSWLF unit shall not cause or contribute to significant degradation of wetlands. The owner/operator shall demonstrate the integrity of the MSWLF unit and its ability to protect ecological resources by addressing the following factors:*

- (A) *erosion, stability, and migration potential of native wetland soils, muds, and deposits used to support the MSWLF unit;*

As previously mentioned, erosion and sediment control BMP devices will be implemented throughout each phase of site development activities and during landfill operation. The facility is designed with adequate calculated factors of safety against slope stability (see Part III, Attachment D) and with surface water drainage design and erosional stability (see Part III, Attachment C). The BMP devices and engineering controls will be used to manage storm water runoff, maintain stability, and minimize erosion/sedimentation.

- (B) *erosion, stability, and migration potential of dredged and fill materials used to support the MSWLF unit;*

Native soils will be excavated from the expansion area to provide soils for the MSWLF operations throughout the Skyline Landfill site life (e.g., daily and intermediate cover, soil liner construction, construction of access roads, final cap construction, etc.). No soils from outside the facility permit boundary are expected to be used for landfill operations. BMP devices will be used to prevent erosion and sedimentation as well as stabilize areas of bare earth during and following construction activities.

- (C) *the volume and chemical nature of the waste managed in the MSWLF unit;*

The major classifications of solid waste to be accepted at Skyline Landfill include municipal solid waste, special waste, and Class 2 and 3 industrial wastes. Special wastes to be accepted at the facility are authorized by §330.171 and the facility Special Waste Acceptance Plan included in Part IV – Site Operating Plan. The waste classifications are defined in §330.3.

The facility has not in the past accepted, and will not accept Class 1 industrial waste, except RACM that has been designated Class 1 industrial waste only because of its asbestos content.

Consistent with §330.15, the facility will not accept ~~for disposal Class 1 nonhazardous industrial waste;~~ lead acid storage batteries; used motor vehicle oil; used oil filters; whole used or scrap tires; refrigerators, freezers, air conditioners or other items containing chlorinated fluorocarbons (CFC); bulk or noncontainerized liquid waste from nonhousehold sources; regulated hazardous waste; polychlorinated biphenyls (PCB) waste; radioactive materials; or other wastes prohibited by TCEQ regulations. Refer to Part II, Section 2 – Waste Acceptance Plan for a detailed discussion of the properties and characteristics of waste and the volume and rate of disposal.

- (D) *impacts on fish, wildlife, and other aquatic resources and their habitat from release of the solid waste;*
- (E) *the potential effects of catastrophic release of waste to the wetland and the resulting impacts on the environment; and*

The facility is designed and will be constructed and operated to prevent releases of solid waste in accordance with the technical portions of the permit amendment application pursuant to the regulations in Chapter 330. Although avoided waters of the U.S., including wetlands, exist in close proximity to the expansion area, during all phases of construction activities, WMTX will incorporate BMP devices to assist in the control of erosion, sedimentation, and post-construction total suspended solids. Additionally, the facility will operate a landfill gas collection and control system with flare, a leachate/contaminated water collection and storage system, and storm water management detention basins on the site. Such control measures are for compliance with Clean Water Act §307. No effluent violations are anticipated at this facility. During operation, there may be occasional windblown wastes. As described in the SOP (Part IV, Section 8.26), routine inspections will be made daily for such wastes, followed by pickup to remove this litter. Thus, the facility is expected to have minimal impacts to the wetland areas, fish, wildlife or other aquatic resources and their habitat.

- (F) *any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected*
- (4) *To the extent required under the Clean Water Act, §404 or applicable State wetlands laws, steps have been taken to attempt to achieve no net loss of wetlands (as defined by Texas Commission on Environmental Quality) by first avoiding impacts to wetlands to the maximum extent practicable as required by paragraph (1) of this section, then minimizing unavoidable impacts to the maximum extent practicable, and finally offsetting remaining unavoidable wetland impacts through all appropriate and practicable compensatory mitigation actions (e.g., restoration of existing degraded wetlands or creation of manmade wetlands).*

Environmental sequencing has been implemented for this site. To achieve the goals of the landfill expansion, wetland areas were identified through delineation activities. Section (1) presented above describes the environmental sequencing for the wetlands associated with the expansion area. Since avoidance and minimization of impacts are not practicable within the expansion area for 15.79 acres of jurisdictional wetlands and 610 linear feet of jurisdictional waters of the U.S., compensation for impacts is currently proposed. WMTX will provide compensatory mitigation to BSMB for construction impacts to approximately 15.79 acres of wetlands and to the TRMB for construction impacts to approximately 610 linear feet of jurisdictional waters of the U.S.

- (5) *Sufficient information shall be made available to the executive director to make a reasonable determination with respect to these demonstrations.*

The Wetland Mitigation Plan for the Skyline Landfill proposed expansion will be made available to the executive director, as appropriate. The Wetland Mitigation Plan is included as part of the IP application submitted to the USACE.

14 ENDANGERED OR THREATENED SPECIES

30 TAC §330.61(n)

Consistent with §330.61(n) and §330.551, an evaluation of endangered or threatened species at or near the site has been prepared by Halff Associates and is documented in Appendix IIE – Endangered or Threatened Species Documentation.

~~Based on site visits conducted by qualified biologists at Halff Associates, there are no threatened or endangered species or critical habitat found on the site.~~

A threatened and endangered species review concluded there is no designated critical habitat found on the site. As summarized in the September 22, 2011 review prepared by Halff Associates, Inc., there are 11 species that are listed as threatened, endangered, or rare under Texas and/or federal law that may be found in the study area (Appendix IIE – Endangered and Threatened Species Documentation). For species such as the white-faced ibis and wood stork, the likelihood of occurrence is conditional on the basis that these species migrate, and their broad migratory range overlaps features on the site that may be suitable as a stopover site. The occurrence of aquatic species such as the alligator snapping turtle, Louisiana pigtoe, fawnsfoot, Texas heelsplitter, and Texas pigtoe would be limited to areas within the Ten Mile Creek channel for which no activities or modifications are proposed. Species such as the Texas garter snake and timber rattlesnake would also be limited to forested areas in close proximity to Ten Mile Creek which would be avoided by the proposed project. Operational requirements for threatened and endangered species protection are provided in Part IV, Section 8.14.

Based on evaluation conducted by Halff Associates, and coordination with the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department, in accordance with §330.551(a), the facility and the operation of the facility will not result in the destruction or adverse modification of the critical habitat of endangered or threatened species, or cause or contribute to the taking of any endangered or threatened species.

Coordination with the U.S. Fish and Wildlife Service and the Texas Parks and Wildlife Department regarding the locations and specific data relating to endangered and threatened species in Texas is provided in Appendix IIE – Endangered or Threatened Species Documentation.

15 TEXAS HISTORICAL COMMISSION REVIEW

30 TAC §330.61(o)

Consistent with §330.61(o), a review letter was submitted to the Texas Historical Commission documenting compliance with the Natural Resources Code, Chapter 191, Texas Antiquities Code. The state Historic Preservation Officer determined that no historic properties are affected and the project may proceed. Documentation of the coordination with the Texas Historical Commission is provided in Appendix IIF – Archaeological Survey.

16 COUNCIL OF GOVERNMENTS AND LOCAL GOVERNMENT REVIEW REQUEST

30 TAC §330.61(p)

Consistent with §330.61(p), Parts I and II of the application were submitted for review to the North Central Texas Council of Governments to determine compliance with the regional solid waste plan. The Skyline Landfill is located within the city limits of Ferris, Texas; however, there is no local government solid waste plan or review process. Documentation of coordination with the North Central Texas Area Council of Governments is provided in Appendix III – North Central Texas Area Council of Governments Documentation.

17 LOCATION RESTRICTIONS

30 TAC §§330.543 through 330.563

Location restriction statements and certifications have been prepared for the Skyline Landfill in accordance with ~~§330.1 and~~ §330.451541. Refer to Appendix IIJ – Location Restriction Certifications for certificates.

17.1 Easements and Buffer Zones

The Skyline Landfill expansion is consistent with the provisions of §330.543.

17.1.1 Easement Protection

No solid waste unloading, storage, disposal, or processing operations shall occur within any easement, buffer zone, or right-of-way that crosses the facility. No solid waste disposal shall occur within 25 feet of the center line of any utility line or pipeline easement, but no closer than the easement, unless otherwise authorized by the executive director. All pipeline and utility easements shall be clearly marked with posts that extend at least 6 feet above ground level, spaced at intervals no greater than 300 feet. There are no pipeline or utility easements that will affect solid waste unloading, storage, disposal or processing operations; refer to Drawing IIA.13 – General Site Plan. One easement as shown on Drawing 11A.13 will require relocation prior to waste placement in its immediate vicinity.

17.1.2 Buffer Zones

The buffer zone distance for the proposed waste disposal activities exceeds the minimum distance of 125 feet. Buffer distances vary along the permit boundary. The distances from the permit boundary to the waste disposal footprint are shown on Drawing IIA.~~14-21~~ – Site Layout Plan Buffer Zone Plan.

The buffer zone distance for waste storage or processing operational activities exceeds the minimum buffer distance of ~~50-125~~ feet. Buffer zone distances vary to each storage or processing facility. The buffer distances from the permit boundary to these facilities are shown on Drawing ~~IIA.14 – Site Layout Plan and Drawing IIA.20 – Entrance Road and Entrance Facilities Plan~~ IIA.21 – Buffer Zone Plan.

17.2 Airport Safety

The facility is consistent with the provisions of §330.545 related to airport safety. The evaluation of the facility impact on surrounding airports is discussed in detail in Part II, Section 9.1 – Airport Impact. Documentation of coordination with the Federal Aviation Administration is provided in Appendix IIH.

17.3 Floodplains

The facility is consistent with the provisions of §330.547 related to floodplains. A discussion of floodplains is provided in Part II, Section 13.1 – Floodplains. Additional documentation is provided in Part III, Attachment C2 – Flood Control and Analysis.

17.4 Groundwater

Consistent with the provisions of §330.549 related to groundwater, the facility is not located within the recharge zone of the Edwards Aquifer, as identified in 30 TAC Chapter 213. Additional information related to groundwater is provided in Attachment E – Geology Report and Attachment F – Groundwater Sampling and Analysis Plan.

17.5 Endangered or Threatened Species

The facility is consistent with the provisions of §330.551 related to endangered or threatened species. The evaluation of the facility's potential impact on endangered or threatened species is provided in Part II, Section 14 – Endangered or Threatened Species. The measures the facility will take to avoid and minimize the impact to the endangered or threatened species is included in Part IV, Section 8.14 – Endangered Species Protection. Additional information is provided in Part II, Appendix IIE – Endangered or Threatened Species Documentation.

17.6 Wetlands

The facility is consistent with the provisions of §330.553 related to wetlands. A discussion of wetlands is provided in Part II, Section 13.2 – Wetlands. Additional documentation is provided in Part II, Appendix IID – Wetlands Documentation.

17.7 Fault Areas

The facility is consistent with the provisions of §330.555 related to fault areas. A discussion of fault areas is provided in Part II, Section 10.3 – Fault Areas. Additional information is provided in Part III, Attachment E – Geology Report.

17.8 Seismic Impact Zones

The facility is consistent with the provisions of §330.557 related to seismic impact zones. A discussion of seismic impact zones is provided in Part II, Section 10.4 – Seismic Impact Zones. Additional information is provided in Part III, Attachment E – Geology Report.

17.9 Unstable Areas

The facility is consistent with the provisions of §330.559 related to unstable areas. A discussion of unstable areas is provided in Part II, Section 10.5 – Unstable Areas. Additional information is provided in Part III, Attachment D5 – Geotechnical Design.

17.10 Coastal Areas

The facility is consistent with the provisions of §330.561; it is not located within a coastal area or within 5,000 feet of an area subject to active coastal shoreline erosion as defined in 30 TAC §335.584(b)(3) or (4).

17.11 Type I Landfill Permit Issuance Prohibited

The facility is consistent with the provisions of §330.563; it is not subject to the conditions specified in Texas Health and Safety Code §361.123.