Texas Commission on Environmental Quality Waste Permits Division Correspondence Cover Sheet

Date: 10/13/2023
Facility Name: City of Waco Transfer Station
Permit or Registration No.: TBD

Nature of Correspondence:
】Initial/New
$\square$ Response/Revision to TCEQ Tracking No.: (from subject line of TCEQ letter regarding initial submission)

Affix this cover sheet to the front of your submission to the Waste Permits Division. Check appropriate box for type of correspondence. Contact WPD at (512) 239-2335 if you have questions regarding this form.

Table 1 - Municipal Solid Waste Correspondence

| Applications | Reports and Notifications |
| :--- | :--- |
| $\square$ New Notice of Intent | $\square$ Alternative Daily Cover Report |
| $\square$ Notice of Intent Revision | $\square$ Closure Report |
| $\square$ New Permit (including Subchapter T) | $\square$ Compost Report |
| $\square$ New Registration (including Subchapter T) | $\square$ Groundwater Alternate Source Demonstration |
| $\square$ Major Amendment | $\square$ Groundwater Corrective Action |
| $\square$ Minor Amendment | $\square$ Groundwater Monitoring Report |
| $\square$ Limited Scope Major Amendment | $\square$ Groundwater Background Evaluation |
| $\square$ Notice Modification | $\square$ Landfill Gas Corrective Action |
| $\square$ Non- Notice Modification | $\square$ Landfill Gas Monitoring |
| $\square$ Transfer/Name Change Modification | $\square$ Liner Evaluation Report |
| $\square$ Temporary Authorization | $\square$ Soil Boring Plan |
| $\square$ Voluntary Revocation | $\square$ Special Waste Request |
| $\square$ Subchapter T Disturbance Non-Enclosed Structure | $\square$ Other: |
| $\square$ Other: |  |

Table 2-Industrial \& Hazardous Waste Correspondence

| Applications | Reports and Responses |
| :--- | :--- |
| $\square$ New | $\square$ Annual/Biennial Site Activity Report |
| $\square$ Renewal | $\square$ CPT Plan/Result |
| $\square$ Post-Closure Order | $\square$ Closure Certification/Report |
| $\square$ Major Amendment | $\square$ Construction Certification/Report |
| $\square$ Minor Amendment | $\square$ CPT Plan/Result |
| $\square$ CCR Registration | $\square$ Extension Request |
| $\square$ CCR Registration Major Amendment | $\square$ Groundwater Monitoring Report |
| $\square$ CCR Registration Minor Amendment | $\square$ Interim Status Change |
| $\square$ Class 3 Modification | $\square$ Interim Status Closure Plan |
| $\square$ Class 2 Modification | $\square$ Soil Core Monitoring Report |
| $\square$ Class 1 ED Modification | $\square$ Treatability Study |
| $\square$ Class 1 Modification | $\square$ Trial Burn Plan/Result |
| $\square$ Endorsement | $\square$ Unsaturated Zone Monitoring Report |
| $\square$ Temporary Authorization | $\square$ Waste Minimization Report |
| $\square$ Voluntary Revocation | $\square$ Other: |
| $\square$ 335.6 Notification |  |
| $\square$ Other: |  |

# City of Waco Transfer Station McLennan County, Texas TCEQ Registration No. MSW-TBD 

Prepared for
City of Waco
501 Schroeder Dr.
Waco, Texas 76710

Prepared by:

1901 Central Drive, Suite 550
Bedford, Texas 76021
817.571 .2288

TBPE Registration No. F-3407

## SCS ENGINEERS

City of Waco Transfer Station
McLennan County
TCEQ Permit No. MSW -TBD

## Type V Transfer Station Registration Application

Table of Contents

Administrative and Technical Review Checklist for Municipal Solid Waste (MSW) Permits, Registrations, and Amendments
Parts I/II General Application Requirements
Appendix I/II-A Registration Related Correspondence
Appendix I/II-B Waters of the United States Delineation Assessment
Appendix I/II-C Endangered or Threatened Species Assessment
Appendix I/II-D Oil and Water Well Location Summary
Appendix I/II-E Land Ownership List
Appendix I/II-F Traffic Analysis
Appendix I/II-G Original Landfill Permit
Part III Site Development Plan
Part III Attachment 1 - General Facility Design Plan
Part III Attachment 2 - Closure Plan
Part III Attachment 3 - Closure Cost Estimate
Part IV Site Operating Plan
Appendix IV-1 Waste Acceptance Plan


SCS Engineers
TBPE Reg. \# F-3407

## Administrative and Technical Review Checklist for Municipal Solid Waste (MSW) Permits, Registrations and Amendments

This checklist is designed to provide guidance for the Municipal Solid Waste (MSW) rules found in Title 30 Texas Administrative Code (30 TAC) Chapter 330, for Type I, IV and V registration, permit, and permit amendment applications. Areas of the checklist that are shaded in gray are for information purposes only.

Please fill out application information before selecting and filling out a checklist.


| ID | App. Part | Checklist Item | Item Type | Citation | Complete? | Location | Applicant Comments | Application Area |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | General | Submit all four parts of the permit, permit amendment or registration application | Required | 330.57(a) \& (b) | Yes | Parts I/II, III, and IV |  | $\begin{gathered} \text { Format- } \\ \text { Application } \\ \hline \end{gathered}$ |
| 2 | General | Submit TCEQ Part I Form (Form No. 0650) | Required | 330.57(c)(1) | Yes | Parts I/II |  | Forms |
| 8 | General | Part II of the application contains location and coordination information. coordination information. | Informational | 330.57(c)(2) |  |  |  | FormatApplication |
| 9 | General | Part III of the application contains design information | Informational | 330.57(c)(3) |  |  |  | FormatApplication |
| 10 | General | Part IV of the application contains the site operating plan | Informational | 330.57(c)(4) |  |  |  | FormatApplication |
| 11 | General | The application should address all aspects of application and design requirements, even to show why not applicable (N/A) | Informational | 330.57(d) |  |  |  | FormatApplication |
| 12 | General | Submit data of sufficient completeness, accuracy and clarity | Required | 330.57(d) | Yes | Parts I/II, III, and IV |  | FormatApplication |
| 13 | General | Failure to provide complete information may be cause for ED to return application. | Informational | 330.57(d) |  |  |  | $\begin{gathered} \text { Format- } \\ \text { Application } \\ \hline \end{gathered}$ |
| 14 | General | Provide 4 Copies for Initial Submittal (1 original and 3 copies) | Required | 330.57(e) | Yes | Parts I/II, III, and IV |  | $\begin{gathered} \text { Format- } \\ \text { Application } \\ \hline \end{gathered}$ |
| 15 | General | Provide 4 copies for NOD Responses including 1 copy with marked revisions (redline/strikeout) | Required | $330.57(\mathrm{~g})(6)$ | Yes |  |  | FormatApplication |
| 16 | General | Application must be prepared in accordance <br> with Texas Occupations Code, Texas <br> Engineering Practice Act, Chapter 1001 and <br> Texas Geoscience Practice Act, Chapter 1002 | Informational | 330.57(f) |  |  |  | FormatApplication |
| 17 | General | Provide a PE signature, seal and date on the title page of each bound engineering report or individual engineering plan, and on each engineering drawing | Required | 330.57(f)(1) | Yes | Parts I/II and III |  | FormatApplication |
| 18 | General | Provide PG sign, seal, \& date for applicable items | Required | 330.57(f)(2) | Yes | Parts I/II |  | $\begin{gathered} \text { Format- } \\ \text { Application } \end{gathered}$ |
| 19 | General | Applications that are not sealed are incomplete and shall be returned | Informational | 330.57(f)(3) |  |  |  | FormatApplication |
| 20 | General | Submit the application in three ring-binders | Required | 330.57 g (1) | Yes | Parts I/II, III, and IV |  | FormatApplication |
| 21 | General | Submit Title Page with Name, Application No., Site Operator Name, Operator Name (if applicable), Location, Date Prepared and Revision Date(s) | Required | $330.57(\mathrm{~g})(2)$ | Yes | Parts I/II, III, and IV |  | Format Application |
| 22 | General | Provide Table of Contents with PE seal | Required | $330.57 \mathrm{~g})(3)$ | Yes | Cover |  | $\begin{gathered} \text { Format- } \\ \text { Application } \\ \hline \end{gathered}$ |
| 23 | General | Use $8.5 \times 11$ inch or $11 \times 17$ paper (folded to $8.5 \times 11$ inch) | Required | $330.57 \mathrm{~g})(4)$ | Yes | Parts I/II, III, and IV |  | FormatApplication |
| 24 | General | Provide pages with date (original and revised) and sequential page numbers | Required | 330.57 (g)(5) | Yes | Parts I/II, III, and IV |  | FormatApplication |
| 25 | General | Provide legible drawings/maps | Required | 330.57(h)(1) | Yes | Parts I/II and III |  | Format- Maps/Drawing s |
| 26 | General | Provide color coding on all figures and drawings that is legible and distinct after copying in black \& white | Required | 330.57(h)(2) | Yes | Parts I/II and III |  | Format- Maps/Drawing s |
| 27 | General | Provide a standard engineering scale on each figure or drawing | Required | 330.57(h)(3) | Yes | Parts I/II and III |  | Format- Maps/Drawing s |
| 28 | General | Provide a dated title block on each figure or drawing | Required | 330.57(h)(4)(A) | Yes | Parts I/II and III |  | Format- Maps/Drawing s |
| 29 | General | Provide a bar scale at least 1 inch on all figures and drawings | Required | 330.57(h)(4)(B) | Yes | Parts I/II and III |  | Format- Maps/Drawing s |
| 30 | General | Provide a revision block on all figures and drawings | Required | 330.57(h)(4)(C) | Yes | Parts I/II and III |  | Format- Maps/Drawing s |
| 31 | General | Provide a PE or PG seal ,if required, on all figures and drawings | Required | 330.57(h)(4)(D) | Yes | Parts I/II and III |  | Format- Maps/Drawing s |


| 32 | General | Include drawing number and a page number on each drawing and figure | Required | 330.57(h)(4)(E) | Yes | Parts I/II and III |  | Format- Maps/Drawing s |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 33 | General | Include a north arrow on each map or plan drawing | Required | 330.57(h)(5)(A) | Yes | Parts I/II and III |  | $\begin{array}{\|c\|} \hline \text { Format- } \\ \text { Maps/Drawing } \\ \text { s } \end{array}$ |
| 34 | General | Include a reference to base map \& date of most current base map used, if the map is based upon another map | Required | 330.57(h)(5)(B) | Yes | Parts I/II and III |  | Format- Maps/Drawing s |
| 35 | General | Include a legend on each map or plan drawing | Required | 330.57(h)(5)(C) | Yes | Parts I/II and III |  | $\begin{array}{\|c\|} \hline \text { Format- } \\ \text { Maps/Drawing } \\ \mathrm{s} \end{array}$ |
| 36 | General | Provide match lines and section lines that reference the drawing where the match or section is shown. | Required | 330.57(h)(6) | Yes | N/A |  | $\begin{array}{c\|} \text { Format- } \\ \text { Maps/Drawing } \end{array}$ |
| 37 | General | Indicate that the registration is for an MSW transfer station facility that is used in the transfer of MSW to a solid waste processing or disposal facility from any of the following: a municipality with a population of less than 50,000; a county with a population of less than 85,000; a facility used in the transfer of MSW that transfers or will transfer 125 tons per day or less or a transfer station located within the permitted boundaries of an MSW Type I or Type IV facility | Required | 330.9(b)(1) - (4) | Yes | Parts I/II, Section 2.1 |  | Application Eligibility |
| 38 | General | Provide a demonstration that the facility will recover $10 \%$ or more by weight or weight equivalent of the total incoming waste stream for reuse or recycling, ensure that the incoming waste has already been reduced by at least $10 \%$ through a source-separation recycling program; or, also operate one or more source-separation recycling programs in the county where the transfer station is located and those sourceseparation recycling programs manage a total weight or weight equivalent of recyclable materials equal to $10 \%$ or more by weight or weight equivalent of the incoming waste stream to all transfer stations to which credit is being applied | Required if Requested | 330.9(f)(1) | Yes | N/A | The facility will not accept or store grease, oil, or sludge; therefore, the requirements of $\S 330.9(\mathrm{f})$ do not apply | Application Eligibility |
| 39 | General | Provide a demonstration that the facility will transfer the remaining nonrecyclable waste to a landfill not more than 50 miles from the facility. | Required if Requested | 330.9(f)(2) | Yes | N/A | The facility will not accept or store grease, oil, or sludge; therefore, the requirements of $\S 330.9(\mathrm{f})$ do not apply | Application Eligibility |
| 45 | General | Acknowledge that the construction and operation of the waste management facility shall comply with Subchapter U of 30 TAC Chapter 330 (relating to Standard Air Permits for Municipal Solid Waste Landfill Facilities and Transfer Stations) or other approved air authorizations. Owners or operators of these types of facilities should consult with the Air Permits Division on or before the date that the municipal solid waste application is filed with the executive director | Acknowledgement | 330.55(a) | Yes | Yes |  | Other Authorizations |
| 46 | General | Acknowledge that all liquids resulting from the operation of solid waste facilities shall be disposed of in a manner that will not cause surface water or groundwater pollution. Facilities shall provide for the treatment of wastewaters resulting from waste management activities and from cleaning and washing. Owners or operators shall ensure that storm water and wastewater management is in compliance with the regulations of the commission. | Acknowledgement | 330.55(a) | Yes | Yes |  | Other Authorizations |




| 89 | Part I | Signed property owner affidavit | Required in Part I Form | 330.59(d)(2) |  |  | Part IForm |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 90 | Part I | Acknowledge that State may hold owner responsible | Required in Part I Form | 330.59(d)(2)(A) |  |  | Part I Form |
| 92 | Part I | Acknowledge that the owner \& State shall have access during life of the facility and during closure | Required in Part I Form | 330.59(d)(2)(C) |  |  | Part I Form |
| 94 | Part I | Verified legal status of applicant and list of persons with $20 \%$ or more ownership in the facility | Required in Part I Form | 330.59(e) |  |  | Part I Form |
| 95 | Part I | Ownership status as federal, state, private, public, or other | Required in Part I Form | 305.45(a)(2) |  |  | Part I Form |
| 96 | Part I | List of all Texas solid waste sites that the owner or operator has owned or operated within the last ten years. The site name, site type, permit or registration number, county, and dates of operation shall also be submitted. | Required in Part I Form | 330.59(f)(1) |  |  | Part I Form |
| 97 | Part I | List of all solid waste sites in all states, territories, or countries in which the owner or operator has a direct financial interest. The type of site shall be identified by location, operating dates, name, and address of the regulatory agency, and the name under which the site was operated. | Required in Part I Form | 330.59(f)(2) |  |  | Part I Form |
| 98 | Part I | Shall employ a licensed solid waste facility supervisor before operating | Required in Part I Form | 330.59(f)(3) |  |  | Part I Form |
| 99 | Part I | Names of principals \& supervisors owner or operators organization together with previous affiliations with other organizations involved with solid waste activities | Required in Part I Form | 330.59(f)(4) |  |  | Part I Form |
| 101 | Part I | Signatory meets 305.44, documentation of delegated signatory authority | Required in Part I Form | $330.59(\mathrm{~g})$ |  |  | Part I Form |
| 102 | Part I | Corporations - signed by a corporate officer | Required in Part I Form |  |  |  | Part I Form |
| 103 | Part I | Partnership or proprietorship -signed by a general partner or proprietor | Required in Part I Form |  |  |  | Part I Form |
| 104 | Part I | Municipality, public agency -signed by an executive officer or elected official | Required in Part I Form |  |  |  | Part I Form |
| 105 | Part I | Signatory certification statement | Required in Part I Form |  |  |  | Part IForm |
| 106 | Part I | Hazardous Waste Management | Required in Part I Form | 305.45(a)(7)(A) |  |  | Part IForm |
| 107 | Part I | Underground Injection Control | Required in Part I Form | 305.45(a)(7)(B) |  |  | Part I Form |
| 108 | Part I | NPDES | Required in Part I Form | 305.45(a)(7)(C) |  |  | Part I Form |
| 109 | Part I | Prevention of Significant Deterioration | Required in Part I Form | 305.45(a)(7)(D) |  |  | Part IForm |
| 110 | Part I | Nonattainment Program | Required in Part I Form | 305.45(a)(7)(E) |  |  | Part IForm |
| 111 | Part I | NESHAPS | Required in Part I Form | 305.45(a)(7)(F) |  |  | Part I Form |
| 112 | Part I | Ocean dumping permit | Required in Part I Form | 305.45(a)(7)(G) |  |  | Part IForm |
| 113 | Part I | Dredge \& fill permit | Required in Part I Form | 305.45(a)(7)(H) |  |  | Part IForm |
| 114 | Part I | Licenses under the TRCA | Required in Part I Form | $305.45(\mathrm{a})(7)(\mathrm{I})$ |  |  | Part IForm |
| 115 | Part I | Other environmental permits | Required in Part I Form | 305.45(a)(7)(K) |  |  | Part IForm |
| 116 | Part I | Registration Application Fee is $\$ 150.00$ | Required in Part I Form | 330.59(h)(1) |  |  |  |
| 117 | Part I | A copy of the payment receipt to the MSW Permits Section, if paid by check. | Required in Part I Form | 330.59(h)(1) |  |  | Part I Form |
| 118 | Part I | Prepared by PE, PG, or qualified person | Required in Part I Form | 330.57(f) |  |  | Part IForm |
| 119 | Part I | Description of facility \& systems | Required in Part I Form | 305.45(a)(8)(A) |  |  | Part IForm |
| 120 | Part I | Volume, average \& max rate of disposal for each place of disposal | Required in Part I Form | 305.45(a)(8)(B)(i) |  |  | Part IForm |
| 121 | Part I | Physical, chemical, thermal, organic, bacteriological, radiological properties of waste | Required in Part I Form | $305.45(\mathrm{a})(8)(\mathrm{B})($ (ii) |  |  | Part I Form |
| 122 | Part I | Other reasonable information | Required in Part I Form | 305.45(a)(8)(C) |  |  | Part IForm |
| 123 | Part II | Provide the sources and characteristics of all waste to be accepted. | Required | 330.61(b)(1) | Yes | Parts I/II, Section 2.2 | Waste Acceptance Plan |
| 124 | Part II | Specify parametric limitations of each type of waste to be managed by the facility | Required | 330.61(b)(1) | Yes | Parts I/II, Section 2.2 | Waste Acceptance Plan |


| 125 | Part II | Provide a brief description of the general sources and generation areas contributing wastes to the facility. This description shall include an estimate of the population or population equivalent served by the facility | Required | 330.61(b)(1)(A) | Yes | Parts I/II, Section 2.2 |  | $\begin{gathered} \text { Waste } \\ \text { Acceptance } \\ \text { Plan } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 126 | Part II | Provide a descriptive narrative that describes the percentage of incoming waste that must be recovered and its intended use | Required if Requested | 330.61(b)(1)(A) | Yes | NA |  | Waste Acceptance Plan |
| 127 | Part II | Provide the maximum amount of solid waste to be received daily and annually projected for five years. Provide the maximum amount of solid waste to be stored and the maximum and average lengths of time that solid waste is to remain at the facility. Provide the intended destination of the solid waste received at this facility. | Required | 330.61(b)(1)(B) | Yes | Parts I/II, Section 2.2.4 |  | Waste Acceptance Plan |
| 129 |  | Provide information to establish why a facility qualifies for a registration in accordance with 30 TAC §330.9 | Required | 330.61(b)(2) | Yes | Parts I/II, Section 2.1 |  |  |
| 130 | Part II | Provide any site specific conditions that require special design considerations \& possible mitigation of conditions identified under sections (h) - (o) | Required | 330.61(a) | Yes | Parts I/II, Section 3.7 |  | Facility Impact |
| 131 | Part II | Provide information regarding the likely impacts of the facility on cities, communities, groups of property owners, or individuals. | Required | 330.61(h) | Yes | Parts I/II, Section 3.2 |  | Facility Impact |
| 132 | Part II | Provide information on the compatibility of the facility with surrounding land use, zoning in the vicinity, community growth patterns, and other factors associated with the public interest | Required | 330.61(h) | Yes | Parts I/II, Section 3.2 |  | Facility Impact |
| 133 | Part II | Provide information on the character of surrounding land use within one mile | Required | 330.61(h)(2) | Yes | Parts I/II, Section 3.2.2 |  | Existing Conditions |
| 134 | Part II | Provide information about the growth trends within five miles \& directions of development | Required | 330.61(h)(3) | Yes | Parts I/II, 3.2.3 and 3.2.4 |  | Existing Conditions |
| 135 | Part II | Indicate the proximity to residences \& items listed in 330.61(c)(4) \& (12), ~ no. of residences \& commercial establishments including direct \& distance to nearest, population density, all within one mile. | Required | 330.61(h)(4) | Yes | Parts I/II, Section 3.2.5 |  | Existing Conditions |
| 136 | Part II | Indicate all wells and the well density within 500 ft . | Required | 330.61(h)(5) | Yes | Parts I/II, Section 3.2.6, Appendix I/II-C |  | Existing Conditions |
| 137 | Part II | Provide any other information requested by the ED | Required | 330.61(h)(6) | Yes | NA | No other information requested by the ED. | Existing Conditions |
| 138 | Part II | Provide data on availability \& adequacy of access roads | Required | 330.61(i)(1) | Yes | Parts I/II, Section 3.3.1 |  | Transportation |
| 139 | Part II | Provide the existing \& expected traffic volumes on access roads within one mile of the facility during the expected life of the facility | Required | 330.61(i)(2) | Yes | Parts I/II, Section 3.3.2 |  | Transportation |
| 140 | Part II | Provide an estimate of traffic volume generated by the facility on access roads within one mile of the facility | Required | 330.61(i)(3) | Yes | Parts I/II, Section 3.3.3 |  | Transportation |
| 141 | Part II | Provide documentation of coordination for roadway improvements and documentation of coordination with TXDOT for traffic and location restrictions | Required | 330.61(i)(4) | Yes | Appendix I/II-A. 3 |  | Transportation |
| 146 | Part II | Provide notice to the airport \& the FAA for MSW units within 6 miles of a small airport or within 5 miles of a large commercial airport. | Required | 330.545(b) | Yes | NA | 330.545(b) is not applicable for transfer stations | Transportation |
| 148 | Part II | Discuss in general terms the geology and soils of the proposed site | Required | 330.61(j)(1) | Yes | Parts I/II, Section 3.4 |  | Geology |
| 152 | Part II | Provide data on site specific groundwater conditions | Required | 330.61(k)(1) | Yes | Parts I/II, Section 3.5.1 |  | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Groundwater } \\ \text { and Surface } \\ \text { Water } \end{array} \\ \hline \end{array}$ |
| 153 | Part II | Provide data on surface water at or near the site | Required | 330.61(k)(2) | Yes | Parts I/II, Section 3.5.2 |  | $\begin{gathered} \text { Groundwater } \\ \text { and Surface } \\ \text { Water } \end{gathered}$ |


| 154 | Part II | Provide information on how facility will comply with applicable Texas Pollutant Discharge Elimination System (TPDES) storm water permitting requirements and the Clean Water Act, $\S 402$, as amended.. This may include the information requires by 30 TAC $330.61(\mathrm{k})(3)(\mathrm{A})$ \& (B) | Required | 330.61(k)(3) | Yes | Parts I/II, Section 3.5.3 | Groundwater and Surface Water |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 155 | Part II | As applicable, provide a certification statement indicating the owner/operator will obtain the appropriate TPDES permit coverage when required | Required | 330.61(k)(3)(A) | Yes | Parts I/II, Section 3.5.3 | Groundwater and Surface Water |
| 156 | Part II | As applicable, provide a copy of permit number under an individual wastewater permit | Required | 330.61(k)(3)(B) | Yes | NA | Groundwater and Surface Water |
| 157 | Part II | Provide the location of any water wells. | Required | 330.61(1)(1) | Yes | Appendix I/II-D | $\begin{gathered} \hline \text { Abandoned Oil } \\ \text { and Water } \\ \text { Wells } \end{gathered}$ |
| 158 | Part II | All water supply wells must be outside monitoring system or approved in the permit | Informational | 330.61(1)(1) |  |  | $\begin{array}{\|c} \hline \text { Abandoned Oil } \\ \text { and Water } \\ \text { Wells } \end{array}$ |
| 160 | Part II | Provide the location of oil \& gas wells production wells may remain if identified \& don't disrupt operations | Required | 330.61(1)(2) | Yes | Parts I/II, Section 3.6 andAppendix I/II-D | $\begin{gathered} \hline \text { Abandoned Oil } \\ \text { and Water } \\ \text { Wells } \end{gathered}$ |
| 161 | Part II | Production wells may remain if identified \& they do not disrupt facility operations | Informational | 330.61(1)(2) |  |  | $\begin{array}{\|c} \hline \begin{array}{c} \text { Abandoned Oil } \\ \text { and Water } \\ \text { Wells } \end{array} \\ \hline \end{array}$ |
| 162 | Part II | Indicate if the facility is within the 100 yr floodplain. If facility within a floodplain see location restrictions in 30 TAC Chapter 330 Subchapter M | Required | 330.61(m)(1) | Yes | Parts I/II, Section 3.7.1 | Floodplains and Wetlands |
| 165 | Part II | Acknowledge that the construction and operation of the facility shall not result in the destruction or adverse modification of the critical habitat or cause or contribute to the taking of endangered or threatened species. | Acknowledgement | 330.61(n)(1) | Yes | Parts I/II, Section 3.8 | Endangered Species |
| 165 | Part II | Acknowledge that the construction and operation of the facility shall not result in the destruction or adverse modification of the critical habitat or cause or contribute to the taking of endangered or threatened species. If the WWTP permit contains a coordination and a review letter from the United States Fish and Wildlife Service and the Texas Parks and Wildlife Department, the owner or operator shall submit these documents as an attachment/appendix to the registration application and by referencing where this information is addressed in the WWTP Permit and/or permit application. | Acknowledgement | 330.61(n)(1) | Yes | Parts I/II, Section 3.8 | Endangered Species |
| 166 | Part II | Provide a demonstration of whether facility is located within species range and provide a biological assessment. | Required | 330.61(n)(2) | Yes | Parts I/II, Section 3.8 and Appendix I/II-C | Endangered Species |
| 166 | Part II | Provide a demonstration of whether facility is located within species range and provide a biological assessment. If the WWTP permit contains a coordination and a review letter from the United States Fish and Wildlife Service and the Texas Parks and Wildlife Department, the owner or operator shall submit these documents as an attachment/appendix to the registration application and by referencing where this information is addressed in the WWTP Permit and/or permit application. | Required | 330.61(n)(2) | Yes | Appendix I/II-C | Endangered Species |
| 167 | Part II | Provide documentation of compliance with Natural Resource Code, Chapter 191 (Texas Antiquities Code) | Required | 330.61(o) | Yes | Parts I/II, Section 3.2.5 | Historical Commission |


| 167 | Part II | Provide documentation of compliance with Natural Resource Code, Chapter 191 (Texas Antiquities Code). If the WWTP permit contains coordination and a review letter from the Texas Historical Commission, the owner or operator shall submit these documents as an attachment/appendix to the registration application and by referencing where this information is addressed in the WWTP Permit and/or permit application. | Required | 330.61(o) | Yes | Appendix I/II-A. 2 |  | Historical Commission |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 168 | Part II | Provide documentation that Parts I and II of the application were submitted for review to the applicable council of governments for compliance with regional solid waste plans. | Required | 330.61(p) | Yes | Appendix I/II-A. 1 |  | COG Review |
| 169 | Part II | Acknowledgement that the owner or operator requested a review letter from any local government, as appropriate for compliance with local solid waste plans. A review letter is not a prerequisite to a final determination on a permit or registration application. | Acknowledgement | 330.61(p) | Yes | Appendix I/II-A. 1 |  | COG Review |
| 170 | Part II | Provide a constructed map showing boundary, zoning, \& land use within one mile including info from 330.61(c)(4), (5), \& (10) (schools, hospitals, etc.) | Required | 330.61(g) | Yes | Figure I/II-5 |  | Maps/Drawing s |
| 171 | Part II | Provide the prevailing wind direction with a wind rose. | Required | 330.61(c)(1) | Yes | Figure I/II-2 |  | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Maps/Drawing } \\ \text { s } \end{array} \\ \hline \end{array}$ |
| 172 | Part II | Provide the location of all known water wells within 500 feet of the proposed permit boundary with the state well numbering system designation for Water Development Board "located wells". | Required | 330.61(c)(2) | Yes | Appendix I/II-C |  | $\begin{array}{\|c} \text { Maps/Drawing } \\ \text { s } \end{array}$ |
| 173 | Part II | Provide the location of all structures and inhabitable buildings within 500 feet of the facility | Required | 330.61(c)(3) | Yes | Figure I/II-5 |  | $\begin{array}{\|c\|} \hline \text { Maps/Drawing } \\ \mathrm{s} \end{array}$ |
| 174 | Part II | Provide the location of all schools, licensed daycares, churches, hospitals, cemeteries, ponds, lakes, residential, commercial, \& recreational areas within one mile of the facility | Required | 330.61(c)(4) | Yes | Figure I/II-5 |  | Maps/Drawing s |
| 175 | Part II | Provide the location and surface type of roads used for access within one mile of the facility | Required | 330.61(c)(5) | Yes | Appendix I/II-F |  | Maps/Drawing s |
| 176 | Part II | Provide the latitude \& longitude of the facility | Required | 330.61(c)(6) | Yes | Figure I/II-1 |  | $\begin{array}{\|c\|} \hline \text { Maps/Drawing } \\ \text { s } \end{array}$ |
| 177 | Part II | Provide the location of all area streams | Required | 330.61(c)(7) | Yes | Figure I/II-8 |  | $\begin{array}{\|c\|} \hline \text { Maps/Drawing } \\ \mathrm{s} \end{array}$ |
| 178 | Part II | Provide the location of all airports within six miles | Required | 330.61(c)(8) | Yes | Figure I/II-9 | No airports located within six miles | $\begin{array}{\|c\|} \hline \text { Maps/Drawing } \\ \mathrm{s} \end{array}$ |
| 179 | Part II | Indicate the property boundary of facility | Required | 330.61(c)(9) | Yes | Figure I/II-4 |  | $\underset{\mathrm{s}}{\mathrm{Maps} / \text { Drawing }}$ |
| 180 | Part II | Indicate all drainage, pipeline, and utility easements within \& adjacent to the facility | Required | 330.61(c)(10) | Yes | NA |  | $\begin{array}{\|c\|} \hline \text { Maps/Drawing } \\ \mathrm{s} \end{array}$ |
| 181 | Part II | Provide the location of all access control features | Required | 330.61(c)(11) | Yes | Figure I/II-6 |  | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Maps/Drawing } \\ \mathrm{s} \end{array} \\ \hline \end{array}$ |
| 182 | Part II | Provide the location of all archaeological sites, historical sites, and sites with an aesthetic quality adjacent to the facility | Required | 330.61(c)(12) | Yes | NA | No such sites adjacent to facility | Maps/Drawing s |
| 183 | Part II | Provide a facility layout map | Required | 330.61(d) | Yes | Figure I/II-6 |  | $\begin{array}{\|c\|} \hline \text { Maps/Drawing } \\ \mathrm{s} \end{array}$ |
| 184 | Part II | A set of maps may be provided | Informational | 330.61(d) |  |  |  | $\underset{\mathrm{s}}{\mathrm{Maps} / \text { Drawing }}$ |
| 186 | Part II | Provide the location of interior roads | Required | 330.61(d)(2) | Yes | Figure I/II-6 |  | $\underset{\substack{\text { Maps/Drawing } \\ \mathrm{s}}}{ }$ |
| 187 | Part II | Indicate the location of monitor wells | Required | 330.61(d)(3) | Yes | NA |  | $\underset{\mathrm{s}}{\mathrm{Maps} / \text { Drawing }}$ |
| 188 | Part II | Provide the location of all facility buildings | Required | 330.61(d)(4) | Yes | Figure I/II-6 |  | $\begin{array}{\|c\|} \hline \text { Maps/Drawing } \\ \mathrm{s} \end{array}$ |
| 189 | Part II | Provide notes on sequence of development | Required | 330.61(d)(5) | Yes | NA |  | $\begin{array}{\|c\|} \hline \text { Maps/Drawing } \\ \mathrm{s} \\ \hline \end{array}$ |
| 190 | Part II | Indicate the location of all facility fencing | Required | 330.61(d)(6) | Yes | Figure I/II-6 |  | Maps/Drawing s |


| 192 | Part II | Indicate the location of site entrance roads | Required | 330.61(d)(8) | Yes | Figure I/II-6 |  | $\begin{array}{\|c\|} \hline \text { Maps/Drawing } \\ \mathrm{s} \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 198 | Part II | Provide a general topographic maps: USGS 7.5 minute or equivalent one map at scale $1 \mathrm{in} .=$ $2,000 \mathrm{ft}$. | Required | 330.61(e) | Yes | Figure I/II-2 |  | $\underset{\mathrm{s}}{\mathrm{Maps} / \mathrm{Drawing}}$ |
| 199 | Part II | Provide Aerial Photograph(s) that are at least 9 in. by 9 in . at scale range of one inch $=1,667-$ $3,334 \mathrm{ft}$. that covers an area at least one mile in radius of the site. Facility boundary and fill areas (as applicable) must be shown. | Required | 330.61(f) | Yes | Figure I/II-3 |  | Maps/Drawing s |
| 200 | Part II | A series of photos showing growth trends may be used | Informational | 330.61(f)(2) |  |  |  | Maps/Drawing s |
| 201 | Part II | All submitted prints \& photocopies must be legible | Informational | 330.61(f)(3) |  |  |  | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Maps/Drawing } \\ \mathrm{s} \end{array} \\ \hline \end{array}$ |
| 202 | Part II | Provide zoning map within two miles and a copy of any nonconforming use or special permit required for the facility | Required | 330.61(h)(1) | Yes | NA | No published zoning maps within 2 miles of facility | $\begin{array}{\|c\|} \hline \text { Maps/Drawing } \\ \mathrm{s} \end{array}$ |
| 210 | Part II | No solid waste disposal operations are permitted in the 100 yr . floodway | Informational | 330.547(a) |  |  |  | Floodplains and Wetlands |
| 211 | Part II | Demonstrate that, a facility located in 100 year flood plains, does not restrict the flow of the 100 yr. flood, reduce temporary storage capacity, or result in washout of solid waste so as to pose a hazard to human health and the environment | Required | 330.547(b) | Yes | NA | Facility is not in the 100 -yr floodplain | Floodplains and Wetlands |
| 212 | Part II | Demonstrate that storage and processing facilities are located outside of the 100 year floodplain. | Required | 330.547(c) | Yes | Figure I/II-8 |  | Floodplains and Wetlands |
| 213 | Part II | For storage and processing facilities located within the 100 year floodplain, please provide a demonstration that the facility is designed to prevent washout during a 100 year storm event, or a conditional letter of map amendment from the Federal Emergency Management Administration administrator | Required | 330.547(c) | Yes | NA | Facility not in the 100 year floodplain | Floodplains and Wetlands |
| 214 | Part II | Acknowledge if the facility will be located in wetlands. | Acknowledgement | 330.553(a) \& (b) | Yes | NA | Not located within wetlands, see Figure I/II-7 | Floodplains and Wetlands |
| 215 | Part II | Demonstrate, if located within wetlands, that there is no practicable alternative location | Required | 330.553(b)(1) | Yes | NA | Not located within wetlands, see Figure I/II-7 | Floodplains and Wetlands |
| 216 | Part II | Acknowledge that the facility's construction \& operations shall not cause or contribute to violations of state water quality standards, violation of any applicable toxic effluent standard or prohibition under the Clean Water Act $\S 307$; 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, or violate any requirement under the Marine protection, Research, \& Sanctuaries Act | Acknowledgement | 330.553(b)(2)(A) - (D) | Yes | Appendix I/II-C |  | Floodplains and Wetlands |
| 217 | Part II | If wetlands are located within the facility, submit a demonstration for the integrity of landfill unit by addressing erosion, stability, \& migration potential of native wetland soils, muds, and deposits used to support the landfill unit | Required | 330.553(b)(3)(A) | Yes | NA | Appendix I/II-B | Floodplains and Wetlands |
| 218 | Part II | If wetlands are located within the facility, submit a demonstration for the integrity of landfill unit by addressing erosion, stability, \& migration potential of dredged and fill materials used to support the landfill | Required | 330.553(b)(3)(B) | Yes | NA | Appendix I/II-B | Floodplains and Wetlands |
| 219 | Part II | If wetlands are located within the facility, submit a demonstration for the integrity of landfill unit by addressing the volume and chemical nature of the waste managed in the landfill unit | Required | 330.553(b)(3)(C) | Yes | NA | Appendix I/II-B | Floodplains and Wetlands |


| 220 | Part II | If wetlands are located within the facility, submit a demonstration for the integrity of landfill unit by addressing the impacts on fish, wildlife, and other aquatic resources and their habitat for the release of solid waste | Required | 330.553(b)(3)(D) | Yes | NA | Appendix I/II-B | Floodplains and Wetlands |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 221 | Part II | If wetlands are located within the facility, submit a demonstration for the integrity of landfill unit by addressing the potential effects of catastrophic release of waste to the wetlands and the resulting impacts on the environment | Required | 330.553(b)(3)(E) | Yes | NA | Appendix I/II-B | Floodplains and Wetlands |
| 222 | Part II | If wetlands are located within the facility, submit a demonstration for the integrity of landfill unit by addressing any additional factors, as necessary, to demonstrate that ecological resources in the wetland are sufficiently protected | Required | 330.553(b)(3)(F) | Yes | NA | Appendix I/II-B | Floodplains and Wetlands |
| 223 | Part II | Sufficient information shall be provided to the ED to allow a reasonable determination to be made with respect to the demonstrations cited in 30 TAC $\S 330.553(\mathrm{~b})$ | Informational | 330.553(b)(5) |  |  |  | Floodplains and Wetlands |
| 224 | Part II | Provide the steps taken to achieve no net loss of wetlands | Required | 330.553(b)(4) | Yes | NA | No wetlands on site | Floodplains and Wetlands |
| 225 | Part II | Acknowledge that the operation of this facility shall not result in the destruction or adverse modification of the critical habitat of endangered or threatened species | Acknowledgement | 330.551(a) | Yes | Parts I/II, Section 3.8 |  | Endangered Species Species |
| 226 | Part II | The term "Harassing" means; An intentional or negligent act or omission that creates the likelihood of injury to wildlife | Informational | 330.551(b)(1) |  |  |  | Endangered Species |
| 227 | Part II | The term "Harming" means; An act of omission that actually injures or kills wildlife, including acts that annoy it to such an extent as to significantly disrupt essential behavioral patterns | Informational | 330.551(b)(2) |  |  |  | Endangered Species |
| 228 | Part II | The term "Taking" means; collecting an endangered or threatened species or attempting to engage in such conduct | Informational | 330.551(b)(3) |  |  |  | Endangered Species |
| 229 | Part II | Acknowledge that no solid waste unloading, storage, disposal, or processing operations shall occur within any easement, buffer zone, or right of-way that crosses the facility | Acknowledgement | 330.543(a) | Yes | Yes |  | Easements and Buffer Zone |
| 268 | Part II | Submit information for on-site local geologic or geomorphologic features | Required | 330.559(2) | Yes | Parts I/II, Section 3.4 |  | Geology |
| 269 | Part II | Identify local human-made features or events | Required | 330.559(3) | Yes | NA |  | Geology |
| 270 | Part III | Describe facility access control features | Required | 330.63(b)(1) | Yes | Part III, Section 2.1 |  | General <br> Facility Design |
| 271 | Part III | Submit a process design for the facility [that includes items 330.63(b)(2)(A) through 330.63(b)(2)(I)] | Required | 330.63(b)(2) | Yes | Part III Section 2.0 and Drawings III-1.1 through III-1.8. |  | General Facility Design |
| 272 | Part III | Submit a flow diagram(s) to describe the storage, processing, and disposal sequences for each type of waste and/or feedstock/recyclable | Required | 330.63(b)(2)(A) | Yes | Drawing III-1.2 |  | General Facility Design |
| 273 | Part III | Submit a schematic view drawing(s) showing phases for collection, separation and processing/disposal of each type of waste and/or feedstock/recyclable material | Required | 330.63(b)(2)(B) | Yes | Drawing III-1.3 |  | General Facility Design |
| 274 | Part III | Provide ventilation \& odor control measures for each unit | Required | 330.63(b)(2)(C) | Yes | Part III, Section 2.2.3 |  | General Facility Design |
| 275 | Part III | Provide construction details of storage, processing units \& components, dimensions, capacity, materials used, etc. | Required | 330.63(b)(2)(D) | Yes | Section 2.2.4 and Drawings III-1.4, II-1.5, and III-1.7 |  | General Facility Design |
| 276 | Part III | Provide performance data for all storage and processing units and ancillary equipment | Required | 330.63(b)(2)(D) | Yes | Section 2.2.4 and Drawings III-1.4, III-1.5, and III-1.7 |  | $\begin{array}{\|c\|} \hline \text { General } \\ \text { Facility Design } \\ \hline \end{array}$ |
| 278 | Part III | Submit location and engineering designs for containment of storage, processing and loading \& unloading areas including freeboard | Required | 330.63(b)(2)(F) | Yes | Drawings III-1.4, III-1.5, and III-1.7. |  | General Facility Design |


| 279 | Part III | Describe the storage and handling of grease, oil and sludge, including the maximum time waste will be on-site and details of ultimate disposition | Required | 330.63(b)(2)(G) | Yes | NA | The facility will not accept or store grease, oil, or sludge; therefore, the requirements of $\S 330.63(\mathrm{~b})(2)(\mathrm{G})$ do not apply | General Facility Design |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 280 | Part III | Provide details of effluent disposal | Required | 330.63(b)(2)(H) | Yes | NA |  | $\begin{array}{\|c\|} \hline \text { General } \\ \text { Facility Design } \\ \hline \end{array}$ |
| 281 | Part III | Provide designs for noise pollution control | Required | 330.63(b)(2)(I) | Yes | Part III, Section 2.2.5 |  | $\begin{array}{\|c\|} \hline \text { General } \\ \text { Facility Design } \\ \hline \end{array}$ |
| 282 | Part III | Describe how the processing areas will be designed for proper cleaning and to prevent surface water runoff onto, into, and off the treatment areas | Required | 330.63(b)(3)(A) | Yes | Part III, Section 2.3 |  | General Facility Design |
| 283 | Part III | Describe construction material used for walls and floors that can be hosed down and scrubbed | Required | 330.63(b)(3)(B) | Yes | Drawing III-1.7 |  | $\begin{array}{\|c\|} \text { General } \\ \text { Facility Design } \\ \hline \end{array}$ |
| 284 | Part III | Describe water or steam connections and equipment for cleaning | Required | 330.63(b)(3)(C) | Yes | Part III, Section 2.3 |  | $\begin{array}{\|c\|} \hline \text { General } \\ \text { Facility Design } \\ \hline \end{array}$ |
| 285 | Part III | Provide adequate floor drains and/or sumps | Required | 330.63(b)(3)(D) | Yes | Part III, Section 2.3 |  | General Facility Design |
| 286 | Part III | Describe proper disposal of liquids resulting from waste processing, cleaning, and washing and provide for the treatment of waste water | Required | 330.63(b)(4) | Yes | Part III, Section 2.3.2 |  | $\begin{array}{\|c\|} \text { General } \\ \text { Facility Design } \end{array}$ |
| 287 | Part III | Describe how facility will be designed to protect endangered species | Required | 330.63(b)(5) | Yes | Part III, Section 2.3 |  | General <br> Facility Design |
| 336 | Part III | Submit if applicable, a floodplain development permit from any agency with jurisdiction over the proposed improvements | Required if Requested | 330.63(c)(2)(D)(ii) | Yes | NA |  | Surface Water Drainage Report |
| 337 | Part III | Submit if applicable a Conditional Letter of Map Amendment from FEMA | Required if Requested | 330.63(c)(2)(D)(iii) | Yes | NA |  | Surface Water Drainage Report |
| 338 | Part III | Submit if applicable, Corps of Engineers Section 404 Specification of Disposal Sites for Dredged or Fill Material permit for construction of all necessary improvements | Required if Requested | 330.63(c)(2)(D)(iv) | Yes | NA |  | Surface Water Drainage Report |
| 339 | Part III | Provide for storage \& transfer units a description of design features for the rapid processing and minimum detention of solid waste at the facility | Required | 330.63(d)(1)(A) | Yes | Part III, Section 4.0 |  | Waste <br> Management Unit Design |
| 340 | Part III | Provide design features for a facility to prevent the creation of nuisances or public health hazards | Required | 330.63(d)(1)(A) | Yes | Part III, Section 4.0 |  | Waste Management Unit Design |
| 545 | Part III | Indicate that a characterization of the contaminated groundwater, including concentrations of assessment constituents as defined in $\$ 330.409$ | Required | 330.63(f)(7)(A) | Yes | NA |  | Groundwater Sampling \& Analysis Plan |
| 701 | Part III | Specify in the closure plan that the operator will begin closure no later than 30 days after final receipt of waste or no later than one year if the unit has remaining capacity and additional waste may be received | Required | 330.457(f)(3) | Yes | NA | Only applicable to landfill units | Closure Plan |
| 702 | Part III | Provide for closure activities to be completed within 180 days of initiation | Required | 330.457(f)(4) | Yes | NA | Only applicable to landfill units | Closure Plan |
| 704 | Part III | Acknowledge that following receipt of closure documents and the inspection report by the TCEQ region, the ED may acknowledge termination of operation \& closure \& deem the facility properly closed | Acknowledgement | 330.457(f)(6) | Yes | Yes |  | Closure Plan |
| 706 | Part III | Indicate that notice of closure will be published in the newspaper of largest circulation 90 days prior to the initiation of a final facility closure. The notice shall provide the name, address, and physical location of the facility; the TCEQ authorization number; and the last date of intended receipt of waste. | Required | 330.461(a) | Yes | Part III, Att 2, Section 2.0 |  | Closure Plan |


| 707 | Part III | Acknowledge that notice of closure will be provided to the ED 90 days prior to the initiation of a final facility closure and that the owner or operator will also make available an adequate number of copies of the approved final closure and post-closure plans (if applicable) for public access and review | Acknowledgement | 330.461(a) | Yes | Yes |  | Closure Plan |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 708 | Part III | Acknowledge that least one closure sign will be posted at every point of access and notify all persons who utilize the facility of the date of closure and the prohibition against further receipt of waste materials. | Acknowledgement | 330.461(b) | Yes | Yes, Part III, Att 2, Section 2.0 |  | Closure Plan |
| 709 | Part III | Indicate that suitable barriers will be installed at all access points to adequately prevent the unauthorized dumping of solid waste at the closed facility. | Required | 330.461(b) | Yes | Part III, Att 2, Section 2.0 |  | Closure Plan |
| 710 | Part III | Indicate that an Affidavit to the Public will be submitted to the ED by registered mail, if waste will remain onsite and indicate that The Owner or Operator will also record a certified notation on the deed to the facility property that the land has been used as a landfill and submit a certified copy of the modified deed to the ED. | Required if Requested | 330.461 (c)(1) | Yes | Part III, Att 2, Section 3.0 |  | Closure Plan |
| 711 | Part III | Acknowledge that a certification, signed by a P.E., will be provided within 10 days of final closure activities, verifying that final facility closure has been completed in accordance with the approved closure plan and will include all applicable documentation necessary for certification | Acknowledgement | 330.461(c)(2) | Yes | Yes, Part III, Att 2, Section 3.0 |  | Closure Plan |
| 713 | Part III | The owner or operator may request permission from the ED to remove the notation from the deed if all wastes are removed from the facility | Informational | 330.461(d) |  |  |  | Closure Plan |
| 714 | Part III | Submit a closure plan for Storage and Processing units to remove all waste, waste residues, and any recovered materials. Units shall be dismantled and removed off-site or decontaminated. | Required | 330.459(a) | Yes | Part III, Attachment 2 |  | Closure Plan For Processing Facilities |
| 715 | Part III | Provide plans for the evacuation of all material on-site to an authorized facility and the disinfecting of all contaminated water handling units, tipping areas, processing and postprocessing areas (as applicable) | Required | 330.459(b) | Yes | Part III, Att 2, Section 2.0 |  | Closure Plan For Processing Facilities |
| 716 | Part III | Acknowledge that if there is evidence of a release, the ED may require an investigation, assessment, and or corrective action. | Acknowledgement | 330.459(c) | Yes | Yes, Part III, Att 2, Section 2.0 |  | Closure Plan For Processing Facilities |
| 717 | Part III | Submit a plan (if combustible material is stored outdoors) for closure of a recycling facility that includes collecting processed and unprocessed materials, and transporting the materials to an authorized facility for disposition | Required | 330.459(d)(1) | Yes | NA | No combustible material stored outdoors | Closure Plan For Processing Facilities |
| 718 | Part III | Provide for the closure plan to be implemented (if combustible material is stored outdoors) and completed within 180 days following the most recent acceptance of processed or unprocessed materials | Required | 330.459(d)(2) | Yes | NA | No combustible material stored outdoors | Closure Plan For Processing Facilities |
| 737 | Part III | Submit cost estimates for closure \& postclosure. Existing facilities must submit a copy of the financial assurance documentation. New facilities must submit financial assurance within 60 days prior to receipt of waste | Required | 330.63() | Yes | Part III, Attachment 3 |  | Closure Cost Estimates |
| 742 | Part III | Provide cost estimates to close a Recycling facility that stores combustible materials outdoors. | Required | 330.505(a)(1) | Yes | NA |  | Closure Cost Estimates |


| 743 | Part III | Provide a closure cost estimate that equals the costs of closure of the facility, including disposition of the maximum inventories of all waste; processed and unprocessed combustible materials stored outdoors on site during the life of the facility | Required | 330.505(a)(2)(A) | Yes | Part III, Att 3, Table III-3.1 |  | Closure Cost Estimates |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 744 | Part III | Provide a closure cost estimate that is based on the costs of hiring a third party that is not affiliated with the owner or operator; and is based on a per cubic yard and/or short ton measure for collection and disposition costs. | Required | 330.505(a)(2)(B-(C) | Yes | Part III, Att 3, Section 2.0 |  | Closure Cost Estimates |
| 745 | Part III | Provide for the closure cost estimate \& financial assurance to be increased if conditions change which increase the maximum cost of closure at any time during the active life of the facility | Required | 330.505(a)(3) | Yes | Part III, Att 3, Section 2.0 |  | Closure Cost Estimates |
| 746 | Part III | A reduction in the closure cost estimate and the amount of financial assurance may be approved if the cost estimate exceeds the maximum cost of closure at any time during the remaining life of the facility. | Required if Requested | 330.505(a)(4) | Yes | Part III, Att 3, Section 2.0 |  | Closure Cost Estimates |
| 747 | Part III | Provide for the maintenance of financial assurance for Recycling facilities that store combustible materials outdoors or that pose a risk | Required | 330.505(b)(1) | Yes | NA |  | Closure Cost Estimates |
| 748 | Part III | Provide for the maintenance of financial assurance until closure is approved by ED. | Required | 330.505(b)(2) | Yes | Part III, Att 3, Section 2.0 |  | $\begin{array}{\|c\|} \hline \text { Closure Cost } \\ \text { Estimates } \\ \hline \end{array}$ |
| 758 | Part IV | A site operating plan shall cover all on-site units in accordance with Subchapters D \& E of Chapter 330. | Informational | 330.65(a) |  |  |  | Site Operating Plan |
| 785 | Part IV | Indicate that the facility will provide the reports required by 30 TAC $\$ 330.675$ to the Executive Director | Required | 330.675 | Yes | SOP Section 10.0 |  | Site Operating Plan |
| 988 | Part IV | Provide information identifying any permit required under the TPDES and any permit requirements imposed by other agencies for a grease, grit, \& septage processing facility | Required | 330.65(d) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | Site Operating Plan |
| 989 | Part IV | Identify source \& characteristics of wastes that will be received and Specify any limiting parameters that may influence the design and operation of the facility | Required | 330.203(a) | Yes | SOP Section 2.1 |  | Site Operating Plan |
| 990 | Part IV | Provide estimate of the amount of each waste to be received daily, max amount stored at any one time, max \& average time waste will remain onsite, max \& average processing time, intended destination of generated wastes, \& description of how $10 \%$ will be recovered if applicable. | Required | 330.203(b) | Yes | SOP Sections 2.3 and 2.4 |  |  |
| 991 | Part IV | Acknowledge that $10 \%$ recovery of material for beneficial use is considered to be the recovery of fats, oil, and greases, but does not include the recovery of water. | Acknowledgement | 330.203(b) | Yes | Yes |  | Site Operating Plan |
| 992 | Part IV | Provide a description of the method of sampling and analysis for the effluent discharged to a trap, interceptor, or treatment facility permitted under Texas Water Code, Chapter 26. At a minimum, the method of sampling, the frequency of sampling, and the tests to be made shall be part of the sampling and analysis plan. All sampling and analysis shall be done according to approved United States Environmental Protection Agency (EPA) methods. | Required | 330.203(c)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | Site Operating Plan |
| 993 | Part IV | Indicate that records of sampling analysis of wastes and effluent shall be maintained for a three-year period. | Required | 330.203(c)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\begin{array}{\|c} \hline \begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array} \\ \hline \end{array}$ |
| 994 | Part IV | Provide a sampling and analysis plan that includes at minimum analyses for benzene, lead, \& TPH for waste received | Required | 330.203(c)(2) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array} \\ \hline \end{array}$ |
| 995 | Part IV | Provide for the annual analysis of grit trap wastes for BOD, TSS, benzene, TPH, \& lead | Required | 330.203(c)(2) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\substack{\text { Site Operating } \\ \text { Plan }}$ |


| 996 | Part IV | Indicate that sludges to be landfilled must be analyzed annually for benzene, lead, \& TPH. | Required | 330.203(c)(2) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array} \\ \hline \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 997 | Part IV | Indicate that effluent must be analyzed annually for TPH, fats, oil \& grease, \& pH | Required | 330.203(c)(2) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\begin{array}{\|c\|} \hline \text { Site Operating } \\ \text { Plan } \\ \hline \end{array}$ |
| 998 | Part IV | Indicate if applicable that grit trap waste proposed to be accepted is solely from commercial car washes and not from other generators. | Required If Requested | 330.9(g) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\left\lvert\, \begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}\right.$ |
| 999 | Part IV | Acknowledge that a report with supporting documentation shall be submitted on a quarterly basis to demonstrate at least $10 \%$ of the volume of the waste received was processed to recover solid material that was recycled or reused | Acknowledgement | 330.9(g)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\begin{array}{\|l\|} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1000 | Part IV | Acknowledge that failure to achieve the relevant 10 percent recycling rate in any two quarters within any one-year period will cause a registration to terminate and will require the owner or operator of the facility to obtain a permit to continue facility operations. | Acknowledgement | 330.9(g)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\left\lvert\, \begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}\right.$ |
| 1001 | Part IV | Provide for a quarterly report to be submitted that will include volume of waste received, percent solids, and the method of determining the percent solids, processed, disposed, and recycled or reused. | Required | 330.9(g)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\left\lvert\, \begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}\right.$ |
| 1002 | Part IV | Provide in the quarterly report, the method(s) utilized to achieve at least $10 \%$ recycling or reuse of incoming material | Required | 330.9(g)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\begin{array}{\|l} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1003 | Part IV | Submit a quarterly report that reconciles the volume of waste with the amounts on manifests, shipping documents, or trip tickets and indicate where the recyclable material was taken for recycling. | Required | 330.9(g)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\left\lvert\, \begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}\right.$ |
| 1004 | Part IV | Acknowledge that the addition of any material such as lime, polymer, or flocculent added as part of the recycling process is not allowed to be considered as part of the $10 \%$ recovery of material from the waste stream and must be subtracted from the material considered as recycled. | Acknowledgement | 330.9(g)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\left\lvert\, \begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}\right.$ |
| 1005 | Part IV | Acknowledge that diverting material from the waste stream without processing is not considered to be recycling as part of this activity. | Acknowledgement | 330.9(g)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\begin{array}{\|c} \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1006 | Part IV | Provide the characteristics and constituent concentrations of wastes generated by the facility and indicate that documentation that all wastes leaving the facility can be adequately managed by other authorized facilities will be provided | Required | 330.205(a) | Yes | SOP Section 3.0 |  | $\left\lvert\, \begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}\right.$ |
| 1007 | Part IV | Indicate that all wastes generated by a facility must be processed or disposed at an authorized solid waste management facility | Required | 330.205(b) | Yes | SOP Section 3.0 |  | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array} \\ \hline \end{array}$ |
| 1008 | Part IV | Indicate that all wastewaters generated by a facility shall be managed as contaminated water in accordance with 330.207 | Required | 330.205(c) | Yes | SOP Section 3.0 |  | $\begin{array}{\|c\|} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1010 | Part IV | Indicate that the facility shall be designed and operated to produce a sludge that is acceptable at municipal solid waste landfills and does not exceed standards specified in 30 TAC §330.205(d) | Required If Requested | 330.205(d) | Yes | SOP Section 3.0 | The facility will not generate sludges, therefore the requirements of $\S 330.205$ (d) do not apply. | $\begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}$ |
| 1011 | Part IV | Indicate that sludges exceeding the limits shall not be disposed in municipal solid waste landfills and must be sent to an authorized facility for further processing or disposal as a hazardous waste, as appropriate or disposed in a municipal solid waste landfill with dedicated Class 1 industrial solid waste cells if the sludge is nonhazardous. | Required If Requested | 330.205(d) | Yes | SOP Section 3.0 | The facility will not generate sludges, therefore the requirements of $\S 330.205$ (d) do not apply. | $\begin{array}{\|c} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1012 | Part IV | The owner or operator shall not discharge contaminated water without specific written authorization. | Informational | 330.207(a) |  | - |  | $\left\lvert\, \begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}\right.$ |


| 1013 | Part IV | Provide a plan that describes how all liquids resulting from the operation of the facility shall be disposed of in a manner that will not cause surface water or groundwater pollution. | Required | 330.207(a) | Yes | SOP Section 4.0 |  | $\underset{\text { Plan }}{\text { Site Operating }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1014 | Part IV | Indicate that contaminated water shall be collected and contained until properly managed. | Required | 330.207(b) | Yes | Section 4.0 |  | Site Operating Plan |
| 1015 | Part IV | Indicate that leachate shall be collected and contained until properly managed. | Required | 330.207(b) | Yes | NA |  | $\begin{array}{\|c} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1016 | Part IV | Indicate that collection units other than storage tanks shall have a clay or synthetic liner and the liner shall be constructed in accordance with 30 TAC §330.331(b) | Required If Requested | 330.207(b) | Yes | NA | There are no other collection units other than storage tanks at the facility. | Site Operating <br> Plan |
| 1018 | Part IV | Indicate that the use of leachate \& gas condensate in mining process is prohibited. | Required | $330.207(\mathrm{c})$ | Yes | NA | No mining will be performed at facility | $\begin{array}{\|c\|} \hline \text { Site Operating } \\ \text { Plan } \\ \hline \end{array}$ |
| 1019 | Part IV | Indicate that the facility will not discharge to a septic system | Required | $330.207(\mathrm{~d})$ | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | Site Operating Plan |
| 1020 | Part IV | Indicate that off-site discharge of contaminated waters shall be made only after approval under the Texas Pollutant Discharge Elimination System authority | Required | 330.207(e) | Yes | SOP Section 4.0 |  | Site Operating Plan |
| 1021 | Part IV | Acknowledge that wastewaters discharged to a facility permitted under Texas Water Code, Chapter 26 must not interfere with or passthrough the treatment facility processes or operations, interfere with or pass-through its sludge processes, use, or disposal or otherwise be inconsistent with the prohibited discharge standards, including 40 Code of Federal Regulations Part 403, General Pretreatment Regulations for Existing and New Source Pollution | Acknowledgement | 330.207(f)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | Site Operating Plan |
| 1022 | Part IV | Indicate that the daily effluent design standard for oil and grease concentration leaving the facility and entering a public sewer system shall not exceed 200 milligrams per liter, the concentration established in the wastewater discharge permit pretreatment limit or the concentration established by the treatment facility permitted under Texas Water Code, Chapter 26, the National Pollutant Discharge Elimination System, or the limits established in 30 TAC $\S 330.207$, if the discharge points do not require compliance with locally set limits. | Required | 330.207(g) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | Site Operating Plan |
| 1023 | Part IV | Indicate that lagoons, open-top storage tanks, open vessels, and underground storage units are prohibited at liquid waste transfer facilities | Required | 330.207(h) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | Site Operating Plan |
| 1024 | Part IV | Provide plans demonstrating that all waste shall be stored in such a manner that it does not constitute a fire, safety, or health hazard or provide food or harborage for animals and vectors, and shall be contained or bundled so as not to result in litter | Required | 330.209(a) | Yes | SOP Section 5.0 |  | Site Operating Plan |
| 1025 | Part IV | Provide a description of on-site storage area for source-separated or recyclable materials that is separate from a transfer station or process area and provides for the control of odors, vectors, and windblown waste | Required If Requested | 330.209(b) | Yes | SOP Section 5.0 |  | Site Operating Plan |
| 1026 | Part IV | Provide plans for process area of transfer stations that recover material from putrescible or liquid waste. Such plans shall provide for the storage of processed and unprocessed waste \& recycled materials in enclosed buildings, vessels, or containers. | Required If Requested | 330.209(c) | Yes | SOP Section 5.0 |  | Site Operating Plan |
| 1027 | Part IV | Provide a plan that describes how all waste containing food wastes shall be stored in covered or closed containers that are leak-proof, durable, and designed for safe handling and easy cleaning | Required | 330.211 | Yes | SOP Section 6.0 |  | Site Operating Plan |


| 1028 | Part IV | Indicate that nonreusable containers shall be of suitable strength to minimize vector scavenging or rupturing. | Required | 330.211(1) | Yes | Section 6.0 |  | $\begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1029 | Part IV | Indicate that reusable containers must be maintained in a clean condition as not to constitute a nuisance, harbor, feed, and propagate vectors | Required | 330.211(2) | Yes | SOP Section 6.0 |  | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |
| 1030 | Part IV | Indicate that any containers emptied manually must be capable of being serviced without physical contact with waste. | Required | 330.211(2)(A) | Yes | SOP Section 6.0 |  | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |
| 1031 | Part IV | Indicate that containers that are mechanically handled must be designed to prevent spillage/leakage during storage, handling, and transport. | Required | 330.211(2)(B) | Yes | SOP Section 6.0 |  | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |
| 1032 | Part IV | Provide a plan that describes how a citizen's collection stations shall be operated in accordance with 30 TAC $\$ 330.213$ | Required If Requested | 330.213(a) | Yes | SOP Section 7.0 |  | $\begin{array}{\|c} \hline \text { Site Operating } \\ \text { Plan } \\ \hline \end{array}$ |
| 1033 | Part IV | Indicate that it is the responsibility of the person that owns or operates the collection center to provide for the collection of deposited waste on a scheduled basis and supervise the facility in order to maintain it in a sanitary condition. | Required If Requested | 330.213(a) | Yes | SOP Section 7.0 |  | $\begin{array}{\|c} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1034 | Part IV | A citizen's collection station may accept sharps from single-family or multi-family dwellings, hotels, motels, or other establishments that provide lodging and related services for the public. The sharps will not be considered medical waste, as defined in 30 TAC $\S 330.3$ | Required If Requested | 330.213(b) | Yes | SOP Section 7.0 |  | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |
| 1035 | Part IV | Provide operational standards for stationary compactors that describe how they will operated and maintained in such a way as not to create a public nuisance through material loss or spillage, odor, vector breeding or harborage, or other condition. | Required If Requested | 330.215(1) and (2) | Yes | NA, SOP Section 8.0 | The City of Waco Transfer Station will not utilize a stationary compactor, therefore the requirements of $\$ 330.215$ do not apply to this facility. | $\begin{array}{\|c} \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1036 | Part IV | Indicate that a copy of the permit or registration, application, and any other plans or related documents, and as-built plans will be maintained in the site operating record and shall be made available for inspections by agency representatives or other interested parties | Required | 330.219(a) | Yes | SOP Section 10.0 |  | $\begin{array}{\|l\|} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1037 | Part IV | Indicate that operator shall record \& retain location restriction demonstrations, inspection records, training procedures, closure plans, monitoring, testing, analytical data relating to closure, cost estimates, financial assurance documents, all correspondence, modification, approvals, manifests, shipping documents, tickets relating to special waste, \& documents as specified by the executive director in the operating record. | Required | 330.219(b)(1) - (7) | Yes | SOP Section 10.0 |  | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |
| 1038 | Part IV | Indicate that trip tickets will be maintained according to the record retention provisions in 30 TAC $\$ 312.145$. | Required | 330.219(b)(8) | Yes | SOP Section 10.0 |  | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |
| 1039 | Part IV | Indicate that recordkeeping provisions to justify, on a quarterly basis, that the relevant percentage of the incoming waste is processed to recover recycled products for applicable facilities, that failure to achieve the relevant percent recycling rate in any two quarters within any one-year period will cause a change in a facility's status and require the owner or operator of the facility to obtain a registration or permit, as appropriate, to continue facility operations and that the owner or operator shall submit an annual report to the executive director by March 1st summarizing the recycling activities and percent of incoming solid waste that was recycled during the past calendar year | Required | 330.219(b)(9) | Yes | N/A | Recycable materials only recovered at the CCS, not part of the Facility's status | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |


| 1040 | Part IV | Indicate that all reports will be signed by a person who is a duly authorized as a signatory for reports. A person is duly authorized if authorized in in writing by the owner or operator in accordance with 30 TAC §305.44(a) and the authorization specifies individual or position with responsibility and this written authorization is submitted to the executive director | Required | 330.219(c)(1)(A) - (C) | Yes | SOP Section 10.0 |  | $\begin{array}{\|l\|} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1041 | Part IV | Acknowledge that if the authorization to sign is not longer accurate a new authorization will be submitted | Acknowledgement | 330.219(c)(2) | Yes | Yes |  | $\begin{array}{\|c\|} \hline \text { Site Operating } \\ \text { Plan } \\ \hline \end{array}$ |
| 1042 | Part IV | Indicate that any person signing a report shall make the certification in 305.44(b). | Required | 330.219(c)(3) | Yes | SOP Section 10.0 |  | $\begin{array}{\|c\|} \hline \text { Site Operating } \\ \text { Plan } \\ \hline \end{array}$ |
| 1043 | Part IV | Indicate that the operator shall maintain records on-site, available for inspection by the executive director for a period consisting of the two most recent calendar years | Required | 330.219(d) | Yes | NA | Site is not a municipal solid waste composting or landfill mining facility, and as such is not applicable. | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |
| 1045 | Part IV | Indicate that the results of final product testing under 30 TAC $\S 330.613$ or $\S 332.71$ will be maintained in the site operating record | Required | 330.219(d)(2) | Yes | NA | Site is not a municipal solid waste composting or landfill mining facility, and as such is not applicable. | $\begin{array}{\|l\|} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1046 | Part IV | Indicate that copies of annual reports will be maintained in the site operating record for 5 yrs | Required | 330.219(d)(3) | Yes | NA | Site is not a municipal solid waste composting or landfill mining facility, and as such is not applicable. | $\begin{array}{\|l} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1047 | Part IV | Indicate that the site operating record shall be furnished and available for inspection by executive director. | Required | 330.219(e) | Yes | SOP Section 10.0 |  | $\begin{array}{\|l\|} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1048 | Part IV | Indicate that the operator shall retain site operating record for the life of the facility. | Required | 330.219(f) | Yes | SOP Section 10.0 |  | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array} \\ \hline \end{array}$ |
| 1049 | Part IV | Indicate that the executive director may set alternative recordkeeping \& notification schedules. | Required | 330.219(g) | Yes | SOP Section 10.0 |  | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |
| 1051 | Part IV | Provide a fire protection plan that describes the source of fire protection (a local fire department, fire hydrants, fire extinguishers, water tanks, water well, etc.), procedures for using the fire protection source, and employee training and safety procedures. The fire protection plan shall comply with local fire codes. | Required | 330.221(c) | Yes | SOP Section 11.0 |  | $\begin{array}{\|c} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1052 | Part IV | Provide a description of the availability of water under pressure for firefighting purposes | Required | 330.221(a) | Yes | SOP Section 11.0 |  | Site Operating Plan |
| 1053 | Part IV | Provide a description of on-site firefighting equipment | Required | 330.221(b) | Yes | SOP Section 11.0 |  | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array} \\ \hline \end{array}$ |
| 1054 | Part IV | Indicate that all employees shall be trained in the contents and use of the fire protection plan | Required | 330.221(c) | Yes | SOP Section 11.1 |  | $\begin{array}{\|c} \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1055 | Part IV | Provide a description of the artificial barriers, natural barriers, or a combination of both, appropriate to protect human health and safety and the environment that are used to control access to the facility and indicate that uncontrolled access to the facility shall be prevented. | Required | 330.223(a) | Yes | SOP Section 12.0 |  | $\begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}$ |
| 1056 | Part IV | Provide a description of the, minimum two lane, access road from the public road and how it is designed for expected traffic volumes and adequate turning radii. | Required | 330.223(b) | Yes | SOP Section 12.2 |  | $\begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}$ |
| 1057 | Part IV | Provide a description of vehicle parking for equipment, employees, and visitors. Indicate that safety bumpers at hoppers must be provided for vehicles. And provide a description of the positive means to control dust and mud | Required | 330.223(b) | Yes | SOP Section 12.2 |  | $\begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}$ |
| 1058 | Part IV | Provide a description of perimeter control fencing that includes having lockable gates and attendant on site during operating hours. Operating and transport areas shall be enclosed by walls or fencing | Required | 330.223(c) | Yes | SOP Section 12.1 |  | $\begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}$ |


| 1059 | Part IV | Provide a description of the unloading areas and indicate that unloading areas will be confined to as small an area as practical and be monitored by attendant. | Required | 330.225(a) | Yes | SOP Section 13.0 | $\begin{array}{\|c} \text { Site Operating } \\ \text { Plan } \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1060 | Part IV | Provide a description of the signs \& forced access lanes used to prevent indiscriminate dumping | Required | 330.225(a) | Yes | SOP Section 13.0 | $\left\lvert\, \begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}\right.$ |
| 1061 | Part IV | Indicate that the facility is not required to accept any solid waste that he/she determines will cause or may cause problems in maintaining full and continuous compliance | Required | 330.225(a) | Yes | SOP Section 13.0 | $\left\|\begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array}\right\|$ |
| 1062 | Part IV | Provide procedures to ensure that waste in unauthorized areas is removed immediately and disposed of properly. | Required | 330.225(b) | Yes | SOP Section 13.0 | $\begin{array}{\|c\|} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1063 | Part IV | Provide procedures for the detection and prevention of the unloading of processing of prohibited wastes. | Required | $3330.225 \bigcirc$ | Yes | SOP Section 13.0 | $\left\lvert\, \begin{gathered} \text { Site Operating } \\ \text { Plan } \end{gathered}\right.$ |
| 1064 | Part IV | Indicate that prohibited waste must be returned immediately to the transporter or generator. | Required | 330.225(c) | Yes | SOP Section 13.0 | $\begin{array}{\|c} \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1065 | Part IV | Provide a description of how storage \& processing areas are designed to control and contain worst case spill or release and will account for precipitation from a 25 -year, 24hour storm. | Required | 330.227 | Yes | SOP Section 14.0 | $\begin{array}{\|c} \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1066 | Part IV | Specify the waste acceptance and facility operating hours | Required | 330.229(a) | Yes | SoP Section 15.0 | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array} \\ \hline \end{array}$ |
| 1067 | Part IV | The waste acceptance hours may be any time between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, unless otherwise approved by the executive director or commission for a permit. The operating hours for operating heavy equipment and transporting materials on- or off-site may be any time between the hours of 5:00 a.m. and 9:00 p.m., Monday through Friday, unless otherwise approved in the authorization. | Required | 330.229(a) | Yes | SOP Section 15.0 | $\left\|\begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array}\right\|$ |
| 1068 | Part IV | Specify alternative operating hours of up to five days in a calendar year to accommodate special occasions, special purpose events, holidays, or other special occurrences | Required | 330.229(b) | Yes | SOP Section 15.0 | $\left\|\begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array}\right\|$ |
| 1069 | Part IV | Indicate that the facility will record in the site operating record the dates, times, and duration when any alternative operating hours are utilized. | Required | 330.229(d) | Yes | SOP Section 10.0 | $\left\|\begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array}\right\|$ |
| 1070 | Part IV | Indicate that the commission's regional offices may allow additional temporary operating hours to address disaster or other emergency situations, or other unforeseen circumstances that could result in the disruption of waste management services in the area. | Required | 330.229(c) | Yes | SOP Section 15.0 | $\left\|\begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array}\right\|$ |
| 1071 | Part IV | Indicate that a sign measuring at least 4' X 4' must be displayed at all entrances. Indicate that information on the sign must including the facility name and type, hours and days of operation, authorization number, and facility rules. | Required | 330.231 | Yes | SOP Section 16.0 | $\left\|\begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array}\right\|$ |
| 1072 | Part IV | Indicate that windblown material and litter shall be collected as necessary, throughout the facility, along fences and access roads, and at the gate, at least once per day on days that the facility is in operation, to minimize unhealthy, unsafe, or unsightly conditions. | Required | 330.233(a) | Yes | SOP Section 17.0 | $\left\|\begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array}\right\|$ |
| 1073 | Part IV | Indicate the measures used to control windblown waste. | Required | 330.233(a)(1) | Yes | SOP Section 17.0 | $\begin{array}{\|c\|} \hline \begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array} \\ \hline \end{array}$ |
| 1074 | Part IV | Provide a description of fence or screen used to minimize windblown waste if the facility is not completely enclosed. | Required | 330.233(b) | Yes | SOP Section 17.0 | $\begin{array}{\|c\|} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |


| 1075 | Part IV | Provide procedures to encourage waste hauling vehicles to cover loads that may include posting signs, reporting offenders, and assessing surcharges. | Required | 330.235 | Yes | SOP Section 18.0 |  | $\begin{array}{\|l} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1077 | Part IV | Provide a description of all weather access roads at the facility and how the tracking of mud and debris onto public roadways will be minimized. | Required | 330.237(a) | Yes | SOP Section 19.0 |  | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |
| 1078 | Part IV | Provide procedures use to ensure that dust from on-site and other access roadways shall not become a nuisance to surrounding areas and indicate that a water source and necessary equipment or other means of dust control shall be provided. | Required | 330.237(b) | Yes | SOP Section 19.0 |  | Site Operating Plan |
| 1079 | Part IV | Provide procedures to be used to maintain on site roads and minimize depressions, ruts, and potholes. | Required | 330.237(c) | Yes | SOP Section 19.0 |  | Site Operating Plan |
| 1080 | Part IV | Describe screening or other means used to prevent noise pollution \& adverse visual impacts. | Required | 330.239 | Yes | SOP Section 20.0 |  | $\begin{array}{\|c} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1081 | Part IV | Provide procedures used to ensure that the design capacity of the facility shall not be exceeded and that waste will not be allowed to accumulate in quantities that create a nuisance, create odors, or harbor vectors. | Required | 330.241(a) | Yes | SOP Section 21.0 |  | Site Operating Plan |
| 1082 | Part IV | Provide procedures that describe how unprocessed grease, grit, \& septage will only be stored up to 72hrs. | Required | 330.241(a)(1) | Yes | NA | Section 2.1, the facility will not accept or process grease, grit, or septage. | $\begin{aligned} & \text { Site Operating } \\ & \text { Plan } \end{aligned}$ |
| 1083 | Part IV | Provide procedures that provide for the restriction, diversion or removal of waste if the facility experiences a significant work stoppage | Required | 330.241(b) | Yes | SOP Section 21.0 |  | Site Operating Plan |
| 1084 | Part IV | Provide an alternative processing/disposal procedures for when facility is inoperable for more than 24hrs. | Required | 330.241(c) | Yes | SOP Section 21.0 |  | $\begin{array}{\|l} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1085 | Part IV | Provide procedures for washing down all working surfaces in contact with waste at least weekly or twice per week for facilities that operate continuously. | Required | 330.243(a) | Yes | SOP Section 22.0 |  | Site Operating Plan |
| 1086 | Part IV | Provide procedures to ensure that wash water shall not be allowed to accumulate without proper treatment. | Required | 330.243(b) | Yes | SOP Section 23.0 |  | $\begin{array}{\|c} \hline \begin{array}{c} \text { Site Operating } \\ \text { Plan } \end{array} \\ \hline \end{array}$ |
| 1087 | Part IV | Provide procedures that demonstrate that wash water shall be collected \& disposed of in an authorized manner. | Required | 330.243(c) | Yes | SOP Section 4.0 |  | Site Operating <br> Plan |
| 1088 | Part IV | Acknowledge that air emissions from municipal solid waste facilities must not cause or contribute to a condition of air pollution as defined in the Texas Clean Air Act. | Acknowledgement | 330.245(a) | Yes | Yes |  | $\begin{array}{\|c} \hline \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1090 | Part IV | Provide a description of odor-retaining containers \& vessels used to store liquid and solid waste | Required | 330.245(c) | Yes | SOP Section 23.0 |  | Site Operating <br> Plan |
| 1091 | Part IV | Provide a description of how the facility has been designed and will be operated to provide adequate ventilation and prevent nuisance odors from leaving boundary of facility | Required | 330.245(d) | Yes | SOP Section 23.0 |  | Site Operating Plan |
| 1092 | Part IV | Indicate that air pollution emission capture \& abatement equipment shall be cleaned and maintained per manufacturer's recommendations and as necessary so that the equipment efficiency can be adequately maintained. | Required | 330.245(e) | Yes | SOP Section 23.0 |  | Site Operating Plan |
| 1093 | Part IV | Provide a description of the measures/equipment, in accordance with 30 TAC $\S 330.245(f)(1)$ - (4), that will be use to control odor at the facility. | Required | $330.245(f)(1)-(4)$ | Yes | SOP Section 23.0 |  | Site Operating <br> Plan |


| 1094 | Part IV | Indicate that the process areas that recover material from solid waste that contains putrescibles shall be maintained totally within an enclosed building and describe how openings to the process area shall be controlled to prevent releases of nuisance odors from leaving the property boundary of the facility. | Required | $330.245(\mathrm{~g})$ | Yes | SOP Section 23.0 | $\underset{\text { Plan }}{\text { Site Operating }}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1095 | Part IV | Provide a description of how facility shall be designed to allow a minimal time of exposure of liquid waste to the air and minimize waste contact with air during unloading of liquid waste into the facility. | Required | 330.245(h) | Yes | SOP Section 23.0 | Site Operating Plan |
| 1096 | Part IV | Acknowledge that the reporting of emissions events shall be made in accordance with §101.201 of this title (relating to Emissions Event Reporting and Recordkeeping Requirements) and reporting of scheduled maintenance shall be made in accordance with §101.211 of this title (relating to Scheduled Maintenance, Startup, and Shutdown Reporting and Recordkeeping Requirements). | Acknowledgement | 330.245(j) | Yes | Yes | Site Operating Plan |
| 1097 | Part IV | Provide procedures for the control of ponded water to avoid its becoming a nuisance and alleviate any objectionable odors | Required | 330.245(k) | Yes | SOP Section 23.0 | $\begin{array}{\|l} \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1098 | Part IV | Indicate that facility personnel will be trained in the appropriate sections of the facility's health and safety plan. | Required | 330.247 | Yes | SOP Section 24.0 | $\begin{array}{\|l} \text { Site Operating } \\ \text { Plan } \end{array}$ |
| 1099 | Part IV | Indicate that the facility shall provide potable water and sanitary facilities for all employees and visitors. | Required | 330.249 | Yes | SOP Section 25.0 | $\begin{array}{\|l} \text { Site Operating } \\ \text { Plan } \end{array}$ |

# Type V Tra nsfer Station Registration Application 

Parts I/II<br>General Application Requirements

City of Wa co Tra nsfer Station Closed City of Waco Landfill TCEQ Registration No. MSW-TBD McLennan County, Texas

City of Waco
501 Schroeder Dr.
Waco, Texas 76710


# SCS ENGINEERS 

16222063.00 | September 2023

## Table of Contents

Section Page
I. Supplementary Technical Report (30 TAC §305.45(a)(8)) ..... S-1
1 Property and Ownership Summary ..... 1
1.1 Facility Location and History (30 TAC §330.59(b)) ..... 1
1.2 Land Ownership and Mineral Interest Ownership (30 TAC §330.59(c)(3)) ..... 1
1.3 Property Description and Ownership Information ( 30 TAC §330.59(d)) ..... 1
1.4 Legal Authority (30 TAC §330.59(e))
1.6 Appointments (30 TAC §330.59(g)) ..... )).
1.7 Application Fees (30 TAC §330.59(h))
$\qquad$
1.8 Application Posting Information (30 TAC §330.57(i))
$\qquad$NOPFTM+1............... 1
1.9 Required Permits/Authorizations (30 TAC §305.45(a)(7))
1.5 Evidence of Competency ( 30 TAC $\S 330.59$ (f))2
2 FACILITY FEATURES AND WASTE ACCEPTANCE PLAN
). .....  3
2.1 Proposed registration. SES Engineers ..... 4
2.2 Sources and Characteristics of Waste (30 TAC §330.61(b)(1)) .. TBPE.Reg. \#.F-3407. 4
2.2.1 Waste Types and Generation Areas ..... 4
2.2.2 Projected Waste Acceptance Rate ..... 7
2.2.3 Population Equivalent ..... 7
2.2.4 Waste Storage and Disposal ..... 7
2.3 Regional Solid Waste Management (30 TAC §330.61(p)) ..... 8
3 EXISTING CONDITIONS SUMMARY ..... 9
3.1 Site-Specific Conditions Requiring Special Design Considerations (30 TAC §330.61(a)) .....  9
3.2 Impact on Surrounding Area (30 TAC §330.61(H)) ..... 9
3.2.1 Zoning ..... 9
3.2.2 Character of Surrounding Land Use ..... 9
3.2.3 Population and Community Growth Trends ..... 10
3.2.4 Growth Trends ..... 10
3.2.5 Proximity to Residences and Other Uses ..... 10
3.2.5.1 Structures and Inhabitable Buildings within 500 Feet of the Site ..... 12
3.2.6 Prevailing Wind Direction ..... 12
3.2.7 Easements ..... 12
3.3 Transportation Analysis (30 TAC §330.61(i)) ..... 12
3.3.1 Site Access ..... 12
3.3.2 Traffic Volumes ..... 13
3.3.3 Facility Generated Traffic Volumes ..... 13
3.3.4 TxDOT Correspondence ..... 14
3.3.5 Airport Locations. ..... 14
3.4 General Geology and Soils Statement (30 TAC §330.61(j)) ..... 14
3.4.1 Physiography and Topography ..... 14
3.4.2 Geologic Setting ..... 14
3.4.3 On-Site Soils ..... 14
3.5 Ground and Surface Water Statement (30 TAC §330.61(k)) ..... 14
3.5.1 Groundwater Conditions ..... 15
3.5.2 Surface Water Features ..... 15
3.5.3 Texas Pollutant Discharge Elimination System ..... 15
3.6 Abandoned Oil and Water Wells (30 TAC §330.61(I)) ..... 16
3.7 Floodplains and Wetlands Statement (30 TAC §330.61(m)) ..... 16
3.7.1 Floodplains. ..... 16
3.7.2 Wetlands ..... 16
3.8 Protection of Endangered or Threatened Species (30 TAC §330.61(n)) ..... 19

## Tables

I/II-1.1 Required Permits/Authorizations
I/II-3.1 Land Use within a One-Mile Radius
I/II-3.2 Census Population and Projected Estimates for Hunt County, 2020-2050
I/II-3.3 Existing and Future Traffic Volumes for State Highway 24
I/II-3.4 Facility Generated Traffic

## Figures

I/II-1 Site Location Map
I/II-2 General Topographic Map
I/II-3 Aerial Photograph
I/II-4 Land Ownership Map
I/II-5 Land Use Map
I/II-6 Site Layout Plan
I/II-7 US Fish and Wildlife Wetlands Map
I/II-8 Floodplain Map
I/II-9 FAA Airport Vicinity Map


SCS Engineers
TBPE Reg. \# F-3407

## Appendices

## I/II-A Registration Related Correspondence

I/II-A. 1 HOTCOG Correspondence
I/II-A. 2 Archaeological/Historical Quality Review Correspondence I/II-A. 3 TXDOT Correspondence
I/II-B Waters of the United States Delineation Assessment
I/II-C Endangered or Threatened Species Assessment
I/II-D Oil and Water Well Location Summary
I/II-E Land Ownership List
I/II-F Traffic Analysis
I/II-G Original Landfill Permit

## Application Forms

## Part I Application Form <br> TCEQ Core Data Form

Documentation
Legal Description
Legal Authority
Evidence of Competency
Appointment


SCS Engineers
TBPE Reg. \# F-3407

## CITY OF WACO CITY OF WACO TRANSFER STATION FACIUTY SUPPLEMENTARY TECHNICAL REPORT

This Supplementary Technical Report has been prepared in accordance with 30 TAC §305.45(a)(8). The City of Waco is applying to the Texas Commission on Environmental Quality (TCEQ) for a Type V MSW facility registration for a transfer station in McLennan County.

The City of Waco Transfer Station Facility will be located in an unincorporated area of McLennan County, Texas on South University Parks Drive, O.1-mile northwest of the intersection of South University Parks Drive (FM-3400) and Radle Road. The sole access road that will be used by customers or haul vehicles accessing the facility for waste processing is South University Parks Drive. In the vicinity of the transfer station, South University Parks Drive is a two-lane undivided roadway maintained by the Texas Department of Transportation (TxDOT). Although not currently constructed, roadway improvements will be completed on South University Parks Drive to include a southbound turn lane at the site entrance to accommodate site traffic. There are no weight restrictions on this road other than the legal load limit of 80,000 pounds. The on-site road from South University Parks Drive to the transfer station facility will be a paved, all-weather, road.

Solid waste to be accepted at the transfer station will include the following: municipal solid waste, construction-demolition waste, yard waste, and Class 2 and 3 nonhazardous industrial solid waste. Consistent with 30 TAC §330.15(e), the facility will not accept regulated hazardous waste, Class 1 industrial solid waste, PCBs, and all other prohibited waste defined therein.

All waste unloading and loading onto transfer trailers will be conducted within the transfer station structure, with the exception of waste dropped off at the Citizens' Convenience Station (CCS), and brush dropped off in the brush management area.

This transfer station will serve residences and businesses in McLennan County and surrounding counties. The waste acceptance rate in the first year of operation is expected to be approximately 1,000 tons per day. The projected maximum amount of waste to be received daily and annually over the lifetime of the facility is estimate to be approximately 1,800 tons per day or 561,600 tons per year. The annual waste transfer rate, described above, is based on 312 operating days per year.

The Heart of Texas Council of Governments (HOTCOG) has developed the Regional Solid Waste Management Plan (RSWMP) for a 6 county region, which includes McLennan County. NCTCOG's RSWMP, dated November 2013, includes goals for adequate solid waste transportation, disposal, handling, and management while preventing adverse health, social, economic, and environmental impacts. The proposed transfer station is not only consistent with the goals of the RSWMP, but it will contribute to achieving and maintaining these goals.

## 1 PROPERTY AND OWNERSHP SUMMARY

The property ownership information for the City of Waco Transfer Station Facility (Facility or Site) is summarized in the following sections.

### 1.1 Facility Location and History (30 TAC §330.59(b))

The facility will be located in an unincorporated area of McLennan County, Texas on South University Parks Drive (FM-3400), 0.1 mile northwest of the intersection of South University Parks Drive and Radle Road, as shown on Figure I/II-1. Additionally, a general topographic map is included as Figure $\mathrm{I} / I-2$, an aerial photograph showing the site and access roads is included as Figure I/II-3, and surrounding land-use map is included as Figure I/II-5.
The approximate coordinates of the facility entrance are $31^{\circ} 29^{\prime} 46.6^{\prime \prime \prime} \mathrm{N}$ latitude and $97^{\circ} 4^{\prime} 56.6^{\prime \prime} \mathrm{W}$ longitude. The transfer station facility is located on a closed landfill (MSW Permit No, 1039), and will be constructed in accordance with the Subchapter T Development Permit Application, submitted to TCEQ in May 2023, including subsequent revisions during the TCEQ review process.

### 1.2 Land Ownership and Mineral Interest Ownership (30 TAC §330.59(c)(3))

McLennan County Appraisal District Tax Rolls and Tax Maps were reviewed to confirm land ownership within a $1 / 4$-mile of the transfer station property, mineral interest owners below the transfer station property, and others potentially affected by the facility. The land ownership list contains the name and mailing address of each land owner within $1 / 4$-mile radius of the transfer station property. McLennan County Appraisal District records did not indicate any mineral interest ownership under the property. Reference numbers are used to correlate the ownership shown on the land ownership list with the appropriate tract of land as shown on Figure I/II-4, Land Ownership Map. The land ownership and mineral rights holder list is included in Part I/II, Appendix I/II-E, Land Ownership List.

### 1.3 Property Desc ription and Ownership Information (30 TAC §330.59(d))

The facility is situated on a 43.5 acre property owned by City of Waco. The transfer station property is depicted on the Boundary Survey, provided in the Legal Description portion of the Documentation section of Parts I/II.

Ownership information is provided in the Documentation section of Parts I/II, including legal description and Property Owner Affidavit. Additionally, ownership information is provided on the Part I Application Form (TCEQ-0650), included in the Application Forms section of Parts I/II.

### 1.4 Legal Authority (30 TAC §330.59(e))

The facility is owned and operated by City of Waco. No person or entity other than City of Waco owns more than $20 \%$ of the Facility. A copy of a certificate of fact for City of Waco, issued by the Texas Secretary of State, is provided in the Legal Authority portion of the Documentation section of Parts I/II.

### 1.5 Evidence of Competenc y (30 TAC §330.59(f))

City of Waco and its affiliates have owned or operated several solid waste facilities in Texas. A listing of these sites is included in the Evidence of Competency portion of the Documentation section. Further information on the experience of City of Waco's staff is provided in the Evidence of Competency portion of the Documentation section of Parts I/II.

### 1.6 Appointments (30 TAC §330.59(g))

Documentation evidencing the appointment of the Authorized Agent for signing authority of the application included in the Appointments portion of the Documentation section of Parts I/II.

### 1.7 Applic ation Fees (30 TAC §330.59(h))

The required application fee of $\$ 150$ has been submitted electronically to:

> Texas Commission on Environmental Quality
> Financial Administration Division, MC 214
> P.O. Box 13087
> Austin, Texas $78711-3087$

The ePay trace number and receipt are included with the Part I Application Form provided in the Application Forms section of Parts I/II.

### 1.8 Applic ation Posting Information (30 TAC §330.57(i))

In accordance with 30 TAC $\S 330.57(\mathrm{i})(1)$, a complete copy of this Registration application is posted to the City of Waco's website as indicated on the Part I Application Form. All future revisions or supplements to this registration application will also be posted at the same location. This internet posting is for informational purposes only.
In accordance with 30 TAC $\S 330.57(\mathrm{i})(3)$, the owner or operator will post notice signs at the site within 30 days of the executive director's receipt of this application. The sign posting is for informational purposes only. The signs will:

- Have a white background and be no smaller than four feet by four feet
- Consist of dark lettering, with letters at least three inches in height and block printed capital lettering
- Identify, as appropriate, that the application is for a proposed facility
- Include the words "For further information on how the public may participate in Texas Commission on Environmental Quality (TCEQ) permitting matters, contact TCEQ," the toll free telephone number for the Office of Public Assistance, and the agency's Web site address
- Include the name and address of the owner or operator
- Include the telephone number of the owner or operator
- Remain in place and legible until the close of the final comment period

As applicable, signs will be located within ten feet of every property line bordering S University Parks Drive. The signs will be visible from the street and spaced at not more than 1,500-foot intervals. As such, a minimum of one sign, but no more than three signs, will be placed along South University Parks Drive.

### 1.9 Required Permit/ Authorizations (30 TAC §305.45(a)(7))

In accordance with 30 TAC §305.45(a)(7), the required permits and authorizations for the facility are summarized below in Table I/II-1.1.

Table I/II-1.1 Required Permits/Authorizations

| Permit/ Authorization Status | Program |
| :---: | :---: |
| N/A | Hazardous Waste Management program under the Texas Solid Waste Disposal Act |
| N/A | Underground Injection Control (UIC) program underthe Texas Injection Well Act |
| N/A | National Pollution Discharge Elimination Systems (NPDES) program under the Federal Clean Water Act (CWA) and Waste Disc harge program under the Texas Water Code, Chapter 26 |
| N/A | Prevention of Signific ant Deterioration (PSD) Program under the Federal Clean Air Act |
| N/A | Nonatta inment Program under the Clean Air Act |
| N/A | National Emission Sta nda rds for Ha za rd ous Polluta nts (NESHAPS) preconstruction approval under the Clean Air Act |
| N/A | Ocean dumping permits under the Marine Protection Research and SanctuariesAct |
| N/A | Dredge a nd fill permits under the Federal Clean Water Act |
| N/A | Licenses under the Texas Ra diation Control Act |
| RQD | NPDES Stormwa ter Pollution C ontrol § 402 Pemmit |
| N/A | U.S. Army Corps of Engineers Dredge a nd Fill Permit §404 |
| N/A | Subsurface a rea drip dispersal system permits under the Texas Water Code, Chapter 32 |
| RQD (see note 1 below) | TCEQ Air Quality Pemmit-by-Rule or Registration |

Notes: N/A = Not Applicable
REC $=$ Received
RQD = Required
APP = Applied For
1 Standard Air Permit for MSW Transfer Stations (30 TAC § 330.981 et seq.).

## 2 Facility Features and Waste Acceptance Plan

The facility will include the transfer station structure, a scale house with scales, citizen's convenience station, brush management area, two optional contaminated water holding tanks, drainage features, and a perimeter fence with locking gates. The transfer station structure is a single-level building with an above-grade processing floor (tipping floor). The building footprint will be approximately 180 feet wide by 120 feet long with a concrete floor, steel framing, metal exterior panels, and a roof. The building may be expanded to 180 by 200 feet in the future. The transfer station structure will be setback from S University Parks Drive by approximately 950 feet. A Site Layout Plan is included as Figure I/II-6. The general design and construction details for the building components are included in Part III, Attachment 1. The general operations of the transfer station are described in Part IV, Site Operating Plan.

### 2.1 Proposed Registration

By way of this registration application, City of Waco proposes to construct and operate a new Type $V$ MSW transfer station facility in an unincorporated area of McLennan County. The facility will have a maximum waste intake of 1,800 tons/day. A Site Layout Plan is included as Part I/II, Figures I/II-6. In accordance with $\S 330.61(\mathrm{~b})(2)$ and $\S 330.9$, this facility qualifies for a registration application as the transfer station facility is located within the permitted boundaries of an MSW Type I facility.

### 2.2 Sources and Characteristics of Waste (30 TAC §330.61(b)(1))

The acceptable wastes classifications, including properties and characteristics, unauthorized or prohibited wastes, general sources and service areas, projected waste acceptance rates, population equivalent for service area, and storage and disposal requirement for the City of Waco Transfer Station are summarized in the following subsections.

### 2.2.1 Waste Types and Generation Areas

The facility is a Type V facility, which will be authorized to accept municipal solid waste (MSW), Class 2 and 3 industrial non-hazardous waste, and certain types of special waste, provided the special wastes are properly identified and provided the acceptance of such waste does not interfere with site operations. The parameter limitations, as required by §330.203(a), applicable to this facility are described below and in Section 2 of Part IV, Appendix IV-1 - Waste Acceptance Plan.

The transfer station is planned to serve primarily McLennan County and surrounding communities and counties.

Waste accepted at the facility is expected to consist of the following wastes as defined in 30 TAC §330.3:

- Municipal Solid Waste - Solid waste resulting from or incidental to municipal, community, commercial, institutional, and recreational activities, including garbage, rubbish, ashes, street cleanings, automobile parts, and all other solid waste other than industrial solid waste.
- Putrescible Waste - Organic wastes, such as garbage, that are capable of being decomposed by microorganisms with sufficient rapidity as to cause odors or gases or are capable of providing food for or attracting birds, animals, and disease vectors.
- Rubbish - Non-putrescible solid waste (excluding ashes), consisting of both combustible and noncombustible waste materials. Combustible rubbish includes paper, rags, cartons, wood, excelsior, furniture, rubber, plastics, brush, or similar materials; noncombustible rubbish includes glass, crockery, tin cans, aluminum cans, and similar materials that will not burn at ordinary incinerator temperatures (1,600 degrees Fahrenheit to 1,800 degrees Fahrenheit).
- Yard Waste - Leaves, grass clippings, yard and garden debris, and brush, including clean woody vegetative material that results from landscaping maintenance and land-clearing operations. The term does not include stumps, roots, or shrubs with intact root balls.
- Special Waste - Any solid waste or combination of solid waste that because of its quantity, concentration, physical or chemical characteristics, or biological properties requires special handling and disposal to protect the human health or the environment. Only those special waste that do not interfere with site operations will be accepted at this facility including:
o Dead animals that are incidental to routine collection of municipal solid waste and that can be systematically processed along with other solid waste;
o Pharmaceuticals, contaminated foods, or contaminated beverages other than those contained in normal household waste;
o Empty containers which have been used for pesticides, herbicides, fungicides or rodenticides, provided the containers have been triple rinsed, crushed, or rendered unusable upon receipt at the gate;
o Nonregulated asbestos-containing materials (Non-RACM) - limited amounts of NonRACM may be accepted with the prior approval of the transfer station manager. NonRACM will not be subject to any crushing or compaction by which the Non-RACM could be crumbled into a friable state within the transfer station, prior to transport to an authorized disposal facility.
o Waste generated outside the boundaries of Texas that contains any Class 2 and 3 industrial waste; any waste associated with oil, gas, and geothermal exploration, production, or development activities; or any other special waste that is accepted at the facility.
- Construction or demolition (C \& D) Waste - Waste resulting from construction or demolition projects; includes all materials that are directly or indirectly the by-products of construction work or that result from demolition of buildings and other structures, including, but not limited to, paper, cartons, gypsum board, wood, excelsior, rubber, and plastics.
- Class 2 industrial Wastes - Any individual solid waste or combination of industrial solid waste that are not described as Hazardous, Class 1, or Class 3 as defined in $\S 335.506$ of the TCEQ regulations (relating to Class 2 Waste Determination).
- Class 3 Wastes - Inert and essentially insoluble industrial solid waste, usually including, but not limited to, materials such as rock, brick, glass, dirt, and certain plastics and rubber, etc., that are not readily decomposable, as further defined in $\S 335.507$ of the TCEQ regulations (relating to Class 3 Waste Determination).

The transfer station will not accept the following wastes:

- Regulated hazardous wastes
- Polychlorinated biphenyls (PCB) waste
- Radioactive waste
- Regulated Asbestos Containing Materials (RACM)
- The following Special Wastes:
o Hazardous waste from conditionally exempt small-quantity generators that may be exempt from full controls under Chapter 335, Subchapter $N$ of this title(relating to Household Materials Which Could Be Classified as Hazardous Wastes)
o Class 1 non-hazardous industrial waste
o Untreated medical waste
o Municipal wastewater treatment plant sludges, other types of domestic sewage treatment plant sludges, and water-supply treatment plant sludges
o Septic tank pumpings
o Grease and grit trap wastes
o Waste from commercial or industrial waste water treatment plants air pollution control facilities and tanks, drums, or containers used for shipping or storing any material that has been listed as a hazardous constituent in 40 code of Federal Regulations (40 CFR), Part 261, Appendix VIII but has not been listed as a commercial product in 40 CFR, §261.33(e) or (f)
o Slaughterhouse wastes
o Incinerator ash
o Soil contaminated by petroleum products, crude oils, or chemicals in concentrations greater than $1,500 \mathrm{mg} / \mathrm{kg}$ total petroleum hydrocarbons, or contaminated by constituents of concern exceeding the concentrations listed in Table 1 of 30 TAC §335.521(a)(1)
o Lead acid storage batteries
o Used oil
o Used oil filters from internal combustion engines.
- Other limiting parameters, as well as procedures for coordinating with the landfill receiving any special wastes from the transfer station, are addressed in Section 2 of Part IV, Appendix IV-1 - Waste Acceptance Plan.
- Whole used or scrap tires, except for incidental scrap tires picked up in enclosed municipal solid waste collection vehicles in accordance with 30 TAC 328.54(b).
- Items containing chlorinated fluorocarbons (CFC's), such as refrigerators, freezers, and air conditioners, will only be accepted at the transfer station if the generator or transporter provides written certification that the CFC has been evacuated from the unit and that it was not knowingly allowed to escape into the atmosphere.
- Liquid waste (any waste material that is determined to contain "free liquids" as deemed by EPA Method 9095 (Paint Filter Test), as described in "Test Methods for Evaluating Solid Wastes, Physical Chemical Methods" (EPA Publication Number SW-846)) shall not be accepted unless it is:
o Bulk or non-containerized liquid waste that is: household waste other than septic waste, or contained liquid waste and the container is a small container similar in size to that normally found in the household waste, the container is designated to hold liquids for use other than storage, or the waste is a household waste.


### 2.2.2 Projected Waste Acceptance Rate

The waste acceptance rate in the first year of operation is expected to be approximately $800-1,000$ tons per day. In accordance with 30 TAC 330.61(b)(1)(B), the projected maximum amount of waste to be received daily and annually for the first five years of facility operation is estimated to be approximately 1,000 tons per day or 312,000 tons per year. The projected maximum amount of waste to be received daily and annually over the lifetime of the facility is estimated to be approximately 1,800 tons per day, or 561,600 tons per year. However, the facility is not currently expected to reach the projected maximum amount for several years.

### 2.2.3 Population Equivalent

Assuming 5 pounds of waste generated per person per day, the population equivalent (PE) served by the transfer station for the maximum daily acceptance rate of 1,800 tons per day is estimated as follows:

Annual rate per person

PE $\quad=561,600$ tons/year $\div 0.78$ tons/person/year
$=720,000$ persons

### 2.2.4 Waste Storage and Disposal

The maximum volume of waste that will be stored overnight at the transfer station at any given time is 900 tons. No storage of waste materials will occur off the tipping floor, with the exception of temporary storage within the confines of a covered transfer trailer awaiting transport to a disposal facility. Solid waste will generally be processed within an average of 4 to 6 hours. The solid waste will not be allowed to accumulate on-site for such a period that will allow the creation of a nuisance or public health hazard due to odors, fly breeding, or harborage of other vectors. Storage periods significantly above average that are a result of equipment breakdown or acts of God will only be permitted for the time required to repair or replace the malfunctioning equipment, unless authorized by TCEQ. The maximum volume of waste that can be stored at the transfer station under these circumstances is 900 tons. The maximum holding time under these circumstances will not exceed 72 hours. No solid waste unloading, storage, disposal, or processing operations will occur within any easement, buffer zone, or right-of-way.

During time periods, including holidays, the solid waste may be temporarily stored at the site not to exceed 72 hours. If waste remains on the tipping floor during these periods, tarps will be used to cover the waste to control potential odors, flies and other vectors.
All wastes, except for incidental whole used or scrap tires, will be transferred to a landfill permitted by the TCEQ, such as the City of Waco Landfill (TCEQ Permit No. 2400). Whole used or scrap tires will be removed from the waste stream and disposed of or recycled per 30 TAC Chapter 328 of the TCEQ
regulations. Tires that are split in half, quartered or shredded, or subject to an agency exception, will be transferred to permitted landfill for disposal.

### 2.3 Regional Solid Waste Management (30 TAC §330.61(p))

Consistent with 30 TAC $\S 330.61(p)$, Parts I and II of the Registration application are being submitted for review to Heart of Texas Council of Governments (HOTCOG) to demonstrate compliance with the Regional Solid Waste Management Plan (RSWMP). The HOTCOG is an intergovernmental planning agency that serves a six county region (including McLennan County), encompassing the Waco area. HOTCOG's RSWMP dated November 2013, includes goals for adequate solid waste transportation, disposal, handling, and management while preventing adverse health, social, economic, and environmental impacts. The proposed City of Waco Transfer Station Facility is not only consistent with the goals of the RSWMP, this facility will contribute to achieving and maintaining these goals.

A letter is being sent to HOTCOG summarizing the proposed registration application and transmitting a copy of Parts I and II of this application for review. A letter is also being sent to McLennan County consistent with 30 TAC $\S 330.61(\mathrm{p})$. Copies of these letters and the related correspondence is included in Part I/II, Appendix I/II-A.1.

## 3 EXISTING CONDITIONS SUMMARY

In accordance with 30 TAC §330.61, the following sections include the required portions of Part II of the Registration application that summarize the existing conditions of both the transfer station property and the surrounding area. The main topics include land use and zoning, population and community growth trends, locations of water and oil/gas wells, prevailing wind direction, transportation analysis, general geology, soils, groundwater and surface water information, floodplains, wetlands, and threatened and endangered species.

### 3.1 Site-Specific Conditions Requiring Special Design Considerations (30 TAC §330.61(a))

In accordance with 30 TAC $\S 330.61(\mathrm{a})$, the requirements of 30 TAC $\S 330.61(\mathrm{~h})$ through (o) have been evaluated and discussed in the following Sections 3.2 through 3.8 of the existing conditions summary. There are no special design considerations or possible mitigation of conditions required at the facility.

### 3.2 Impact on Surrounding Area (30 TAC §330.61(H))

A land use and zoning compatibility analysis was performed for the facility. The results of the analysis are summarized in the following sections.

### 3.2.1 Zoning

The facility will be located in an unincorporated area of McLennan County, Texas over closed MSW landfill (MSW Permit No. 1039). Additionally, McLennan County has not established zoning requirements for the area in which the transfer station will be located; therefore, there are no zoning restrictions for the facility. The Facility is subject to permitting by McLennan County for construction.

### 3.2.2 Character of Surrounding Land Use

Existing uses of the site and the surrounding area are shown on Figure I/II-5, Land Use Map. The map was prepared based on a field reconnaissance study by SCS Engineers (September 2023) and a review of recent aerial photographs (GoogleEarthTM) of the surrounding area. Within one mile of the site, the land uses include open space and agriculture areas, as well as limited commercial, industrial, and residential. Scattered homes are located within a one-mile radius of the site. The breakdown of overall land use within the one-mile radius is shown on Table I/II-3.1.

Table I/II-3.1: Land Use within a One-Mile Radius

| Land Use | Area (in acres) | Percentage of <br> Total Area |
| :---: | :---: | :---: |
| Agric ultural | 900.0 | 32.6 |
| Commercial | 55.9 | 2.0 |
| Industrial | 138.8 | 5.0 |
| Residential | 241.8 | 8.8 |
| Water Bodies | 419.4 | 15.2 |
| City of Waco Transfer Station Property | 43.5 | 1.6 |
| Open Space (including undeveloped or <br> forested areas) | 962.9 | 34.8 |
| Total | $\mathbf{2 7 6 2 . 3}$ | $\mathbf{1 0 0 . 0} \%$ |

### 3.2.3 Population and Community Growth Trends

The site is located within unincorporated McLennan County. According to the United States Census Bureau, the population for McLennan County for 2020 was 260,579. The nearest city to the transfer station property is Waco, Texas, located to the south approximately 4.5 miles from the facility. Waco, TX had a population of 138,486 , according to the 2020 U.S. Census.

### 3.2.4 Growth Trends

The Texas Demographic Center has projected the population for McLennan County as listed in Table I/II-3.2.

Ta ble I/II-3.2
Census Population and Projected Estimates for
Mc Lennan County, Texas 2020-2050

| Year | Projected Population <br> of McLennan County | Source |
| :---: | :---: | :---: |
| 2020 | 260,579 | U.S. Census Bureau |
| 2030 | 279,823 | Texas Demographic Center |
| 2040 | 295,538 | Texas Demographic Center |
| 2050 | 307,022 | Texas Demographic Center |

### 3.2.5 Proximity to Residences and Other Uses

Consistent with 30 TAC §330.61(h)(4), the following paragraphs describe specific uses of the properties within a one-mile radius of the facility. The locations of ponds and lakes, licensed day care facilities, residences, churches, parks, cemeteries, commercial and industrial areas within a one-mile radius of the facility are shown on Part I/II, Figure I/II-5 and are discussed in further detail in the following paragraphs. As described below, no known churches, licensed daycare facilities, parks and recreational areas, hospitals, or cemeteries were identified within one mile of the facility. Also, as
addressed in the letter to the Texas Historical Commission, no archeological or historical sites, or sites with exceptional aesthetic qualities have been identified on the site (see Appendix I/II-A.2).

## Ponds and Lakes

All ponds and bodies of water within a one-mile radius of the site are shown on Part I/II, Figure I/II-5.

## Residential

A driving survey of the area in September 2023 and review of recent aerial photography shows approximately 85 residences within one mile of the facility. The nearest habitable structure is located approximately 50 feet east of the facility registration boundary. All residential areas are shown on the Land Use Map, provided as Figure I/II-5.

## Churches

A driving survey of the area in September 2023 and review of recent aerial photography indicated that there are no churches located within one mile of the facility.

## Licensed Day Care Facilities

A driving survey of the area in September 2023 and review of recent aerial photography indicated that there are no licensed day care facilities located within one mile of the facility.

## Parks and Recreational Areas

A driving survey of the area in September 2023 and review of recent aerial photography indicates that there are no parks and recreational facilities located within one mile of the facility.

## Cemeteries

A driving survey of the area in September 2023 and review of recent aerial photography indicates that there are no known cemeteries located within a one-mile radius of the facility.

## Hospitals

A driving survey of the area in September 2023 and review of recent aerial photography indicates that there are no known hospitals located within a one-mile radius of the facility.

## Schools

A driving survey of the area in September 2023 and review of recent aerial photography indicates that there are no elementary, middle, or high schools located within a one-mile radius of the facility.

## Commercial and Industrial

A driving survey of the area in September 2023 and review of recent aerial photography indicated that there are approximately 10 businesses within a one-mile radius of the facility. These include both commercial and industrial activities, such as concrete suppliers, and a perfume store. All commercial and industrial areas are shown on the Land Use Map, provided as Figure I/II-5.

## Historic Site and Cultural Resources

In accordance with 30 TAC §330.61(0), a letter was sent to the Texas Historical Commission (THC) (1) noting the former use of the site as a landfill in the area proposed for the transfer station and (2)
noting the low potential for cultural resources. A copy of the THC correspondence is included in Part I/II, Appendix I/II-A.2.

### 3.2.5.1 Struc tures and Inhabitable Buildings within 500 Feet of the Site

There are three structures located within 500 feet of the facility boundary. These structures are located along Radle Road, including one abandoned structure, and two residences. Each structure is located approximately 150 feet from facility boundary.

### 3.2.6 Prevailing Wind Direction

A wind rose is included on Figure I/II-2 to illustrate the prevailing wind direction. The nearest available wind rose for Waco, Texas between the years 1984 to 1992 indicates that the prevailing wind is from the south. The wind rose data was obtained from the TNRCC-EPA.

### 3.2.7 Easements

There are no existing easements located on the property.

### 3.3 Transportation Analysis (30 TAC § 330.61(i))

A traffic analysis was performed for the transfer station property by Lee Engineering in accordance with the requirements of 30 TAC $\S 330.61$ (i).
The analysis includes the following:

- Data on the availability and adequacy of roads that the owner or operator will use to access the facility, and recommended improvements;
- Data on the volume of vehicular traffic on access roads within one-mile of the facility, both existing and projected, during the expected life of the facility; and
- Projected volume of traffic expected to be generated by the facility on the access roads within one-mile of the facility.

A draft copy of the traffic analysis conducted by Lee Engineering is included in Part I/II, Appendix I/IIF. A finalized traffic analysis report will be included with this application at the time of the Texas Department of Transportation's (TxDOT) final determination. Additionally, as TxDOT will be the agency exercising maintenance responsibility for the public roadways involved, documentation of coordination with the TxDOT for traffic and location restrictions, and all designs associated with the facility entrance and exit are included in Part I/II, Appendix I/II-A.3.

### 3.3.1 Site Access

Vehicular traffic to the facility will access the facility using South University Parks Drive. Public access to the facility will be provided by one entrance located on the east side of South University Parks Drive, which runs north/south west of the site. South University Parks Drive is a 2 -lane undivided roadway, which consists of one paved asphalt lane in each direction (north/south). The City is working with TxDOT to design and construct one additional turn lane on southbound South University Parks Drive to provide entrance into the facility. The existing driveway entrance to the site property will be relocated and improved for the Facility. The City will apply for a new driveway permit with TxDOT prior
to construction of the new facility entrance. The site access road will include at minimum a single 15foot inbound lane, and a single 15 -foot outbound lane, and will be an all-weather on-site road to accommodate two-way traffic entering and exiting the facility. The driveway for this on-site road will intersect South University Parks Drive at an approximate 90-degree angle at a location with no sight restrictions or conflicts that impair the turning of the vehicles or the view of drivers on South University Parks Drive. Vehicles that turn into the facility entrance driveway at South University Parks Drive (see Part I/II, Figure I/II-6 - Site Layout Plan) will have approximately 900 feet of queuing distance before they reach the scale house. The site exit will be controlled by a stop sign. Traffic flow directions are also provided on Figure I/II-6.

Based on the information above, South University Parks Drive, in conjunction with the proposed roadway improvements, will be adequate in capacity and structure to serve the needs of the owner or operator and the general public. Subject to coordination with TxDOT, public roadway improvements such as turning lanes associated with the site entrance/exit will be implemented.

The maximum legal weight limit for South University Parks Drive is 80,000 pounds. The vehicles using this transfer station will comply this limit.

Correspondence between TxDOT and the City coordinating the proposed roadway improvements is included in Appendix I/II-A.3.

### 3.3.2 Traffic Volumes

All traffic will access the facility via the entrance off of South University Parks Drive. The 2022 daily traffic volumes in the vicinity of the facility were obtained, and provided in Appendix I/II-F, Table 1. Future traffic is projected through the year 2059 based on historical growth data, TxDOT Statewide Planning projections, and generated facility traffic volumes discussed in Section 3.2.3. The expected life for many transfer stations, including this one, may vary due to various future factors, which could change over time. However, this analysis was performed to evaluate traffic impacts over approximately the next 35 years, which is representative of the maximum traffic volume to be expected at this facility. The existing and projected traffic volumes for roadways within one mile of the facility are shown on Appendix I/II-F, Table 7. This table includes traffic count data for the South University Parks Drive access road based on existing and future projected data.

### 3.3.3 Facility Generated Traffic Volumes

Traffic generated by the facility is estimated based on the projected incoming waste rate and assumptions regarding the vehicles used for waste transport in and out of the facility. The maximum total volume of traffic generated by the Facility is expected to be approximately 1,424 total site trips per day, as shown in Appendix I/II-F, Table 4.

The comparison of the traffic to be generated at the facility with other background traffic on Table 7 in Appendix I/II-F shows that the volume of the traffic generated by the Facility represents a relatively small percentage of the projected volume on State Highway (SH) 6, north of the site. Due to low existing traffic volumes between the site access on South University Parks Drive and SH 6, the Facility traffic is anticipated to be about $50 \%$ of total traffic in 2025, and $25 \%$ at the time of closure of the Facility. Based on the findings of this traffic study and communications with TxDOT, there are no other existing or future restrictions on S University Parks Drive within one-mile of the facility that would prevent safe and efficient operations for both the transfer station-generated traffic, as well as the other vehicles in the area.

### 3.3.4 TxDOTCorrespondence

In accordance with 30 TAC §330.61(i)(4), TxDOT was contacted for any traffic or location restrictions which may apply to the facility. A copy of all correspondence with TXDOT is included in Parts I/II, Appendix I/II-A.3.

### 3.3.5 Aiport Locations

30 TAC $\S 330.545$, related to airport safety, is not applicable to transfer stations. However, as shown on Figure I/II-9, there are no airports located within 6 miles of the facility.

### 3.4 General Geology and Soils Statement (30 TAC §330.61(j))

In accordance with 30 TAC $\S 330.61(\mathrm{j})(1)$, a general discussion of the geology and soils at the transfer station property is included in the following sections.

### 3.4.1 Physiography and Topography

The facility is located in McLennan County, Texas. The topography of the area surrounding the property is dominated by grasslands trending from a topographic high south of the facility. The facility is located in the physiographic region known as the Blackland Prairie. Low rolling terrain is the typical topographic expression in the area. The approximate existing ground elevation of the facility ranges from 418 ft msl at the center of the site to $402 \mathrm{ft}-\mathrm{msl}$ at the east corner of the property.

### 3.4.2 Geologic Setting

Based on available data, the property is located within alluvial and terrace deposits derived from depositional episodes of the Brazos River. These deposits consist of gravel, sand, silt, and clay in varying proportions. These alluvial/terrace deposits overlay the Cretaceous-aged Lower Taylor Marl, consisting of clays and shales, with a maximum thickness of 500 to 775 feet in the Central Texas area (Barnes, 1970).

### 3.4.3 On-Site Soils

The transfer station property is composed entirely of one soil type, according to the Natural Resource Conservation Service's Soil Geographic Database for McLennan County: Pits, gravel (Pg). This classification is most likely due to previous landfill activity at the site area.

### 3.5 Ground and Surface Water Statement (30 TAC §330.61(k))

In accordance with 30 TAC $\S 330.61(\mathrm{k})$, a general discussion of the groundwater and surface water conditions of the property are included in the following sections.

### 3.5.1 Groundwater Conditions

The Brazos River Alluvium aquifer (aquifer) is a State of Texas-defined minor aquifer that exists beneath the facility and occurring in floodplain and terrace deposits proximate to the Brazos River. The aquifer consists of alluvial sediments deposited by the Brazos River during depositional episodes. The aquifer is an unconfined aquifer that receives recharge primarily from direct precipitation (STGC, 2015). Groundwater in the aquifer generally flows toward the Brazos River and slightly downstream, discharging through springs and seeps into the Brazos River and streams within the outcrop of the alluvium (Yelderman, 2017).

The closed landfill (MSW permit no. 1039) was permitted in 1977 and closed in the 1980s. The landfill has been in post-closure maintenance during that entire period since closure. Original permit application indicates that groundwater table was approximately 13 to 18 feet below ground surface elevations based on limited observations in soil borings. Copy of the original permit is included in Appendix I/II-G

## References:

Barnes, V.E., 1970, Geologic atlas of Texas, Waco sheet: University of Texas-Austin, Bureau of Economic Geology Geologic Atlas of Texas
Southern Trinity Groundwater Conservation District, Groundwater Management Plan, 2015.
Yelderman, Y., and Hamilton, W., 2017, Brazos River Alluvium Aquifer Quantity and Quality Assessment of McLennan County, Texas

### 3.5.2 Surface Water Features

The facility sits on an existing closed landfill with a peak at the center of the property. As such, the site generally slopes away from the peak in each direction at an approximately average $2.0 \%$ slope. Based on topography of the property and surrounding properties, no storm water run-on will occur from offsite properties.

### 3.5.3 Texas Pollutant Disc harge Elimination System

Liquids resulting from the operation of the transfer station will be disposed of in a manner that will not cause surface water contamination. The facility is designed to prevent discharge of pollutants into waters of the State or waters of the United States, as defined by the Texas Water Code and the Federal Clean Water Act, $\S 402$, as amended, respectively.
Consistent with TCEQ requirements, a Notice of Intent (NOI) will be submitted to TCEQ and a Stormwater Pollution Prevention Plan (SWPPP) will be developed prior to the commencement of transfer station operations to obtain coverage under the Texas Pollutant Discharge Elimination System (TPDES) General Permit, TXR050000 for Stormwater Discharges associated with Industrial Activity. In addition, an NOI will be submitted the TCEQ and a Stormwater Pollution Prevention Plan will be developed prior to construction to obtain coverage under the TPDES General Permit, TXR150000 for Stormwater Discharges Associated with Construction Activity.
The owner will obtain appropriate approvals or permits that may be required by local agencies for installation of an on-site domestic wastewater management system.

### 3.6 ABANDONED OIL AND WATER WELLS (30 TAC §330.61(I))

The locations of water and oil/gas wells within 500 feet of the Registration boundary of the facility were determined based on search by SCS Engineers of the water and oil and gas well database of the Texas Water Development Board. The well database search is included in Appendix I/II-D, Oil and Water Well Location Summary. No known oil/gas wells or water wells were identified within a 500 feet radius of the facility.

### 3.7 Floodplains and Wetlands Statement (30 TAC §330.61(m))

### 3.7.1 Roodplains

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) that includes the subject facility area (McLennan County, Texas and Incorporated Areas: Map Nos. 48309C0575D and 48309C0390D, each Revised December 20, 2019) were reviewed and are included as Figure I/II-8. The facility and access road are not located in an area of 100-year floodplain or floodway.

### 3.7.2 Wetlands

As part of the "Waters of the United States Delineation", Integrated Environmental Solutions, LLC (IES) performed an assessment of the waters of the United States on the transfer station property. The purpose of this assessment was to determine the approximate sizes and locations of wetlands (if any) within the facility boundaries according to the Texas Water Code (TWC) §11.502. The IES report indicates that "No aquatic features were identified within the survey area... the site is void of jurisdictional features and nothing on-site would be regulated under CWA Section 404", as shown on Figure I/II-7. Consistent with $\S 330.553(\mathrm{~b})(2)$, the facility will not cause or contribute to violations of any applicable water quality standard, violate any applicable toxic effluent standard or prohibition under the Clean Water Act, 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, or violate any requirement under the Marine Protection, Research, and Sanctuaries Act of 1972 for the protection of a marine sanctuary.

A copy of IES's assessment is included in Appendix I/II-B.

### 3.8 PROTECTION OF ENDANGERED OR THREATENED SPECIES (30 TAC §330.61(n))

IES performed a Protected Species Habitat Assessment for the transfer station property in accordance with the requirements of the Endangered Species Act and 30 TAC §330.61(n). IES concluded that "No federally listed critical habitat for these species is located within the vicinity of the survey area. The TPWD lists 13 state protected species that could occur within McLennan County, four of which are also federally listed avian species. The review of the TXNDD files did not indicate any unique vegetation communities, parks, or natural/managed areas within the survey area ... the proposed project is not expected to have any impacts on the federally or state-listed threatened or endangered species." In view of the above, and consistent with $\S 330.551$ and $\S 330.61(n)$, 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

A copy of the threatened and endangered species assessment conducted by IES is included in Part I/II, Appendix I/II-C

## APPLICATION FORMS

## PART I APPLICATION FORM

## Texas Commission on Environmental Quality Part I Application Form for New Permit, Permit Amendment, or Registration for a Municipal Solid Waste Facility

## Application Tracking Information

Facility Name: City of Waco Transfer Station Facility
Permittee or Registrant Name: City of Waco
MSW Authorization Number: TBD
Initial Submission Date: October 2023
Revision Date: $\qquad$
Instructions for completing this Part I Application Form are provided in TCEQ 00650-instr ${ }^{1}$. Include a Core Data Form (TCEQ 10400) ${ }^{2}$ with the application for the facility owner, and another Core Data Form for the operator if different from the owner. If you have questions, contact the Municipal Solid Waste Permits Section by email to mswper@tceq.texas.gov, or by phone at 512-239-2335.

## Application Data

## 1. Submission Type

## 2. Authorization Type

## Permit

Registration

## 3. Application Type

$\square$ New Permit
$\square$ Permit Major Amendment $\quad \square$ Permit Limited Scope Major Amendment
$\square$ New Registration

[^0]
## 4. Application Fee

## Amount

\$2,050—New Landfill Permits, and Landfill Permit Major Amendments Described in 30 TAC $305.62(\mathrm{j})(1)$
\$150—Other Permits, Landfill Limited Scope Major Amendments, Permit Amendments for Storage and Processing Facilities, and Registrations

## Payment Method

Check
Online through ePay portal www3.tceq.texas.gov/epay/
If paid online, enter ePay Trace Number: 582EA000573134

## 5. Application URL

For applications other than those for arid exempt landfills, provide the URL address of a publicly accessible internet web site where the application and all revisions to the application will be posted.
https://www.waco-texas.com/Transfer-Station-Permitting

## 6. Party Responsible for Publishing Notice

Indicate who will be responsible for publishing notice:
$\square$ Applicant
$\square$ Agent in ServiceConsultant
Contact Name: $\qquad$
Title: $\qquad$
Email Address: $\qquad$

## 7. Alternative Language Notice

Use the Alternative Language Checklist on Public Notice Verification Form TCEQ-20244-Waste-NORI, TCEQ-20244-Waste-NAPD, or TCEQ-20244-Waste-NAORPM available at www.tceq.texas.gov/permitting/waste permits/msw permits/msw notice.html to determine if an alternative language notice is required.

Is an alternative language notice required for this application?
$\square$ Yes $\square$ No
Indicate the alternative language: $\qquad$

## 8. Public Place for Copy of Application

Name of the Public Place: Waco-McLennan County Library
Physical Address: 1717 Austin Ave
City: Waco County: McLennan State: TX Zip Code: $\underline{76701}$
Phone Number: (254) 750-5941

## 9. Consolidated Permit Processing

Is this submittal part of a consolidated permit processing request, in accordance with 30 TAC Chapter 33?
$\square$ Yes $\quad \square$ No
If "Yes", indicate the other TCEQ program authorizations requested:

## 10. Confidential Documents

Does the application contain confidential documents?
$\square$ Yes
$\square$ No
If "Yes", reference the confidential documents in the application, but submit the confidential documents as an attachment in a separate binder marked "CONFIDENTIAL."

## 11. Permits and Construction Approvals

Mark the following table to indicate status of other permits or approvals.
Table 1. Permits and Construction Approvals.

| Permit or Approval | Received | Pending | Not <br> Applicable |
| :--- | :---: | :---: | :---: |
| Hazardous Waste Management Program under Texas <br> Solid Waste Disposal Act |  | X |  |
| Underground Injection Control Program under Texas <br> Injection Well Act |  | X |  |
| National Pollutant Discharge Elimination System <br> Program under Clean Water Act; Waste Discharge <br> Program under Texas Water Code, Chapter 26 |  | X | X |
| Prevention of Significant Deterioration Program under <br> Federal Clean Air Act (FCAA); <br> Nonattainment Program under the FCAA |  | X |  |
| National Emission Standards for Hazardous Air <br> Pollutants Preconstruction Approval under the FCAA |  |  |  |


| Permit or Approval | Received | Pending | Not <br> Applicable |
| :--- | :---: | :---: | :---: |
| Ocean Dumping Permits under Marine Protection <br> Research and Sanctuaries Act |  |  | X |
| Dredge or Fill Permits under Clean Water Act |  |  | X |
| Licenses under the Texas Radiation Control Act |  |  | X |
| Other (describe): |  |  |  |
| Other (describe): |  |  |  |

## 12. Facility General Information

Facility Name: City of Waco Transfer Station
Contact Name: Kody Petillo

Title: Director of Solid Waste
MSW Authorization Number (if existing): 1039
Regulated Entity Reference Number: RN 106117625
Physical or Street Address (if available): S University Parks Drive
City: Waco
County: McLennan
State: TX Zip Code: $\underline{76712}$
Phone Number: 254-299-2623
Latitude (Degrees, Minutes Seconds): $31^{\circ} 29^{\prime} 46.6^{\prime \prime} \mathrm{N}$
Longitude (Degrees, Minutes Seconds): $97^{\circ} 4^{\prime} 56.6^{\prime \prime} \mathrm{W}$
Benchmark Elevation (above mean sea level): $\qquad$ feet

Description of facility location with respect to known or easily identifiable landmarks:
0.1 mile north of the intersection of S University Parks Drive and Radle Road.

Access routes from the nearest United States or state highway to the facility:
0.1 mile north of the intersection of S University Parks Drive and Radle Road

## Coastal Management Program

Is the facility within the Coastal Management Program boundary?
$\square$ Yes $\quad \square$ No

## 13. Facility Types

$\square$ Type I $\square$ Type IV $\square$ Type V

## Type IAE Type IVAE Type VI

## 14. Activities Conducted at the Facility

```
Storage
Processing
Disposal
```


## 15. Facility Waste Management Units

Check the box for each type of waste management unit proposed.
$\square$ Landfill Unit(s)Container(s)
$\square$ Incinerator(s)
$\square$ Roll-off Boxes
$\square$ Class 1 Landfill Unit(s)Surface Impoundment
$\square$ Process Tank(s)Autoclave(s)
$\square$ Storage Tank(s)Refrigeration Unit(s)
$\square$ Tipping FloorMobile Processing Unit(s)
$\square$ Storage AreaCompost Pile(s) or Vessel(s)
$\square$ Other (specify):
Transfer Station

## 16. Description of Proposed Facility or Changes to Existing Facility

Provide a brief description of the proposed activities if application is for a new facility, or the proposed changes to an existing facility or permit conditions if the application is for an amendment.
MSW Transfer Station with scales and scale building. Site improvements will include a new site entrance road and citizens' collection station.

## 17. Facility Contact Information

## Site Operator (Permittee or Registrant)

Name: City of Waco
Customer Reference Number: CN 600131940
Contact Name: Kody Petillo Title: Director of Solid Waste
Mailing Address: P.O. Box 2570
City: Waco County: McLennan State: TX Zip Code: $\underline{76702}$
Phone Number: 254-750-6627
Email Address: KodyP@wacotx.gov
Texas Secretary of State (SOS) Filing Number: $\qquad$
Operator (if different from Site Operator)
Name: Same as Site Operator
Customer Reference Number: CN
Contact Name: $\qquad$ Title: $\qquad$
Mailing Address: $\qquad$
City: $\qquad$ County: $\qquad$ State: $\qquad$ Zip Code: $\qquad$
Phone Number: $\qquad$
Email Address: $\qquad$
Texas Secretary of State (SOS) Filing Number: $\qquad$
Consultant (if applicable)
Firm Name: SCS Engineers
Consultant Name: Sandeep Saraf
Texas Board of Professional Engineers Firm Registration Number: F-13144
Contact Name: Sandeep Saraf Title: Senior Project Manager
Mailing Address: 1901 Central Dr. Suite 550
City: Bedford
County: Tarrant
State: TX
Zip Code: 76021
Phone Number: 407-923-7013
Email Address: ssaraf@scsengineers.com

## Agent in Service (required for out-of-state applicants)

Name: $\qquad$
Mailing Address: $\qquad$
City: __ County:
Phone Number: $\qquad$
Email Address: $\qquad$

## 18. Facility Supervisor License

Indicate the level of Municipal Solid Waste Facility Supervisor license, as defined in 30 TAC Chapter 30, Occupational Licenses and Registrations, Subchapter F that the individual who supervises or manages the operations will obtain prior to commencing operations.

Class A Supervisor License $\square$ Class B Supervisor License

## 19. Ownership Status of the Facility

## Business Type

$\square$ Corporation
$\square$ County Government
$\square$ IndividualState GovernmentSole ProprietorshipFederal Government
$\square$ General PartnershipOther Government
$\square$ Limited PartnershipMilitary
City Government
$\square$ Other (specify): $\qquad$

## Facility Owner

Does the Site Operator (Permittee or Registrant) own all the facility units and all the facility property?

Yes No

If "No", provide the following information for other owners.
Owner Name: $\qquad$
Mailing Address: $\qquad$
City: $\qquad$ County: $\qquad$ State: TX Zip Code: $\qquad$
Phone Number: $\qquad$
Email Address: $\qquad$

## 20. Other Government Entities Information

## Texas Department of Transportation

District: Waco
District Engineer's Name: Stanley Swiatek, P.E.
Mailing Address: 100 S Loop Dr
City: Waco County: McLennan State: TX Zip Code: $\underline{76704}$

Phone Number: 254-867-2700
Email Address: $\qquad$

## Local Government Authority Responsible for Road Maintenance (if applicable)

Government or Agency Name: Road and Bridge Department
Contact Person's Name: Will Jones
Mailing Address: 133 N Snider Road
City: West County: McLennan State: TX Zip Code: $7 \underline{7691}$
Phone Number: 254-826-5012
Email Address: $\qquad$
City Mayor Information
City Mayor's Name: Mr. Dillion Meek
Mailing Address: 300 Austin Ave.
City: Waco County: McLennan $\quad$ State: TX Zip Code: $\underline{76701}$

Phone Number: 254-757-5028
Email Address: Engineer@co.mclennan.tx.us

## City Health Authority

Authority Name: Waco-McLennan County Public Health Di
Contact Person's Name: Ms. LaShonda M. Marley-Horen
Mailing Address: 225 W. Waco Drive
City: Waco

County: McLennan
State: TX Zip Code: 76071
Phone Number: 254-750-5492
Email Address: lasdondam@wacotx.gov

## County Judge Information

County Judge's Name: Mr. Scott Felton
Mailing Address: 501 Washington Avenue, Room 214
City: Waco County: McLennan State: TX Zip Code: $7 \underline{76701}$

Phone Number: 254-757-5049
Email Address: $\qquad$
County Health Authority
Agency Name: Same as City Health Authority
Contact Person's Name: $\qquad$
Mailing Address: $\qquad$
City: $\qquad$ County: $\qquad$ State: TX Zip Code: $\qquad$
Phone Number: $\qquad$
Email Address: $\qquad$

## State Representative Information

District Number: 56
State Representative's Name: Charles Anderson
District Office Mailing Address: 900 Austin Avenue, Suite 804
City: Waco County: McLennan State: TX Zip Code: $\underline{76701}$
Phone Number: 512-463-0135
Email Address: $\qquad$

## State Senator Information

District Number: 22
State Senator's Name: The Honorable Brian Birdwell
District Office Mailing Address: 900 Austin Avenue, Suite 500
City: Waco
County: McLennan
State: TX Zip Code: $\underline{76701}$
Phone Number: 254-772-6225
Email Address: $\qquad$

## Council of Governments (COG)

COG Name: Heart of Texas Council of Governments
COG Representative's Name: Mr. Russell Devorsky
COG Representative's Title: Executive Director
Mailing Address: 1514 S. New Road
City: Waco
County: McLennan
State: TX Zip Code: $\underline{76711}$
Phone Number: 254-292-1800
Email Address: russell.devorsky@hot.cog.tx.us

## River Basin Authority

Authority Name: Brazos River Authority
Contact Person's Name: Mr. David Collinsworth
Watershed Sub-Basin Name: $\qquad$
Mailing Address: 4600 Cobbs Drive
City: Waco County: McLennan $\quad$ State: TX Zip Code: $\underline{76710}$
Phone Number: 254-761-3100
Email Address: $\qquad$

## U.S. Army Corps of Engineers District

Indicate the U.S. Army Corps of Engineers district in which the facility is located:
$\square$ Albuquerque, NMGalveston, TX
回 Ft. Worth, TXTulsa, OK

## Local Government Jurisdiction

Within City Limits of: N/A
Within Extraterritorial Jurisdiction of: N/A
Is the facility located in an area in which the governing body of the municipality or county has prohibited the storage, processing, or disposal of municipal or industrial solid waste?
$\square$ Yes $\square$ No
If "Yes", provide a copy of the ordinance or order as an attachment.

## Signature Page

## Site Operator or Authorized Signatory

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

## Name:

Bradley Ford Title: City Manager

Email Address: bradleyf@wacotx.gov
SFR Signature:


Date:


## Operator or Principal Executive Officer Designation of Authorized Signatory

To be completed by the operator if the application is signed by an authorized representative for the operator.

I hereby designate $\qquad$ as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

Operator or Principal Executive Officer Name: $\qquad$
Email Address: $\qquad$
Signature: $\qquad$ Date: $\qquad$

## Notary

subscribed and sworn to before me by the said Bradley Ford, City Manager On this 18 th day of Detobes 2023


County, Texas


Note: Application Must Bear Signature \& Seal of Notary Public

## Part I Attachments

Refer to instruction document 00650-instr for professional engineer seal requirements.
Attachments Table 1. Required attachments.

| Required Attachments | Attachment <br> Number |
| :--- | :---: |
| Supplementary Technical Report | Part I/II Narrative |
| Property Legal Description | Documentation |
| Property Metes and Bounds Description | Documentation |
| Facility Legal Description | Documentation |
| Facility Metes and Bounds Description | Documentation |
| Metes and Bounds Drawings | Documentation |
| On-Site Easements Drawing |  |
| Land Ownership Map | Figure I/II-4 |
| Landowners List |  |
| Mailing Labels (printed and electronic) | Figure I/II-1 |
| Texas Department of Transportation (TxDOT) County Map |  |
| General Location Map | Figure I/II-2 |
| General Topographic Map | Documentation |
| Verification of Legal Status | Documentation |
| Property Owner Affidavit | Documentation |
| Evidence of Competency |  |

## Attachments Table 2. Additional attachments as applicable.

| Additional Attachments as Applicable <br> (select all that apply and add others as needed) | Attachment <br> Number |
| :--- | :---: |
| $\square$ TCEQ Core Data Form(s) | Forms |
| $\square$ Signatory Authority Delegation |  |
| $\square$ Fee Payment Receipt | Forms |
| $\square$ Confidential Documents |  |
| $\square$ Waste Storage, Processing and Disposal Ordinances |  |
| $\square$ Final Plat Record of Property |  |


| Additional Attachments as Applicable <br> (select all that apply and add others as needed) | Attachment <br> Number |
| :--- | :--- |
| $\square$ Certificate of Fact (Certificate of Incorporation) |  |
| $\square$ Assumed Name Certificate |  |
| Other (describe): |  |
| Other (describe): |  |
| Other (describe): |  |

Your transaction is complete. Thank you for using TCEQ ePay.
Note: It may take up to 3 working days for this electronic payment to be processed and be reflected in the TCEQ ePay system. Print this receipt and the vouchers for your records. An email receipt has also been sent.

```
-Transaction Information
    Trace Number: 582EA000573134
    Date: 10/20/2023 12:03 PM
    Payment Method: CC - Authorization 0000051137
            ePay Actor: KRYSTAL KUNTZ
            Actor Email: kkuntz@scsengineers.com
            IP: 99.48.161.145
    TCEQ Amount: $150.00
    Texas.gov Price: $153.63*
```

* This service is provided by Texas.gov, the official website of Texas. The price of this service includes funds that support the ongoing operations and enhancements of Texas.gov, which is provided by a third party in partnership with the State.

Payment Contact Information
Name: SANDEEP SARAF
Company: SCS ENGINEERS
Address: 1901 CENTRAL DRIVE SUITE 550, BEDFORD, TX 76021
Phone: 817-571-2288

| Cart Items |  |  |
| :--- | :--- | :--- |
| Click on the voucher number to see the voucher details. |  |  |
| Voucher | Fee Description | AR Number |
| 666252 | NONHAZARDOUS WASTE PERMIT - MODIFICATIONS |  |
| 666253 | 30 TAC 305.53B HWP NOTIFICATION FEE | $\$ 100.00$ |
|  | TCEQ Amount: | $\$ 150.00$ |

ePay Again Exit ePay

Note: It may take up to 3 working days for this electronic payment to be processed and be reflected in the TCEQ ePay system. Print this receipt for your records.

Site Help | Disclaimer | Web Policies | Accessibility | Our Compact with Texans | TCEQ Homeland Security | Contact Us
Statewide Links: Texas.gov | Texas Homeland Security | TRAIL Statewide Archive | Texas Veterans Portal
© 2002-2023 Texas Commission on Environmental Quality

## TCEQ CORE DATA FORM

## TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

## SECTION I: General Information

| 1. Reason for Submission (If other is checked please describe in space provided.) |  |  |
| :---: | :---: | :---: |
| \ New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.) |  |  |
| $\square \quad$ Renewal (Core Data Form should be subm | newal form) | $\square$ Other |
| 2. Customer Reference Number (if issued) | Follow this link to search | 3. Regulated Entity Reference Number (if issued) |
| CN 600131940 | Central Registry** | RN 106117625 |

## SECTION II: Customer Information



## SECTION III: Regulated Entity Information

21. General Regulated Entity Information (If 'New Regulated Entity" is selected, a new permit application is also required.)

】 New Regulated EntityUpdate to Regulated Entity NameUpdate to Regulated Entity Information


If no Street Address is provided, fields 25-28 are required.

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

| $\square$ Dam Safety | $\square$ Districts | $\square$ Edwards Aquifer | $\square$ Emissions Inventory Air | $\square$ Industrial Hazardous Waste |
| :---: | :---: | :---: | :---: | :---: |
| 区 Municipal Solid Waste | New Source Review Air | $\square$ OSSF | $\square$ Petroleum Storage Tank | $\square$ PWS |
| $\square$ Sludge | $\square$ storm Water | $\square$ Title V Air | $\square$ Tires | $\square$ Used Oil |
| $\square$ Voluntary Cleanup | $\square$ Wastewater | $\square$ Wastewater Agriculture | $\square$ Water Rights | $\square$ Other: |

## SECTION IV: Preparer Information

| 40. Name: | Sandeep Saraf, P.E. | 41. Title: | Sr. Project Manager |  |
| :--- | :--- | :--- | :--- | :--- |
| 42. Telephone Number | 43. Ext./Code | 44. Fax Number | 45. E-Mail Address |  |
| (407) $923-7013$ |  | 1 | - | ssaraf@scsengineers.com |

## SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.


## DOCUMENTATION

## LEGAL DESCRIPTION



823 Washington Ave., Suite 100
Waco, Texas 76701

### 43.482 ACRES LOCATED IN THE CARLOS O'CAMPO SURVEY, ABSTRACT 32, McLENNAN COUNTY, TEXAS

FIELD NOTES FOR A 43.482 ACRE TRACT OF LAND LOCATED IN THE CARLOS O'CAMPO SURVEY, ABSTRACT 32, McLENNNAN COUNTY, TEXAS, AND BEING ALL OF A CALLED 43.472 ACRE TRACT DESCRIBED AS TRACT TWO IN A DEED TO THE CITY OF WACO, A MUNICIPAL CORPORATION RECORDED IN VOLUME 1511, PAGE 299 OF THE DEED RECORDS OF McLENNAN COUNTY, TEXAS (D.R.M.C.T.). SAID 43.482 ACRE TRACT BEING MORE PARTICULARLY SHOWN ON THE ATTACHED LAND TITLE SURVEY DRAWING AND FURTHER DESCRIBED BY METES AND BOUNDS AS FOLLOWS:

BEGINNING AT A 1/2" IRON ROD FOUND IN THE EAST RIGHT-OF-WAY LINE OF FARM TO MARKET HIGHWAY 3400, ALSO KNOWN AS UNIVERSITY PARKS DRIVE (120' WIDE), SAME BEING THE EAST LINE OF A CALLED 0.34 ACRE RIGHT-OF-WAY TRACT DESCRIBED IN A DEED TO THE STATE OF TEXAS RECORDED IN VOLUME 1302, PAGE 869 OF THE D.R.M.C.T., IN THE NORTH MARGIN OF RADLE ROAD (NO FORMAL DEDICATION FOUND) AT THE NORTHWEST CORNER OF THE REMAINDER OF A CALLED 64.71 ACRE TRACT DESCRIBED IN A DEED TO TRANSIT MIX CONCRETE \& MATERIALS COMPANY RECORDED IN VOLUME 1771, PAGE 467 OF THE D.R.M.C.T. SAID 1/2" IRON ROD FOUND MARKING THE SOUTHWEST CORNER OF SAID 43.472 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT, FROM WHICH A $1 / 2^{\prime \prime}$ IRON ROD FOUND IN THE EAST RIGHT-OF-WAY LINE OF FARM TO MARKET HIGHWAY 3400 MARKING THE SOUTHEAST CORNER OF SAID 0.34 ACRE TRACT AND THE SOUTHWEST CORNER OF THE REMAINDER OF SAID 64.71 ACRE TRACT BEARS S $19^{\circ} 42^{\prime} 00^{\prime \prime} \mathrm{E}-8.16^{\prime}$;
 ALONG A BARBED WIRE FENCE TO A 1/2" IRON ROD FOUND MARKING THE SOUTHWEST CORNER OF A CALLED 29.75 ACRE TRACT DESCRIBED AS TRACT FIVE IN A DEED TO ALBERTO COMACHO LOREDO, D/B/A LOREDO TRUCKING RECORDED IN McLENNAN COUNTY CLERK'S DOCUMENT (M.C.C.D.) 2013000403 OF THE OFFICIAL PUBLIC RECORDS OF McLENNAN COUNTY, TEXAS (O.P.R.M.C.T.), SAME BEING THE NORTHWEST CORNER OF SAID 43.472 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT, FROM WHICH A 1/2" IRON ROD FOUND IN THE EAST RIGHT-OF-WAY LINE OF FARM TO MARKET HIGHWAY 3400 MARKING THE NORTHWEST CORNER OF SAID 29.75 ACRE TRACT BEARS N 17º $25^{\prime} 10^{\prime \prime} \mathrm{W}$ - $1437.46^{\prime}$;

THENCE N 58º34’43" E - 1129.64’ WITH THE COMMON LINE OF SAID 43.472 ACRE TRACT AND SAID 29.75 ACRE TRACT, GENERALLY ALONG A BARBED WIRE FENCE TO A 1/2" IRON ROD WITH A CAP STAMPED "WALKER PARTNERS" SET IN THE WEST LINE OF A CALLED 24.308 ACRE TRACT DESCRIBED AS TRACT ONE IN IN SAID DEED TO ALBERTO COMACHO LOREDO, D/B/A LOREDO TRUCKING FOR THE SOUTHEAST CORNER OF THE 29.75 ACRE TRACT, SAME BEING THE NORTHEAST CORNER OF THE 43.472 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT;

THENCE S $\mathbf{3 2}^{\circ}{ }^{\circ} \mathbf{1 6}^{\prime} \mathbf{5 7}{ }^{\prime \prime} \mathrm{E}$ - 447.87${ }^{\prime}$ WITH THE COMMON LINE OF SAID 43.472 ACRE TRACT AND SAID 24.308 ACRE TRACT TO A 1/2" IRON ROD WITH A CAP STAMPED "WALKER PARTNERS" SET MARKING THE SOUTHWEST CORNER OF THE 24.308 ACRE TRACT, SAME BEING THE NORTHWEST CORNER OF A CALLED 7 ACRE TRACT DESCRIBED IN A DEED TO ANDREW JAMES RECORDED IN VOLUME 454, PAGE 605 OF THE D.R.M.C.T. FOR AN ANGLE POINT OF THE 43.472 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT, FROM WHICH A DISTURBED $1 / 2^{\prime \prime}$ IRON ROD FOUND BEARS S $58^{\circ} 04^{\prime} 16^{\prime \prime} \mathrm{W}-0.91^{\prime}$, AND A $1 / 2^{\prime \prime}$ IRON ROD FOUND IN THE WEST RIGHT-OF-WAY LINE OF FARM TO MARKET HIGHWAY 434, ALSO KNOWN AS SOUTH 3RD STREET MARKING THE NORTHEAST CORNER OF THE 7 ACRE TRACT BEARS N 59²4 ${ }^{\prime} 15^{\prime \prime \prime}$ E - 1613.83';

THENCE S $33^{\circ} 01^{\prime} \mathbf{5} \mathbf{0}^{\prime \prime} \mathrm{E}$ - $\mathbf{3 9 1 . 4 2}{ }^{\prime}$ WITH THE EAST LINE OF SAID 43.472 ACRE TRACT, BEING COMMON WITH THE WEST LINE OF SAID 7 ACRE TRACT AND THE WEST LINE OF A CALLED 7.51 ACRE TRACT DESCRIBED IN A DEED TO ANDREW JAMES RECORDED IN VOLUME 455, PAGE 278 OF THE D.R.M.C.T., GENERALLY ALONG A BARBED WIRE FENCE TO A 1" IRON ROD FOUND MARKING THE SOUTHWEST CORNER OF SAID 7.51 ACRE TRACT, SAME BEING THE NORTHWEST CORNER OF A CALLED 3.7 ACRE TRACT DESCRIBED IN A DEED TO JULIAN BALDERAS AND WIFE, MARIA P. BALDERAS RECORDED IN M.C.C.D. 2001038785 OF THE O.P.R.M.C.T. FOR AN ANGLE POINT OF THE 43.472 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT;

TBPE Registration No. 8053 | TBPLS Registration No. 10032500
G:\Projects\1-03676\1 Survey\1.5 Final Copies\Field Notes\FIELD NOTE 01_43.482 AC.docx

THENCE S $\mathbf{3 4}^{\circ} \mathbf{0} \mathbf{9 0}^{\prime} \mathbf{4 7}{ }^{\prime \prime} \mathrm{E}$ - WITH THE COMMON LINE OF SAID 43.472 ACRE TRACT AND SAID 3.7 ACRE TRACT, AT 409.40’ PASS THE SOUTHWEST CORNER OF THE 3.7 ACRE TRACT, SAME BEING AN OUTSIDE CORNER OF THE ABOVE MENTIONED REMAINDER OF THE CALLED 64.71 ACRE TRANSIT MIX CONCRETE \& MATERIALS COMPANY TRACT, FROM WHICH A 1/2" IRON ROD FOUND FOR REFERENCE BEARS S $59^{\circ} 28^{\prime} 17^{\prime \prime} \mathrm{W}-0.24^{\prime}$, CONTINUING WITH THE COMMON LINE OF THE 43.472 ACRE TRACT AND THE REMAINDER OF THE 64.71 ACRE TRACT A TOTAL DISTANCE OF 597.50' TO A 1/2" IRON ROD FOUND MARKING AN INSIDE CORNER OF THE REMAINDER OF THE 64.71 ACRE FOR THE SOUTHEAST CORNER OF THE 43.472 ACRE TRACT AND OF THE HEREIN DESCRIBED TRACT, FROM WHICH A 3/8" IRON ROD IN CONCRETE BY A FENCE CORNER POST FOUND MARKING AN INSIDE CORNER OF THE REMAINDER OF THE 64.71 ACRE TRACT AT THE NORTHEAST CORNER OF THE REMAINDER OF A CALLED 54.8 ACRE TRACT DESCRIBED AS TRACT 3 IN A DEED TO BOBBY RADLE RECORDED IN M.C.C.D. 2016017103 OF THE O.P.R.M.C.T. BEARS S $34^{\circ} 17^{\prime} 21^{\prime \prime} \mathrm{E}-46.85^{\prime}$, AND A $3^{\prime \prime}$ DIAMETER METAL PIPE IN CONCRETE FOUND IN THE EAST LINE OF THE REMAINDER OF SAID 54.8 ACRE TRACT MARKING AN OUTSIDE CORNER OF THE REMAINDER OF THE 64.71 ACRE TRACT BEARS S $34^{\circ} 17^{\prime} 21^{\prime \prime} \mathrm{E}-46.85^{\prime}$ AND S $30^{\circ} 44^{\prime} 50^{\prime \prime}$ E - 69.37';
 ACRE TRACT RETURNING TO THE POINT OF BEGINNING AND CONTAINING 43.482 ACRES OF LAND AS SURVEYED BY DANA B. SPIGENER, REGISTERED PROFESSIONAL LAND SURVEYOR, NO. 4809 ON MARCH 12, 2022. BEARINGS CITED WITHIN THIS DESCRIPTION ARE BASED ON TEXAS STATE PLANE COORDINATE SYSTEM, NAD 83, TEXAS CENTRAL ZONE ACQUIRED FROM GLOBAL POSITIONING SYSTEM OBSERVATIONS.

## DanaB.Spicmer

 DANA B. SPIGENER, R.Rl.S. 4809PREPARED: MARCH 28, 2022
REVISED: APRIL 5, 2022
PROJ NO. 1-03676.00
PLAT NO. D1-0566
FIELD NOTE NO. 01_43.482 AC


MAP CHECKED: APRIL 5, 2022

## LEGAL AUTHORITY

## THE STATE OF TEXAS §

COUNTY OF McLENNAN §
I, Esmeralda Hudson, TRMC, City Secretary of the City of Waco, Texas, hereby certify that the attached is a true and correct copy of the Charter of Waco Texas as adopted at an election held on the 1st day of November, 1958, was declared adopted by the Waco City Council on the 18th day of November, and subsequently amended in accordance with the Charter Election held on the 7th day of May, 2006, and adopted by the Waco City Council by Ordinance 2006-308 on second reading on the 16th day of May, 2006.
(City Seal)


## THE STATE OF TEXAS § COUNTY OF McLENNAN §

BEFORE ME, the undersigned authority, on this day Esmeralda Hudson, City Secretary of the City of Waco, Texas, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledge to me that she executed the same for the purpose and consideration therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 25 th day of $\qquad$ A.D. 2018.

(Notary Seal)


## PART I

## CHARTER*

## Article I. Incorporation, Form of Government and Powers

Sec. 1. Incorporation.
Sec. 2. General powers.
Sec. 3. Form of government.
Sec. 4. Streets and public property.
Sec. 5. Street development and improvement.
Sec. 6. Change of boundaries and annexation of territory.
Sec. 7. Urban development, redevelopment and renewal.

## Article II. The Council

Sec. 1. City divided into districts.
Sec. 2. Number, selection and term of office.
Sec. 3. Qualifications.
Sec. 4. Vacancies.
Sec. 5. Powers of the council.
Sec. 6. Investigative body.
Sec. 7. Interference in personnel matters.
Sec. 8. Mayor and Mayor Pro Tem.
Sec. 9. City secretary.
Sec. 10. Meetings of council.
Sec. 11. Rules of procedure.
Sec. 12. Procedure to enact legislation.
Sec. 13. Publication of ordinance.
Sec. 14. Code of ordinances.
Sec. 15. Emergency powers of mayor.

## Article III. Elections

Sec. 1. General election.
Sec. 2. Regulation of elections.
Sec. 3. Filing of candidates.
Sec. 4. Canvassing election and declaring results.
*Editor's note-Printed herein is the city's Home Rule Charter adopted by the voters of the city at a special election held on November 1, 1958. The original arrangement, including section numbers and catchlines and article headings, has been retained. Amendments to the Charter have been added at the proper places and are indicated by history notes following the amended sections. All material contained within brackets [] has been added by the editors, either to clarify or correct the meaning of the text, to correct errors or to facilitate indexing or ease of reference. Obvious misspellings and punctuation errors have been corrected without notation. A uniform system of citation to state statutes has been used to conform to the Code of Ordinances.

State law references-Adoption, amendment, etc., of Home Rule Charter, V.T.C.A., Local Government Code § 9.001 et seq.; charters, Vernon's Ann. Tex. Const. art. 11, § 5.

## WACO CODE

Sec. 5. Notification and qualification of city officers.
Sec. 6. Special elections.

## Article IV. Initiative, Referendum and Recall

Sec. 1. Power of initiative.
Sec. 2. Power of referendum.
Sec. 3. Form of petitions.
Sec. 4. Filing, examination and certification of petitions.
Sec. 5. Council consideration and submission to voters.
Sec. 6. Results of elections.
Sec. 7. Power of recall.
Sec. 8. Recall election.
Sec. 9. Results of recall election.
Sec. 10. Limitation on recall.

## Article V. Administrative Organization

Sec. 1. The city manager.
Sec. 2. Powers and duties of the city manager.
Sec. 3. Administrative departments.
Sec. 4. Directors of departments.
Sec. 5. Departmental organization.
Sec. 6. City attorney.

## Article VI. Municipal Court

Sec. 1. Municipal court.
Sec. 2. Judge of the municipal court.
Sec. 3. Clerk of the municipal court.
Sec. 4. Costs, process and procedure in the municipal court.

## Article VII. Finance

Sec. 1. Department of finance.
Sec. 2. Director of finance-Powers and duties.
Sec. 3. Fiscal year.
Sec. 4. Budget preparation and adoption.
Sec. 5. Appropriations.
Sec. 6. Emergency appropriations.
Sec. 7. Borrowing to meet emergency appropriations.
Sec. 8. Borrowing in anticipation of property taxes.
Sec. 9. Depository.
Sec. 10. General obligation bonds.
Sec. 11. Revenue bonds.
Sec. 12. Sale of bonds.
Sec. 13. Purchase procedure.
Sec. 14. Independent audit.

## CHARTER

## Article VII. Taxation

Sec. 1. Department of taxation.
Sec. 2. Powers of taxation.
Secs. 3-5. Reserved.
Sec. 6. Tax liens and liability.
Sec. 7. Reserved.
Sec. 8. Arrears of taxes offset to debt against city
Sec. 9. Other rules and regulations.

## Article IX. Planning

Sec. 1
Sec. 2
Sec. 3.
Sec. 4.
Sec. 5.

Sec. 1.
Sec. 2.
Sec. 3
Sec. 4
Sec. 5
Sec. 6.

The city plan commission.
The city plan commission-Powers and duties.
City plan department.
The city plan.
Legal effect of city plan.

## Article X. Franchises and Public Utilities

Inalienability of control of public property.
Power to grant franchise.
Ordinance granting franchise.
Transfer of franchise.
Regulation of franchise.
Regulation of rates.

## Article XI. General Provisions

Sec. 1.
Sec. 2.
Sec. 3.
Sec. 4.
Sec. 5
Sec. 6.
Sec. 7
Sec. 8.
Sec. 9.
Sec. 10
Sec. 11
Sec. 12.
Sec. 13
Sec. 14
Sec. 15
Sec. 16. Non-substantive revisions and conformance with state and federal laws.
Sec. 17. Judicial notice.
Sec. 18. Construction of charter.
Sec. 19. Separability clause.

## ARTICLE I. INCORPORATION, FORM OF GOVERNMENT AND POWERS

## Section 1. Incorporation.

The inhabitants of the City of Waco, McLennan County, Texas, residing within its corporate limits as heretofore or hereafter established, are hereby constituted and shall continue to be a municipal body politic and corporate in perpetuity under the name of the "City of Waco," hereinafter referred to as the "City" with such powers, privileges, rights, duties and immunities as are herein provided.

## Section 2. General powers.

The City shall have all the power granted to cities by the Constitution and Laws of the State of Texas together with all of the implied powers necessary to carry into execution such granted powers. The City may use a corporate seal; may sue and be sued; may contract and be contracted with; may cooperate with the government of the State of Texas or any agency or any political subdivision thereof, or with the federal government or any agency thereof, to accomplish any lawful purpose for the advancement of the interest, welfare, health, morals, comfort, safety, and convenience of the City and its inhabitants; may acquire property within or without its corporate limits for any municipal purpose in fee simple, or in any lesser interest or estate, by purchase, gift, devise, lease or condemnation, and, subject to the provisions of this Charter; may sell, lease, mortgage, hold, manage, improve, and control such property as may now or hereafter be owned by it; may pass ordinances and enact such regulations as may be expedient for the maintenance of the good government, order, and peace of the City and the welfare, health, morals, comfort, safety, and convenience of its inhabitants. The powers hereby conferred upon the City shall include, but are not restricted to, the powers conferred expressly and permissively by Chapter 147, Page 307, of the Acts of the 33rd Legislature, Regular Session, enacted in 1913 pursuant to the Home Rule Amendment of the Constitution of Texas, known as the Enabling Act and including Vernon's Ann. Civ. St. art. 1175, V.T.C.A., Local Government Code $\S \S 26.021,26.041,43.021,43.142,51.072-51.078,54.004,101.021-101.023,141.004$, $211.003,211.005,211.013,214.001,214.005,214.013,214.901,215.072-215.075,217.042$, $251.001,341.003,341.903,342.011,342.012,372.041,401.002,402.002,402.017$, as now or hereafter amended, all of which are hereby adopted. In addition to the powers enumerated herein, and subject only to the limitations imposed by the State Constitution, the State laws, and this Charter, the City shall have, without the necessity of express enumeration in this Charter, each and every power which, by virtue of Article XI, Section V, of the Constitution of Texas, the people of the City are empowered by election to grant to or confer upon the City by expressly and specifically granting and enumerating the same herein. All such powers, whether expressed or implied, shall be exercised and enforced in the manner prescribed in this Charter; or when not prescribed herein, in such manner as shall be provided by ordinance of the Council.

## Section 3. Form of government.

The municipal government provided by this Charter shall be known as "Council-Manager Government." Pursuant to the provisions of and subject only to the limitations imposed by the

State Constitution, the State Laws, and this Charter, all powers of the City shall be vested in and exercised by an elective Council, hereinafter referred to as "the Council," which shall enact legislation, adopt budget, determine policies, and appoint the City Manager who shall execute the laws and administer the government of the City.

## Section 4. Streets and public property.

The City shall have exclusive dominion, control and jurisdiction in, upon, over and under the public streets, sidewalks, alleys, highways, public squares and public ways within the corporate limits of the City, and in, upon, over and under all public property of the City. With respect to each and every public street, sidewalk, alley, highway, public square, public park or other public way within the corporate limits of the City, the City shall have the power to establish, maintain, improve, alter, abandon, or vacate the same; to regulate, establish, or change the grade thereof; to control and regulate the use thereof; and to abate and remove in a summary manner any encroachment thereon.

## Section 5. Street development and improvement.

The City shail have the power to develop and improve, or cause to be developed and improved, any and all public streets, sidewalks, alleys, highways, and other public ways within the corporate limits of the City by laying out, opening, narrowing, widening, straightening, extending, lighting, and establishing building lines along the same; by purchasing, condemning, and taking property therefor; by filling, grading, raising, lowering, paving, repaving, and repairing, in a permanent manner, the same; and by constructing, reconstructing, altering, repairing, and realigning curbs, gutters, drains, sidewalks, culverts, and other appurtenances and incidentals in connection with such development and improvement authorized hereinabove, or any combination or parts thereof. The cost of such development and improvement may be paid partly or entirely by assessments levied as a lien against the property abutting thereon and against the owners thereof, and such assessments may be levied in any amounts and under any procedure not prohibited by State Law; provided, that no assessment shall be made against such land or owners in excess of the enhancement in value of such property occasioned by such improvement.

If improvements be ordered constructed in any part of any such area used or occupied by the tracks or facilities of any railway or public utility, then the City Council shall have power to assess the whole cost of improvements in such area and the added costs of improvements in areas adjacent thereto made necessary by such use or occupancy against such railway or utility, and shall have power, by ordinance, to provide for the enforcement of such assessment.

As an alternate and cumulative method of developing, improving, and paving any and all public streets, sidewalks, alleys, highways, and other public ways within its corporate limits, the City shall have the power and authority to proceed in accordance with Chapter 106, Page 489, Acts 1927, Fortieth Legislature, First Called Session, as now or hereafter amended, and same being Vernon's Ann. Civ. St. art. 1105b.

State law reference-Street improvement and assessments, Vernon's Ann. Civ. St. art. 1105 b .

## Section 6. Change of boundaries and annexation of territory.

The City Council shall have power by ordinance to fix the boundary limits of the City of Waco; and to provide for the alteration and extension of said boundary limits, the detachment of territory, and the annexation of additional territory lying adjacent to the City, with or without the consent of the territory and inhabitants annexed or detached. Upon the introduction of any ordinance annexing additional territory, such ordinance shall be published in the form in which it may be finally passed, in the official newspaper of said City at least one time, and said ordinance shall not thereafter be finally acted upon until at least thirty (30) days have elapsed after the first publication thereof, and upon the final passage of any such ordinance, the corporate limits of the City shall thereafter include the territory so annexed; and when any additional territory has been so annexed, same shall be a part of the City of Waco, and the property situated therein shall bear its pro rata part of the taxes levied by the City, and the inhabitants thereof shall be entitled to all the rights and privileges of all citizens and shall be bound by the acts and ordinances, resolutions and regulations of the City. Upon the final adoption of any ordinance detaching territory from the City, the corporate limits of the City shall be reduced by the territory so detached.

State law reference-Annexations, V.T.C.A., Local Government Code § 43.001 et seq.

## Section 7. Urban development, redevelopment and renewal.

The City shall have the power to carry out slum clearance, public housing and urban redevelopment and renewal projects. For these purposes, it may acquire land by eminent domain, may contract or cooperate with the State or Federal Governments of any agency thereof, may invest its funds and borrow or accept money.

## ARTICLE II. THE COUNCIL

## Section 1. City divided into districts.

The City shall be divided into five districts. The territory included in such districts shall be as heretofore established by ordinances of the City of Waco, and may be changed from time to time by ordinance as the interests of the City may demand, having regard to the number of qualified electors as shown by the last preceding tax roll and fixing district boundaries so that each ward shall contain, as nearly as possible, the same number of qualified electors. In the event the limits of the City are extended, annexed territory shall become a part of the district to which it adjoins until changed by the Council; and in the event any annexed tract adjoins two or more districts, the district line or lines intersecting the original City Limits shall be considered extended so that such annexed territories shall become parts of such adjoining districts until changed by the Council.
(Ord. No. 2006-308, § 1, 5-16-06)
Editor's note-Ord. No. 2006-308, § 1, adopted May 16, 2006, changed the title of section 1 from "City divided into wards" to "City divided into districts."

Editor's note-The six (6) ward at large system was declared unconstitutional in 1976 in Derrick, et al. v. Mathias, et al. (Civil Action No. W-74-CA-2 in the U.S. District Court for the Western District of Texas, Waco Division). The court ordered the adoption of a five (5) single member district and one (1) at large council member system.

## WACO CODE

## Section 2. Number, selection and term of office.

The Council shall be composed of the Mayor and five (5) Council members. Each Council member, unless sooner removed under the provisions of this Charter, shall serve for two (2) year terms, from the first meeting of the Council following the Council member's election until the first meeting of the Council following the election two (2) years later, or until the Council member's successor has been elected and duly qualified. The Mayor and Council members from Districts I and III shall be elected in even numbered years. The Council members from Districts II, IV, and V shall be elected in odd numbered years.

Editor's note-The six (6) ward at large system was declared unconstitutional in 1976 in Derrick, et al. v. Mathias, et al. (Civil Action No. W-74-CA-2 in the U.S. District Court of the Western District of Texas, Waco Division). The court ordered the adoption of a five (5) single member district and one (1) at large council member system. Districts I and III and at large member are elected in even years and districts II, IV and V are elected in odd years per the 1976 court order. In 1987, the Charter was amended to provide that the at large member was the mayor and that position is elected in even numbered years.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 3. Qualifications.

At the time of election to office, each member of the Council shall be at least twenty-one (21) years of age, shall be a citizen and qualified voter of the State of Texas and the City of Waco for the twelve (12) months immediately preceding the date of election, and, if elected from a District, a resident of the District from which elected for the six (6) months immediately preceding the day of election. No member of the Council shall hold any other office or employment under the City Government while a member of said Council, nor shall hold any paid employment under the City Government within two (2) years thereafter. A member of the Council from a district who ceases to reside within that district or a Mayor who ceases to reside in the city shall immediately forfeit his or her office.
(Res. No. 1987-134, Amend. No. 2, 11-9-87; Ord. No. 2006-308, § 1, 5-16-06)
State law references-Qualified voter, V.T.C.A., Election Code § 11.002; eligibility for public office, V.T.C.A., Election Code § 141.003.

## Section 4. Vacancies.

Vacancies in the Council except for the position of mayor arising from any cause shall be filled by a majority vote of the remaining members for the unexpired term or until the next City general election and provided the successor shall possess all qualifications required for the office. Provided also, that in all cases the said vacancy shall be filled by election at the next succeeding City general election for the remaining year of the unexpired term or for the next full term, as the case may be.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 5. Powers of the council.

All powers and authority which are expressly or impliedly conferred on or possessed by the City shall be vested in and exercised by the Council; provided, that the Council shall have no power to exercise those powers which are expressly conferred upon other City officers by this Charter.

## Section 6. Investigative body.

The Council shall have the power to inquire into the official conduct of any department, agency, office, officer or employee of the City, and for that purpose shall have the power to administer oaths, subpoena witnesses, compel the production of books, papers, and other evidence material to the inquiry. The Council shall provide by ordinance penalties for contempt in failing or refusing to obey any such subpoena or to produce any such books, papers or other evidence, and shall have the power to punish any such contempt in the manner provided by such ordinance.

State law reference-Public meetings, V.T.C.A., Government Code § 551.001 et seq.

## Section 7. Interference in personnel matters.

Neither the Council nor any of its members shall instruct or request the City Manager or any of the Manager's subordinates to appoint to or remove from office or employment any person except with respect to those offices which are to be filled by appointment by the Council under the provisions of this Charter. Except for the purpose of inquiry and investigation, the Council and its members shall deal with the administrative service of the City solely through the City Manager and shall not give orders to any of the Manager's subordinates either publicly or privately.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 8. Mayor and Mayor Pro Tem.

The Council member elected at large shall serve as the Mayor. The Mayor shall serve no more than three (3) two (2) year terms. As used in this section the word "term" shall mean the period of time from the first meeting of the Council following the Mayor's election until the first meeting of the Council following the election of the Mayor two (2) years later or any portion thereof. Vacancies created in the Mayor's position, arising from any cause, shall be filled by election at the next authorized election date for the remaining of the unexpired term or for the next full term as the cause may be. As used in this charter, except where otherwise provided, the term council or council member shall include the Mayor. At its first meeting following each regular election of Council members, the Council shall by election designate one (1) of its number as Mayor Pro Tem who shall serve in such capacity during the pleasure of the Council. The Mayor shall preside at all meetings of the Council and shall be recognized as head of the City government for all ceremonial purposes, for the purpose of receiving service of civil process, for emergency purposes and for military purposes, but shall have no regular administrative duties. The Mayor, as a member of the Council, shall be entitled to vote upon all affairs considered by the Council but shall have no veto power. The Mayor Pro Tem shall act as Mayor during the absence or disability of the Mayor and shall have power to perform every act the Mayor could perform if present.
(Res. No. 1987-134, Amend. No. 1, 11-9-87; Ord. No. 2006-308, § 1, 5-16-06)

## Section 9. City secretary.

The Council shall appoint the City Secretary for a term of four (4) years and continuing thereafter until reappointment and/or appointment of successor. The City Secretary shall keep
the records of the council and shall have such other duties and responsibilities as may be assigned by this Charter and the Council. The City Secretary shall appoint such assistants as may be authorized by the Council. The Council may enter into such written agreement as deemed appropriate. The City Secretary can be removed for cause, after hearing, by a majority vote of the council members qualified and serving.
(Res. No. 1987-134, Amend. No. 7, 11-9-87; Ord. No. 2006-308, § 1, 5-16-06)

## Section 10. Meetings of council.

There shall be regular meetings of the City Council which shall be held at such times and places as shall be prescribed by ordinance or resolution. Special meetings may be called at any time by the City Secretary upon the request of the Mayor, the City Manager, or three Council members. Notice of special meetings shall be given to all members of the Council who are not absent from the City; provided, however, that any member of the Council who did not receive notice of a special meeting may, either before or after such special meeting is held, waive such notice. It shall not be necessary to give notice to a Council member of a special meeting held at a time when such Council member is absent from the City, and it shall not be necessary for such absent Council member to waive such notice.
(Ord. No. 2006-308, § 1, 5-16-06)
State law reference-Open meetings act, V.T.C.A., Government Code § 551.001 ct seq.

## Section 11. Rules of procedure.

The Council shall by ordinance determine its own rules and order of business. A majority of the Council qualified and serving shall constitute a quorum for all meetings for the transaction of all business; but no action of the Council shall be of any force or effect unless it is adopted by the favorable votes of a majority of the Councilmembers qualified and serving unless otherwise provided by this Charter. The Council may adopt such rules, and prescribe such penalties as it may see fit to enforce the attendance of its members at all regular and called meetings of the Council or its committees. Minutes of all meetings of the Council shall be taken and recorded, and such minutes shall constitute a public record.
(Ord. No. 2006-308, § 1, 5-16-06)
State law references-Public meetings, V.T.C.A., Government Code $\$ 551.001$ et seq.; public records, V.T.C.A., Government Code § 552.001 et seq.

## Section 12. Procedure to enact legislation.

The Council shall legislate by ordinance, and the enacting clause of every ordinance shall be, "Be it Ordained by the City Council of the City of Waco." The City Attorney shall approve all ordinances adopted by the Council as to the legality thereof or shall file with the City Secretary written legal objections thereto. Evidence of approval of an ordinance by the City Attorney may be by notation on the ordinance itself or by separate paper or instrument. Every ordinance enacted by the Council shall be signed by the Mayor, Mayor Pro Tem or by two (2) Councilmembers and shall be filed with and recorded by the City Secretary. All ordinances shall be read by descriptive caption in open meeting of the Council on two (2) different days.

All ordinances, unless otherwise provided by law or by the terms of such ordinances, shall take effect immediately upon final passage thereof. The requirements for reading ordinances on two (2) different days may be dispensed with where an ordinance relating to the immediate preservation of the public peace, health, safety or welfare is adopted by the favorable vote of three-fourths ( $3 / 4$ ) of all Council members, qualified and serving, and contains a statement of the nature of the emergency.
(Res. No. 1987-134, Amend. No. 4, 11-9-87; Ord. No. 2006-308, § 1, 5-16-06)
Cross reference-Procedure for ordinance granting franchise, art. X, § 3.

## Section 13. Publication of ordinance.

Except as otherwise provided by law or this Charter, the City Secretary shall give notice of the enactment of every ordinance imposing any penalty, fine or forfeiture for any violation of any of its provisions, and of every other ordinance required by law or this Charter to be published, by causing the said ordinance, or its caption and penalty, to be published at least one (1) time within ten (10) days after final passage thereof in the official newspaper of the City. The affidavit of such publication by the publisher of such newspaper taken before any officer authorized to administer oaths and filed with the City Secretary shall be conclusive proof of the legal publication and promulgation of such ordinance in all courts. Such ordinance shall take effect ten (10) days after the date of such publication, provided that any penal ordinance passed as an emergency measure under Section 12 of this Article shall take effect immediately on its publication.

State law reference-Ordinance adoption procedure for home rule cities, V.T.C.A., Local Government Code § 52.013.

## Section 14. Code of ordinances.

The Council shall have the power to cause all general ordinances of the City to be compiled and printed in code form. Every general ordinance enacted subsequent to such codification shall be enacted as an amendment to the code. The Council shall cause all general ordinances to be codified, recodified and reprinted whenever in its discretion such is deemed desirable, or when such codification or recodification is required by law. When adopted by the Council, the printed codes of general ordinances contemplated by this section shall be in full force and effect without the necessity of such code or any part thereof being published in any newspaper. The caption, descriptive clause and other formal parts of the ordinances of the City may be omitted without affecting the validity of such ordinances when they are published as a code.

## Section 15. Emergency powers of mayor.

In addition to the powers granted pursuant to Chapter 418 of the Texas Government Code, as amended from time to time, whenever the Mayor shall deem it necessary in order to enforce the laws of the City, or to advert danger, or to protect life or property in case of riot, outbreak, calamity or public disturbance, or when the Mayor has reason to fear any serious violation of law or order, outbreak or any other danger to the City of Waco or the inhabitants thereof, the Mayor shall summon into service as a special police force, all or as many of the citizens as in
the Mayor's judgment and discretion may be necessary and proper; and such summons may be made by proclamation or orders addressed to the citizens generally, or those of any district of the City or subdivision thereof, or such summons may be by personal notification. Such summons shall be made pursuant to a proclamation by the Mayor that an emergency exists in the City of Waco. During such emergency, the police department of the City of Waco, and such special police as have been summoned by the Mayor, shall be subject to the orders of the Mayor, and shall perform such duties as the Mayor may require, and shall have the same power while on duty as the regular police of the City of Waco. The Mayor shall have authority during the continuance of such emergency to make and enforce such rules, regulations, and orders as are necessary to preserve the public health, safety, and welfare from the threatened danger. During such emergency, such rules, regulations and orders shall have the force and effect of law.

The Mayor shall have authority in case of riot or other unlawful assemblage, to order and enforce the closing of any theater, picture show, or other place of public amusement or entertainment, ballroom, barroom, or other place of resort, or public room or building, and may order the arrest of any person violating in his presence any of the penal laws of the State, or any ordinance of the City; and shall perform such other duties and possess and exercise such other power and authority as may be prescribed by law or by ordinance.
(Ord. No. 2006-308, § 1, 5-16-06)
State law reference-Emergency management, V.T.C.A., Government Code § 418.001 et seq.

## ARTICLE III. ELECTIONS*

## Section 1. General election.

The regular election of Council members to the places on the Council occupied by Council members whose texms are expiring shall be held on the second Saturday in May of each year. In every election each qualified voter shall vote for not more than one candidate for each Council place to be filled. Said election shall be ordered by the Council, and in case of its failure to order the same, the Mayor of the City shall make such order. In the case of the inability of the Council and the Mayor to act, the election may be called by the City Secretary, and in case of the City Secretary's inability to act, by the County Judge of McLennan County, Texas, and in case of the County Judge's inability to act, by the Governor of the State of Texas. The City Secretary shall give notice of such election by causing said notice to be published at least thirty (30) days previous to the day of such election in the official newspaper of the City. (Res. No. 1987-162, 12-22-87; Ord. No. 2006-308, § 1, 5-16-06)

State law references-Election dates, V.T.C.A., Election Code § 41.001; filing period, V.T.C.A., Election Code § 143.007.
*State law reference-Elections, V.T.C.A., Election Code § 1.001 et seq.

## Section 2. Regulation of elections.

All elections shall be held in accordance with the Laws of the State of Texas regulating the holding of municipal elections and in accordance with the ordinances adopted by the Council for the conduct of elections. The Council shall appoint the Election Judges and other election officials and shall provide for the compensation of all election officials in the City elections, and for all other expenses of holding such election.

## Section 3. Filing of candidates.

Any qualified person who desires to become a candidate for election to a place on the Council shall file with the City Secretary an application for their name to appear on the ballot. Such application shall clearly designate by district, the place on the Council to which the candidate seeks election and shall contain a sworn statement by the candidate that they are fully qualified under the Laws of Texas and the provisions of this Charter to hold the office they seeks.
(Ord. No. 2006-308, § 1, 5-16-06)
State law references-Candidate filing dates, V.T.C.A., Election Code § 143.007; candidate filing requirements, V.T.C.A., Election Code § 143.001 et seq.

## Section 4. Canvassing election and declaring results.

The returns of every municipal election shall be delivered forthwith by the Election Judges to the City Secretary. The Council shall canvass the returns, investigate the qualifications of the candidates, and declare the official results of the election as prescribed by state law. The qualified person receiving the highest number of votes cast for any office shall thereupon be declared by said Council elected.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 5. Notification and qualification of city officers.

It shall be the duty of the City Secretary to notify all persons elected or appointed to office of their election or appointment and all the newly elected or appointed officers may enter upon their duties. Any officer elected or appointed must qualify by taking and subscribing the oath of office within thirty (30) days; otherwise the office may be deemed vacant.
(Ord. No. 2006-308, § 1, 5-16-06)
State law reference-Oath, Vernon's Ann. Tex. Const. art. 16.

## Section 6. Special elections.

The Council may by ordinance or resolution call such special elections as are authorized by the State law and this Charter.

> (Ord. No. 2006-308, § 1, 5-16-06)

State law reference-Special elections, V.T.C.A., Election Code § 41.003.

## ARTICLE IV. INITLATIVE, REFERENDUM AND RECALL**

## Section 1. Power of initiative.

The people of the City reserve the power of direct legislation by initiative, and in the exercise of such power may propose any ordinance, except ordinances appropriating money or levying taxes, or ordinances repealing ordinances appropriating money or levying taxes, not in conflict with this Charter, the State Constitution, or the State Laws. Any initiated ordinance may be submitted to the Council by a petition signed by qualified voters of the City equal in number to at least fifteen per cent of the qualified voters of the City.

State law reference-Qualified voter, V.T.C.A., Election Code § 11.002.

## Section 2. Power of referendum.

The people reserve the power to approve or reject at the polls any legislation enacted by the Council which is subject to the initiative process under this Charter, except that ordinances authorizing the issuance of bonds (either tax bonds or revenue bonds), whether original or refunding bonds, shall only be subject to such referendum where expressly authorized by state law. Prior to or within thirty (30) days after the effective date of any ordinance which is subject to referendum a petition signed by qualified voters of the City equal in number to at least fifteen per cent of the qualified voters of the City may be filed with the City Secretary requesting that any such ordinance be either repealed or submitted to the vote of the people. When such a petition has been certified as sufficient by the City Secretary, the ordinance specified in the petition shall not go into effect, or further action thereunder shall be suspended if it shall have gone into effect, until and unless it is approved by the voters as herein provided. (Ord. No. 2006-308, § 1, 5-16-06)

State law reference-Qualified voter, V.T.C.A., Election Code § 11.002.

## Section 3. Form of petitions.

Initiative petition papers shall contain the full text of the proposed legislation in the form of an ordinance, including a descriptive caption. Referendum petition papers shall contain a sufficient description of the ordinance sought to be referred to identify it, or if the ordinance has been passed by the Council, the full text of the ordinance sought to be referred shall be included in such papers. The signatures to the initiative or referendum petitions need not be all appended to one paper. In addition to the signatures, the petition must contain the information required by state law. No signature shall be counted where there is reason to believe it is not the actual signature of the purported signer or that it is a duplication either of name or of handwriting used in any other signature on the petition, or does not contain the information required by state law. Before the signatures on any petition paper may be counted, one of the signers of such petition paper, a qualified voter, shall make oath before the City Secretary, or any other officer competent to administer oaths, that the statements made
*State law reference-Charter amendments, V.T.C.A., Local Government Code § 9.004.
therein are true, that each signature to the paper appended is the genuine signature of the person whose name purports to be signed thereto, and that such signatures were placed thereon in the affiant's presence.
(Ord. No. 2006-308, § 1, 5-16-06)
State law reference-Qualified voter, V.T.C.A., Election Code § 11.002.

## Section 4. Filing, examination and certification of petitions.

Within thirty (30) days after an initiative or referendum petition is filed, the City Secretary shall determine whether the same is properly signed by the requisite number of qualified voters. The City Secretary shall declare void any petition paper which does not have an affidavit attached thereto as required in Section 3 of this Article. In examining the petition, the Secretary shall write the letters "D. V." in red ink opposite the names of signers found not qualified. After completing examination of the petition the Secretary shall certify the result thereof to the Council at its next regular meeting. If the certificate of the City Secretary shall show an initiative or referendum petition to be insufficient, the Secretary shall notify the person filing the petition, and it may be amended within ten (10) days from the date of such notice by filing a supplementary petition upon additional papers signed and filed as provided for in the original petition. Within thirty (30) days after such amendment is filed, the Secretary shall examine the amended petition and certify as to its sufficiency. If the amended petition is then found to be insufficient no further proceedings shall be had with regard to it.

State law reference-Qualified voter, V.T.C.A., Election Code § 11.002.

## Section 5. Council consideration and submission to voters.

When the Council receives an authorized initiative petition certified by the City Secretary to be sufficient, the Council shall either:
(a) Pass the initiated ordinance without amendment within thirty (30) days after the date of the certification to the Council; or
(b) Submit said initiated ordinance without amendments to a vote of the qualified voters of the City at the next available election date; or
(c) At such election submit to a vote of the qualified voters of the City said initiated ordinance without amendment, and an alternative ordinance on the same subject proposed by the Council.
When the Council receives an authorized referendum petition certified by the City Secretary to be sufficient, the Council shall reconsider the referred ordinance, and if upon such reconsideration such ordinance is not repealed within thirty (30) days, it shall be submitted to the qualified voters of the City at the next available election date. Special elections on initiated or referred ordinances shall not be held more frequently than once each six months, and no ordinance on the same subject as an initiated ordinance which has been defeated or on the same subject as a referred ordinance which has been approved at any election may be initiated by the voters within two (2) years from the date of such election.
(Ord. No. 2006-308, § 1, 5-16-06)
State law reference-Qualified voter, V.T.C.A., Election Code § 11.002.

## Section 6. Results of elections.

Any number of ordinances may be voted on at the same election in accordance with the provisions of this Article. If a majority of the legal votes cast is in favor of an initiated ordinance, it shall thereupon be effective as an ordinance of the City. An ordinance so adopted may be repealed or amended at any time after the expiration of two (2) years by a vote of three-fourths of the Council members qualified and serving. A referred ordinance which is rejected by a majority of the legal votes cast in a referendum election shall be deemed thereupon repealed.

## Section 7. Power of recall.

The people of the City reserve the power to recall any elected officer of the City of Waco and may exercise such power by filing with the City Secretary a petition, signed by qualified voters of the City equal in number to at least thirty (30) per cent of the qualified voters of the City or district as applicable, demanding the removal of such elected officer. The petition shall be signed and verified in the manner required for an initiative petition.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 8. Recall election.

The provisions regulating examination, certification and amendment of initiative petitions shall apply to recall petitions. If the petition is certified by the City Secretary to be sufficient, the Council shall order and hold an election forthwith to determine whether such officer shall be recalled.

State law reference—Recall elections, V.T.C.A., Election Code § 41.001(b)(6).

## Section 9. Results of recall election.

If the majority of the legal votes cast at a recall election be for the recall of the officer named on the ballot, the Council shall immediately declare the office vacant and a special election for the filling of such vacancy shall be called and held forthwith, in accordance with the provisions of this Charter on elections. An officer thus removed shall not be eligible to hold office again in the City of Waco within a period of four (4) years from date of their recall.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 10. Limitation on recall.

No recall petition shall be filed against an officer within six (6) months after the person takes office, and no officer shall be subjected to more than one (1) recall election during a term of office.
(Ord. No. 2006-308, § 1, 5-16-06)

## ARTICLE V. ADMINISTRATIVE ORGANIZATION

## Section 1. The city manager.

The Council shall appoint a City Manager who shall be the chief administrative and executive officer of the City. The City Manager shall be chosen by the Council solely on the
basis of executive and administrative training, experience and ability and need not, when appointed, be a resident of the City of Waco; however, during the City Manager's tenure of office, the City Manager shall reside within the City.

The Council may appoint an Acting City Manager to serve at the pleasure of the Council during the temporary absence of the City Manager or upon the vacancy of that position.

The City Council shall have the authority in its sole discretion to enter into a contract of employment for a City Manager, either at the time of hiring or any time during the City Manager's tenure; but in no event may a contract of employment exceed four (4) years. The City Council shall always have authority to remove a City Manager for cause with due process considerations, subject to the provisions provided herein. The removal of the City Manager, subject to the provisions herein, shall be by majority yote.

No member of the Council shall, during the time for which the Council member is elected or for two (2) years thereafter, be appointed as City Manager.
(Res. No. 1987-134, Amend. No. 6, 11-9-87; Ord. No. 2006-308, § 1, 5-16-06)

## Section 2. Powers and duties of the city manager.

The City Manager shall be responsible to the Council for the proper administration of all the affairs of the City. The powers herein conferred upon the City Manager shall include, but shall not be limited by, the following:
(a) To appoint and remove any officer or employee of the City, except those officers and employees whose appointment or election is otherwise provided for by law or this Charter;
(b) To perform such other duties as may be prescribed by this Charter or required by the Council, not inconsistent with the provisions of this Charter.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 3. Administrative departments.

There shall be such administrative departments as are established by this Charter and as may be established by ordinance, all of which shall be under the control and direction of the City Manager. The Council may abolish or combine one (1) or more departments created by it, and may assign or transfer duties of any departments of the City from one (1) department to another by ordinance.

## Section 4. Directors of departments.

At the head of each department there shall be a Director who shall be appointed and who may be removed by the City Manager. Such directors shall have supervision and control over their respective departments, and may serve as chief of divisions within their respective departments. Two (2) or more departments may be headed by the same individual, and the City Manager may head one (1) or more departments.

WACO CODE

## Section 5. Departmental organization.

The work of each department shall be distributed among such divisions as may be established by ordinance. Pending passage of ordinances establishing department divisions, the City Manager may establish temporary divisions in any department.

## Section 6. City attorney.

There shall be a Department of Law, the head of which shall be the City Attorney. The City Attorney shall be a competent attorney who shall have practiced law in the State of Texas for at least five (5) years immediately preceding appointment. The City Attorney shall be the legal advisor of and attorney for all of the offices and departments of the City, and shall represent the City in all litigation and legal proceedings. The City Attorney shall draft, approve or file written legal objections to every ordinance adopted by the Council; and shall pass upon all documents, contracts and legal instruments in which the City may have an interest.

There shall be such assistant City Attorneys as may be authorized by the Council and appointed by the City Attorney, and such Assistant City Attorneys shall be authorized to act for [or] on behalf of the City Attorney.

The City Attorney shall be hired by and responsible to the City Council for a four-year term of office and continuing thereafter until reappointment or appointment of successor. The City Attorney, so appointed by the Council, may be removed for cause, after hearing, by a majority vote of the Council Members qualified and serving. A Council may enter into such written agreement as deemed appropriate.
(Res. No. 1987-134, Amend. No. 8, 11-9-87; Ord. No. 2006-308, § 1, 5-16-06)

## ARTICLE VI. MUNICIPAL COURT*

## Section 1. Municipal court.

There shall be a court known as the Municipal Court of the City of Waco, which court shall be deemed always open for the trial of causes, with such jurisdiction, powers, and duties as are given and prescribed by the Laws of the State of Texas.
(Ord. No. 2006-308, § 1, 5-16-06)
Editor's note-Ord. No. 2006-308, § 1, adopted May 16, 2006, changed the title of section 1 from "Corporation court" to "Municipal court."

## Section 2. Judge of the municipal court.

The Municipal Court shall be presided over by a magistrate who shall be known as the Judge of the Municipal Court. The Judge shall be appointed by the Council for a term of two (2) years, from June first in even years until May thirty-first two (2) years later, or for the portion of such term unexpired at the time of the appointment. The Judge shall be a competent
*State law references-Municipal court, V.T.C.A., Government Code § 29.001 et seq.; rules of municipal court, Vernon's C.C.P. art. 45.01 et seq.
attorney who at the time of appointment has practiced law for at least two (2) years and who is a resident of the City of Waco. The Judge of the Municipal Court may be removed for cause, after hearing by vote of three-fourths (3/4) of the Council qualified and serving.

In the event the Judge of the Municipal Court is temporary unable to act for any reason, the Court shall appoint a qualified attorney to act in the Judge's place. The Judge, or anyone acting in the Judge's place, shall receive such compensation as may be set by the Council.

The Council shall have the power to create and establish additional Municipal Courts, and to appoint more than one (1) Judge of each Municipal Court, whether one (1) or more, each of whom shall be a magistrate.
(Ord. No. 2006-308, § 1, 5-16-06)
Editor's note-Ord. No. 2006-308, § 1, adopted May 16, 2006, changed the title of section 2 from "Judge of the corporation court" to "Judge of the municipal court."

## Section 3. Clerk of the municipal court.

There shall be a Clerk of the Municipal Court who shall be appointed by and who shall serve at the pleasure of the Judge of the Municipal Court. The Clerk shall have the power to administer oaths and affidavits, make certificates, affix the seal of the Court thereto, and otherwise perform any and all acts necessary in issuing process of such Court and conducting the business thereof.

There shall be such deputy clerks of the Municipal Court as may be authorized by the Council and appointed by the judge of the Municipal Court, which deputy clerks shall have authority to act for and on the behalf of the Clerk of the Municipal Court.
(Ord. No. 2006-308, § 1, 5-16-06)
Editor's note-Ord. No. 2006-308, § 1, adopted May 16, 2006, changed the title of section 3 from "Clerk of the corporation court" to "Clerk of the municipal court."

State law reference-Clerk, V.T.C.A., Government Code § 29.010.

## Section 4. Costs, process and procedure in the municipal court.

The Council shall determine what costs, if any, shall be charged for proceedings in and for all processes issued by said Court.

The style of all writs issued out of the Municipal Court shall be in the name of the City of Waco.

All jurors shall be residents of said City and otherwise possess the same qualifications as jurors in the State courts, and they shall be summoned in the same manner as provided for in Justice Courts.
(Ord. No. 2006-308, § 1, 5-16-06)
Editor's note-Ord. No. 2006-308, § 1, adopted May 16, 2006, changed the title of section 4 from "Costs, process and procedure in the corporation court" to "Costs, process and procedure in the municipal court."

## ARTICLE VII. FINANCE*

## Section 1. Department of finance.

There shall be a Department of Finance, the head of which shall be the Director of Finance. The Director of Finance shall have knowledge of municipal accounting and shall have had at least three years experience in budgeting, accounting, and financial control. Said Director shall provide a bond with such surety and in such amount as the Council may require. The premiums on such bond shall be paid by the City.

## Section 2. Director of finance-Powers and duties.

The Director of Finance shall administer and supervise all financial affairs of the City and shall have such other powers and duties as the Council shall by ordinance or resolution prescribe.

## Section 3. Fiscal year.

The fiscal year of the City shall begin on the first day of each October and end on the last day of September of the succeeding year. All funds collected by the City during any fiscal year, including both current and delinquent revenues, shall belong to such fiscal year and, except for funds derived to pay interest and create a sinking fund on the bonded indebtedness of the City, may be applied to the payment of expenses incurred during such fiscal year, except as provided in this Charter. Any revenues uncollected at the end of any fiscal year, and any unencumbered funds actually on hand, shall become resources of the next succeeding fiscal year.

## Section 4. Budget preparation and adoption.

At least thirty (30) days prior to the end of each fiscal year the City Manager shall submit to the Council a proposed budget presenting a complete financial plan for the ensuing fiscal year. The budget shall be finally adopted not later than the twenty-seventh day of the last month of the fiscal year. Should the Council take no final action on or prior to such day, the budget, as submitted, shall be deemed to have been finally adopted by the Council. No budget shall be adopted or appropriations made unless the total of estimated revenues, income and funds available shall be equal to or in excess of such budget or appropriations, except as otherwise provided in this Article.

## Section 5. Appropriations.

From the effective date of the budget, the several amounts stated therein as proposed expenditures shall be and become appropriated to the several objects and purposes named therein. Except as provided in this Article no funds of the City shall be expended nor shall any obligation for the expenditure of money be incurred, except pursuant to the annual appropriation ordinance provided by this Article. At the close of each fiscal year any unencumbered balance of an appropriation shall revert to the fund from which appropriated and become
*State law reference-Finances, V.T.C.A., Local Government Code § 101.021 et seq.
available for reappropriation for the next fiscal year. The Council may transfer any unencumbered appropriation balance or portion thereof from one office, department, or agency to another, at any time. The City Manager shall have authority, without Council approval, to transfer appropriation balances from one expenditure account to another within a single office, department, or agency of the City.

## Section 6. Emergency appropriations.

At any time in any fiscal year, the Council may, pursuant to this section, make emergency appropriations to meet a pressing need for public expenditure, for other than regular or recurring requirements, to protect the public health, safety or welfare. Such appropriation shall be by ordinance adopted by the favorable votes of three-fourths of the Council members qualified and serving, and shall be made only upon recommendation of the City Manager. The total amount of all emergency appropriations made in any fiscal year shall not exceed two and one-half per centum of the tax levy for that fiscal year. Should the unappropriated and unencumbered revenues, income and available funds of the City for such fiscal year be not sufficient to meet the expenditures under the appropriation authorized by this section, thereby creating a deficit, it shall be the duty of the Council to include the amount of such deficit in its budget for the following fiscal year, and said deficit shall be paid off and discharged during the said following fiscal year.

State law references-Emergency expenditures, V.T.C.A., Local Government Code § 102.009; charter provisions prevail under certain circumstances, V.T.C.A., Local Government Code § 102.011; notice provisions, V.T.C.A., Government Code § 551.043; municipal budgets, V.T.C.A., Local Government Code § 102.001 et seq.

## Section 7. Borrowing to meet emergency appropriations.

In the absence of unappropriated available revenues or other funds to meet emergency appropriations under the provisions of the next preceding Section, the Council may by resolution authorize the borrowing of money to meet such deficit by the issuance of notes, each of which shall be designated "Emergency Note" and may be renewed from time to time, but all such notes of any such fiscal year and any renewals thereof shall mature and be payable not later than the last day of the fiscal year next succeeding the fiscal year in which the emergency appropriation was made, as provided in the last preceding Section.
State law reference-Charter provisions prevail under certain circumstances, V.T.C.A., Local Government Code § 102.011.

## Section 8. Borrowing in anticipation of property taxes.

In any fiscal year, in anticipation of the collection of the ad valorem property tax for such year, whether levied or to be levied in such year, the Council may by resolution authorize the borrowing of money, not to exceed in any fiscal year an amount equal to ten per cent of the budget for that fiscal year. Such borrowing shall be by the issuance of negotiable notes of the City, each of which shall be designated "tax anticipation note for the year 20__" (stating the

## WACO CODE

tax year). Such notes shall mature and be payable not later than the end of the fiscal year in which issued, and may be secured by the pledge of the ad valorem property taxes for such year. (Ord. No. 2006-308, § 1, 5-16-06)

## Section 9. Depository.

All moneys received by any person, department, or agency of the City for or in connection with affairs of the City shall be deposited promptly in the City depository or depositories, which shall be designated by the Council in accordance with such regulations and subject to such requirements as to security for deposits and interest thereon as may be established by ordinance. All checks, vouchers, or warrants for the withdrawal of money from the City depositories shall be signed by the Director of Finance or a deputy and countersigned by the City Manager. Provided, that the Council, under such regulations and limitations as it may prescribe, may by ordinance authorize the use of machine-imprinted facsimile signatures of said Director of Finance and City Manager on such checks, vouchers or warrants.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 10. General obligation bonds.

The City shall have the power to borrow money on the credit of the City and to issue general obligation bonds for permanent public improvements or for any other public purpose not prohibited by the Constitution and laws of the State of Texas, and to issue refunding bonds to refund outstanding bonds of the City previously issued. All such bonds shall be issued in conformity with the laws of the State of Texas.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 11. Revenue bonds.

The City shall have power to borrow money for the purpose of constructing, purchasing, improving, extending or repairing of public utilities, recreational facilities or any other self-liquidating municipal function not prohibited by the Constitution and laws of the State of Texas, and to issue revenue bonds to evidence the obligation created thereby. Such bonds shall be a charge upon and payable solely from the properties, or interest therein, pledged, or the income therefrom, or both, and shall never be a debt of the City. All such bonds shall be issued in conformity with the laws of the State of Texas.
(Ord. No. 2006-308, \& 1, 5-16-06)
State law reference-Bonds, Vernon's Ann. Civ. St., art. 701 et seq.

## Section 12. Sale of bonds.

No bond (other than refunding bonds issued to refund and in exchange for previously issued outstanding bonds) issued by the City shall be sold for less than par value and accrued interest.

All bonds of the City having been issued and sold in accordance with the terms of this section, and having been delivered to the purchasers thereof, shall thereafter be incontestable, and all bonds issued to refund and in exchange for outstanding bonds previously issued shall, after said exchange, be incontestable.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 13. Purchase procedure.

All purchases made and contracts executed by the City shall be pursuant to a requisition from the head of the office, department or agency whose appropriation will be charged; and no contract or order shall be binding upon the City, unless and until the Director of Finance certifies that there is to the credit of such office, department or agency a sufficient unencumbered appropriation and allotment balance to pay for the supplies, materials, equipment or contractual services for which the contract or order is to be issued. Before the City makes any purchase or contract for supplies, materials, equipment or contractual services, opportunity shall be given for competition. The Council may, by ordinance, confer upon the city manager general authority to contract for expenditures for budgeted items and also emergency expenditures without further approval of the Council. The Council may also determine by ordinance the dollar amount above which contracts or purchases shall be let to the lowest and best responsible bidder, after there has been opportunity for competitive bidding as provided for by law or ordinance; provided, however, that said amount shall not be greater than the maximum amount allowed by state law, and also provided that the council, or the city manager, if authorized to contract for the City, shall have the right to reject any and all bids. Contracts for personal or professional services may be competitively bid if permitted by state law.
(Res. No. 1987-134, Amend. No. 3, 11-9-87; Ord. No. 2006-308, § 1, 5-16-06)
State law reference-Purchasing and contracting, V.T.C.A., Local Government Code § 252.001 et seq.

## Section 14. Independent audit.

At the close of each fiscal year, and at such other times as it may be deemed necessary, the Council shall cause an independent audit to be made of all accounts of the City by a certified public accountant. The certified public accountant so selected shall have no personal interest, directly or indirectly, in the financial affairs of the City or any of its officers. Upon completion of the audit, the results thereof shall be published immediately in the official newspaper of the City of Waco and copies placed on file in the City Secretary's office as a public record.

State law reference-Audits, V.T.C.A., Local Government Code § 103.001 et seq.

## ARTICLE VIII. TAXATION*

## Section 1. Department of taxation.

There shall be a Department of Taxation, the head of which shall be the City Tax Assessor and Collector. The Department Head shall be responsible for the assessment and collection of all taxes levied by the City of Waco.
(Ord. No. 2006-308, § 1, 5-16-06)
State law reference-Tax assessor/collector, V.T.C.A., Tax Code § 6.22 et seq.

## Section 2. Powers of taxation.

The City shall have the power to levy, assess, and collect taxes of every character and type not prohibited by the Constitution and Laws of the State of Texas, and for any municipal purpose. Provided that the City ad valorem property tax rate for any one year shall never exceed one dollar and eighty-five cents (\$1.85) per one hundred dollars' assessed value of taxable property.

State law reference-Taxation authority, Vernon's Ann. Tex. Const. art. 11, § 5, art. 8, V.T.C.A., Tax Code $\S 1.01$ et seq.

## Sections 3-5. Reserved.

Editor's note-Ord. No. 2006-308, § 1, adopted May 16, 2006, repealed sections 3-5 in their entirety, which pertained to assessment of property for tax purposes, board of equalization, and tax payments, respectively, and derived from original codification.

## Section 6. Tax liens and liability.

All property, real, personal and mixed, situated in the City of Waco on the first day of January of each year shall stand charged with a special lien in favor of the City from said date for the taxes due thereon. The liens provided herein shall be superior to all other liens except liens except as provided by law, regardless of when such other liens were created.
(Ord. No. 2006-308, § 1, 5-16-06)
State law reference-Tax liens, V.T.C.A., Tax Code $\$ \S 32.01$ et seq., 113.001 et seq.

## Section 7. Reserved.

Editor's note-Ord. No. 2006-308, § 1, adopted May 16, 2006, repealed section 7 in its entirety, which pertained to joint interest in property and derived from original codification.

## Section 8. Arrears of taxes offset to debt against city.

The City shall be entitled to counterclaim and offset against any debt, claim, demand or account owed by the City to any person, firm or corporation who is in arrears to the City of

[^1]Waco for taxes, in the amount of taxes so in arrears, and no assignment or transfer of such debt, claim, demand or account after the said taxes are due, shall affect the right of the City to so offset the said taxes against the same.

## Section 9. Other rules and regulations.

Except as otherwise provided by law or this Charter, the Council shall have the power to provide by ordinance for the assessment and collection of all taxes, and to make such rules, regulations and mode of procedure to enforce the collection by and payment to the City Tax Assessor and Collector as it may deem expedient, and may provide such penalties for the failure to pay such taxes as it may deem expedient.

## ARTICLE IX. PLANNING*

## Section 1. The city plan commission.

There shall be a City Plan Commission which shall consist of not less than nine nor more than fifteen citizens of the City of Waco, and such other ex officio members as are provided herein. The members of said Commission, except the ex officio members, shall be appointed by the Council for a term of three years. Vacancies will be filled for the unexpired term by the Council. The ex officio members shall include the City Manager, the Chair of the Board of Adjustment, the Director of Public Works, and such other ex officio members as the Council shall by ordinance or resolution provide. Ex officio members shall participate in the work of the Commission, but shall not have a vote in its official actions.

The Commission shall elect a chair from among its appointed members. A majority of the appointed members shall constitute a quorum.

The Council may provide by ordinance for the appointment of subcommittees from the membership of the Commission who shall have the power to hold hearings, make recommendations to the Commission, and otherwise carry on the work of the Commission. In the absence of such provision the Commission may authorize and empower such subcommittees. The final action taken by the Commission with regard to any matter before it, however, shall be by the Commission as a whole.

The Commission shall keep minutes of its proceedings, which shall be a public record. (Ord. No. 2006-308, § 1, 5-16-06)

State law reference-Planning commission, V.T.C.A., Local Government Code § 371.001 et seq.

[^2]
## Section 2. The city plan commission-Powers and duties.

The City Plan Commission shall:
(1) Recommend a City Plan for the physical development of the City and amendments thereto;
(2) Recommend to the Council approval or disapproval of proposed changes in the zoning ordinance;
(3) Exercise control over platting or subdividing land within the corporate limits of the City and outside said corporate limits to the extent authorized by law.

The Commission shall be responsible to and act as an advisory body to the Council and shall have and perform such additional duties as may be prescribed by ordinance.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 3. City plan department.

There shall be a City Plan Department, to be headed by the Director of Planning. The Director of Planning shall serve as the regular technical adviser of the City Plan Commission, and shall have such other duties and responsibilities as the Council may establish.

## Section 4. The city plan.

The City Plan for the physical development of the City of Waco shall contain the Commission's recommendations for the growth, development and beautification of the City. Before recommending to the Council a City Plan, or any part thereof, or any amendment thereto, the Commission shall hold a public hearing thereon, after having given notice of such hearing by causing such notice to be published one time at least fifteen days before such hearing in the official newspaper of the City. Acopy of the City Plan, or any part thereof, shall be forwarded to the city manager who shall thereupon submit such plan, or part thereof, to the Council with the city manager's recommendations thereon. The Council may adopt the plan or partial plan so submitted as a whole or in parts. If such plan or part thereof should be rejected by the Council, the City Plan Commission may modify such plan, or part thereof, and again forward it to the city manager for submission to the Council. All amendments to the City Plan shall be recommended by the Plan Commission and submitted in the same manner as that outlined above to the Council for approval, and the Council may adopt or reject the same in the same manner as above specified. All recommendations to the City Council from any City Department affecting the City Plan must be accompanied by a recommendation from the Commission.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 5. Legal effect of city plan.

Upon adoption of the City Plan by the Council, no subdivision, street, park nor any public way, ground or space, public building or structure and no public utility, whether publicly or privately owned, which is in conflict with the City Plan, shall be authorized, purchased or
constructed by the City until and unless the location, extent and character thereof shall have been submitted to and approved or disapproved by the Commission. In case of disapproval, the Commission shall communicate its reasons to the Council in writing. The Council shall have the power to overrule such disapproval and upon such overruling the Council or the appropriate office, department or agency shall have the power to proceed. The failure of the Commission to act within thirty days after the date of official submission to the Commission shall be deemed approval, unless a longer period be granted by the Council or the submitting official. The widening, narrowing, relocating, vacating or change in the use of any street, river or watercourse, or other public way or ground or the sale of any public building or real property shall be subject to similar submission and approval, and failure to approve may be similarly overruled by the Council. Provided, that a certificate by the city manager executed under the seal of the City that a public project or improvement is not in conflict with the City Plan, or that the location, character and extent of such project or improvement have been approved by the City Plan Commission, or if such project or improvement has been disapproved by the City Plan Commission that the Council has overruled such disapproval, shall be conclusive as to such facts. Provided, that the sale of any land or building owned or held by the City, not for public use and not included in the City Plan as City land for public use, shall not be subject to the provisions of this Section; and provided further, that a certificate by the city manager as to such facts, shall be conclusive as to any purchaser of such land or building from the City. (Ord. No. 2006-308, § 1, 5-16-06)

## ARTICLE X. FRANCHISES AND PUBLIC UTLLITIES*:

## Section 1. Inalienability of control of public property.

The right of control and use of the public streets, highways, sidewalks, alleys, parks, public squares, and public places of the City is hereby declared to be inalienable by the City, except by ordinances not in conflict with the provisions of this Charter. No act or omission by the Council or any officer or agent of the City shall be construed to grant, renew, extend, or amend, expressly or by estoppel or implication any right, franchise or easement affecting said public streets, highways, sidewalks, alleys, parks, public squares, public places and other real property, except as provided in this Charter.

## Section 2. Power to grant franchise.

The Council shall have the power by ordinance to grant, renew, and extend all franchises of all public utilities of every character operating within the City, and, with consent of the franchise holder, to amend the same. Provided, however, that no franchise shall be granted for an indeterminate term, and that no franchise shall be granted for a term of more than 25 years.

[^3]
## WACO CODE

## Section 3. Ordinance granting franchise.

Every ordinance granting, renewing, extending, or amending a public utility franchise shall be read at three regular meetings of the Council, and shall not be finally acted upon until 30 days after the first reading thereof. Within five days following each of the three readings of the ordinance, the full text thereof shall be published one time in the official newspaper of the City, and the expense of such publication shall be borne by the prospective franchise holder.

## Section 4. Transfer of franchise.

No public utility franchise shall be transferred by the holder thereof except with the approval of the Council expressed by ordinance.

## Section 5. Regulation of franchise.

Every grant, renewal, extension, or amendment of a public utility franchise, whether so provided in the ordinance or not, shall be subject to the right of the Council:
(1) To forfeit any such franchise by ordinance at any time for failure of the holder thereof to comply with the terms of the franchise. Such power shall be exercised only after written notice to the franchise holder stating wherein the franchise holder has failed to comply with the terms of the franchise and setting a reasonable time for the correction of such failure, and shall be exercised only after hearing and after such reasonable time has expired.
(2) To impose reasonable regulations to insure safe, efficient and continuous service to the public.
(3) To require such expansion, extension, enlargement and improvements of plans and facilities as are necessary to provide adequate service to the public.
(4) To require every franchise holder to furnish to the City, without cost to the City, full information regarding the location, character, size, length and terminals of all facilities of such franchise holder in, over and under the streets, alleys, and other public property of the City; and to regulate and control the location, relocation, and removal of such facilities.
(5) To collect from every public utility operating in the City such proportion of the expense of excavating, grading, paving, repaving, constructing, reconstructing, draining, repairing, maintaining, lighting, sweeping, and sprinkling the streets, alleys, bridges, culverts, viaducts, and other public places of the City as represents the increased cost of such operations resulting from the occupancy of such public places by such public utility, and such proportion of the costs of such operations as results from the damage to or disturbance of such public places caused by such public utility; or to compel such public utility to perform, at its own expense, such operations as above listed which are made necessary by the occupancy of such public places by such utility or by damage to or disturbance of such public places caused by such public utility.
(6) To require every franchise holder to allow other public utilities to use its poles and other facilities, including bridges and viaducts, whenever in the judgment of the Council such use shall be in the public interest, provided that in such event a reasonable rental shall be paid such owner of facilities for such use. Provided further, that inability of such public utilities to agree upon rentals for such facilities shall not be an excuse for failure to comply with such requirements by the Council.
(7) (a) To require the keeping of accounts in such form as will accurately reflect the value of the property of each franchise holder which is used and useful in rendering its service to the public and the expenses, receipts and profits of all kinds of such franchise holder.
(b) To examine and audit at any time during business hours the accounts and other records of any franchise holder.
(c) To require reports on the operations of the utility, which shall be in such form and contain such information as the Council shall prescribe.

## Section 6. Regulation of rates.

The Council shall have full power after notice and hearing to regulate by ordinance the rates, charges and fares of every public utility franchise holder operating in the City, provided that no such ordinance shall be passed as an emergency measure. Every franchise holder who shall request an increase in rates, charges, or fares, shall have, at the hearing of the Council called to consider such request, the burden of establishing by clear, competent and convincing evidence, the value of its investment properly allocable to service in the City, and the amount and character of its expenses and revenues connected with the rendering of such service. If, upon such hearing, the Council is not satisfied with the sufficiency of the evidence so furnished, it shall be entitled to call upon such public utility for the furnishing of additional evidence at a subsequent date, to which said hearing may be adjourned. If at the conclusion of said adjourned hearing, the Council is still not satisfied with the sufficiency of the evidence furnished by said utility, the Council shall have the right to select and employ, then and later, rate consultants, auditors and attorneys to conduct investigations, present evidence, advise the Council, and conduct litigation on such requested increase in rates, charges or fares; and said utility shall reimburse the City for its reasonable and necessary expense so incurred. Such rate consultants, auditors and attorneys shall be qualified, competent, and of good standing in their professions. No public utility franchise holder shall institute any legal action to contest any rate, charge or fare fixed by the Council until such franchise holder has filed a motion for rehearing with the Council specifically setting out each ground of its complaint against the rate, charge or fare fixed by the Council, and until the Council shall have acted upon such motion. Such motion shall be deemed overruled unless acted upon by the Council within a reasonable time, not to exceed ninety days from the filing of such motion for rehearing; provided, that the Council may by resolution extend such time limit for acting on said motion for rehearing from ninety days to one hundred eighty days.

State law reference-Authority to regulate certain utilities, Vernon's Ann. Civ. St. art. 1446c, § 17.

## WACO CODE

## ARTICLE XI. GENERAL PROVISIONS

## Section 1. Reserved.

Editor's note-Ord. No. 2006-308, § 1, adopted May 16, 2006, repealed section 1 in its entirety, which pertained to interim government, and derived from original codification.

## Section 2. Continuation of government.

Any ordinance in effect at the time this Charter is adopted, and not otherwise in conflict with this Charter, which refers to some office or employment of the City of Waco which ceases to exist under this Charter, shall continue in force and the powers and duties therein prescribed shall be the powers and duties of the office or employment which, under this Charter, succeeds to the same general powers and duties of such office or employment under the previous charter. When the term "Board of Commissioners" appears in any such ordinance it shall be construed as "The Council" after the effective date of this Charter.

## Section 3. Effect of charter on existing law.

All ordinances, resolutions, rules and regulations in force in the City of Waco on the effective date of this Charter, and not in conflict with this Charter, shall remain in force until altered, amended or repealed by the Council. All taxes, assessments, liens, incumbrances and demands, of or against the City, fixed or established before such date, or for the fixing or establishing of which proceedings have begun at such date, shall be valid when properly fixed or established either under the law in force at the time of the beginning of such proceedings or under the law after the adoption of this Charter.

## Section 4. Official oath.

All officers of the City of Waco shall, before entering upon the duties of their respective offices, take and subscribe the official oath prescribed in the Constitution of the State of Texas.

State law reference-Oath, Vernon's Ann. Tex. Const. art. 16, § 1.

## Section 5. Public records.

All public records of every office, department, or agency of the City shall be open to inspection by any citizen at all reasonable times, provided that police records and vital statistics records, and any other records closed to the public by law, shall not be considered public records for the purpose of this Section.

State law references-Public records, V.T.C.A., Government Code § 552.001 et seq.; local government records, V.T.C.A., Local Government Code § 201.001 et seq.

## Section 6. Official newspaper.

The Council shall have power to contract annually with, and by ordinance or resolution designate, a public newspaper of general circulation in the City as the official organ thereof
and to continue as such until another is designated, and shall cause to be published therein, all ordinances, notices and other matter required by this Charter, by the ordinances of the City, of [or] by the Constitution or laws of the State of Texas to be published.
(Ord. No. 2006-308, § 1, 5-16-06)

## Section 7. Notice of claim.

The City of Waco shall not be held responsible on account of any claim for damages to any person or property unless the person making such complaint or claiming such damages shall, within thirty days after the time at which it is claimed such damages were inflicted upon such person or property, file with the City Secretary, a true statement under oath, as to the nature and character of such damages or injuries, the extent of the same, and the place where same happened, the circumstances under which happened, the conditions causing same, with a detailed statement of each item of damages and the amount thereof, and if it be for personal injuries, giving a list of the witnesses, if any known to affiants, who witnessed such accident.

State law reference-Notice of claim, V.T.C.A., Civil Practice and Remedies Code § 101.101.

## Section 8. Assignment, execution, and garnishment.

The property, real and personal, belonging to the City shall not be liable for sale or appropriation under any writ of execution. The funds belonging to the City, in the hands of any person, firm, or corporation, shall not be liable to garnishment, attachment, or sequestration; nor shall the City be liable to garnishment on account of any debt it may owe or funds or property it may have on hand or owing to any person. Neither the City nor any of its officers or agents shall be required to answer any such writ of garnishment on any account whatever. The City shall not be obligated to recognize any assignment of wages or funds by its employees, agents or contractors.

State law reference-Garnishment, V.T.C.A., Local Government Code § 101.023.

## Section 9. Security or bond not required.

It shall not be necessary in any action, suit or proceedings in which the City shall be a party, for any bond, undertaking or security to be executed in behalf of the City; but all actions, suits and proceedings, shall be conducted in the same manner as if such bond, undertaking or security had been given. The City shall have all remedies of appeal provided by law to all courts in this State without bond or security of any kind. For all the purposes of such actions, suits, proceedings, and appeals, the City shall be liable in the same manner, and to the same extent, as if the bond, undertaking or security in ordinary cases had been given and executed.

## Section 10. Remission of fines and penalties.

The City Council shall have power to remit in whole or in part, on such conditions as it may deem proper, by a vote of three-fourths of the Council members qualified and serving, any fine or penalty belonging to the City which may be imposed or incurred under any penal ordinance of the City.

## WACO CODE

## Section 11. Personal interest in city contracts.

No member of the City Council, or other officer or employee of the City of Waco shall be directly or indirectly interested in any work, business or contract, the expense, price or consideration of which is paid from the City Treasury, or by an assessment levied by an ordinance or resolution of the City Council, nor be the surety on the official bond of any officer of the City, or for any person having a contract, work or business with said City for the performance of which security may be required, except on behalf of the City as an officer or employee. Any wilfull violation of this section shall constitute malfeasance in office, and any officer or employee guilty thereof shall be subject to removal from his office or position. Any violation of this section, with the knowledge, express or implied, of the person or corporation contracting with the City shall render the contract involved voidable by the Council.
(Ord. No. 2006-308, § 1, 5-16-06)
State law reference-Conflicts of interest of officers and employees, V.T.C.A., Local Government Code § 171.001 et seq.

## Section 12. Nepotism.

No person related within the fourth degree by affinity or consanguinity to the Mayor, any member of the City Council, or the city manager shall be appointed to any paid office, position, clerkship, or other service of the City. This prohibition shall not apply, however, to any person who shall have been employed by the City prior to and at the time of the election of the Mayor or Councilmember, or appointment of the city manager, so related thereto.
(Ord. No. 2006-308, § 1, 5-16-06)
State law reference-Nepotism, V.T.C.A., Government Code § 573.041 et seq.

## Section 13. Residence requirements.

Any officer or City Council appointed department head appointed after the effective date of this Charter to any office or employment under the City Government shall before entering upon employment or term of office be or become a resident of the City of Waco, and shall remain a resident of the City of Waco so long as they shall hold such office or employment. This Section shall not apply to independent contractors with the City.
(Ord. No. 2006-308, § 1, 5-16-06)
State law reference--Residency requirement, V.T.C.A., Local Government Code § 150.021.

## Section 14. Health, life and accident insurance for city employees.

The City Council shall have the power, exercisable in its discretion, and subject to such limitations and regulations as it shall deem proper to create, operate, amend, and contract for an insurance plan covering health, life and accident insurance, or any of them, for any or all City employees, and to pay the premiums therefor.

## Section 15. Pensions for retiring policemen and firemen.

Any policeman, fireman or fire alarm operator who was employed by the City prior to September 12, 1950, and the hereinafter named dependents of such policeman, fireman or fire
alarm operator, shall be entitled to the benefits of this Section. Any such policeman, fireman or fire alarm operator who has been continuously on the payroll of the City for twenty-five (25) years or more, who shall retire or be dropped therefrom, shall be retired by the Council on pension pay equal to one-half $(1 / 2)$ of the salary drawn by him per month at the time of his retirement. The Council shall provide by ordinance for the payment of a sum monthly to firemen, policemen and fire alarm operators who may be disabled while in their performance of their duties an amount equal to one-half ( $1 / 2$ ) of their salary. The Council shall also provide by ordinance for the payment to the surviving widows of such firemen, policemen and fire alarm operators who may receive injuries while in the performance of their duty, resulting in death within six (6) months of such injury, of an amount payable monthly equal to one-half ( $1 / 2$ ) of the payment per month received by such party injured, provided that payment shall be made to the surviving widow all her life, or until she shall marry again, or to the minor children until they shall become of age, as said Council may deem advisable. No fireman, policeman or fire alarm operator who was employed by the City after September 12, 1950, or any dependent of such policeman, fireman or fire alarm operator, shall be entitled to the benefits of this Section. The City Council may, by ordinance provide increases in pension benefits for police officers, firefighters and fire alarm operators and their respective dependents but, in no event, greater than other City employees' benefits.
(Res. No. 1987-134, Amend. No. 5, 11-9-87; Ord. No. 2006-308, § 1, 5-16-06)

## Section 16. Non-substantive revisions and Conformance with State and Federal laws.

The City Council may, without approval of the voters, adopt ordinances that renumber; revise titles; reorder; rearrange; correct errors in spelling; grammar; cross-references; punctuations; revise language to reflect modern usage and style and similar non-substantive revisions.

The City Council may, without approval of the voters, adopt ordinances that conform the language of the Charter to current State and Federal laws.
(Ord. No. 2006-308, § 1, 5-16-06)
Editor's note-Ord. No. 2006-308, § 1, adopted May 16, 2006, amended section 16 in its entirety to read as herein set out. Formerly, section 16 pertained to rearrangement and renumbering, and derived from original codification.

## Section 17. Judicial notice.

This Charter shall be deemed a public act, and shall have the force and effect of a general law, may be read in evidence without pleading or proof, and judicial notice shall be taken thereof in all courts and places without further proof.

## Section 18. Construction of charter.

This Charter shall not be construed as a mere grant of enumerated powers, but shall be construed as a general grant of power and as a limitation of power on the government of the City of Waco in the same manner as the Constitution of Texas is construed as a limitation on
the powers of the Legislature. Except where expressly prohibited by this Charter, each and every power under Article XI, Section 5, of the Constitution of Texas, which it would be competent for the people of the City of Waco to grant expressly to the City, shall be construed to be granted to the City by this Charter.

## Section 19. Separability clause.

If any Section or part of a Section of this Charter is held to be invalid or unconstitutional by a court of competent jurisdiction, such invalidity shall not invalidate or impair the validity, force, or effect of any other Section or part of a Section of this Charter.

I, Patricia W. Ervin, City Secretary of the City of Waco, hereby certify that the foregoing is a true and correct copy of the Charter of the City of Waco as adopted at an election held on the 1st day of November, 1958, and said Charter was declared adopted by the governing body of the City of Waco on the 1.8th day of November, 1958.

Witness my hand and seal of said City this the 1st day of October, A. D., 2002.
/s/ Patricia W. Ervin

## EVIDENCE OF COMPETANCY

## EVIDENCE OF COMPEIENCY (30 TAC §330.957(e))

## City of Waco

The applicant, the City of Waco, currently owns and operates a Type I MSW Landfill, TCEQ Permit No. MSW-948A (Site 948A). This site was initially permitted under MSW Permit No. 948 on July 22, 1977, and subsequently a permit amendment was approved on September 21, 1987. While Site 948A is the only landfill that the City has operated within the last 10 years, the City previously operated the following MSW landfills, which have been closed in accordance with TCEQ requirements:

- Closed City of Waco Landfill, Permit No. MSW-1419 issued on September 3 1981, located on FM 3400 southeast of Waco; stopped accepting waste on June 17, 1986.
- Closed City of Waco Landfill, Permit No. MSW-1039 issued on July 22, 1977, located on FM 3400 southeast of Waco; stopped receiving waste on June 24, 1983.

The competency of the City of Waco to manage the closed landfill (Permit No. MSW-1039) is evidenced by the City's operating history over 20 years of operating Site 948A and prior closed sites in previous periods. The City of Waco has no financial interest in any solid waste facilities in any other states, territories, or countries.

As with MSW Permit No. 948A, the closed landfill and the transfer station at MSW Permit No. 1039 will be managed within the City's Solid Waste Department. Key personnel include the Director of Solid Waste and Landfill Manager both of which have experience in operation and maintenance of MSW landfills and transfer stations and at least one of which maintain a TCEQ MSW Class "A" license.

## APPPOINTMENT

## NOTICE OF APPOINTMENT <br> Engineers Appointment

Jon Niermann
Chairman
Texas Commission on Environmental Quality
P.O. Box 13087

Austin, Texas 78711-3087

## Dear Mr. Niermann:

This is to advise the TCEQ that the City of Waco has duly appointed SCS Engineers as consulting and design engineers for the purpose of submitting engineering reports and planning material for a Registration Application for the City of Waco Transfer Station located on South University Parks Drive at the site of the closed landfill MSW Permit No. 1039. SCS Engineers is an engineering firm employing professional engineers in good standing in accordance with State statutes, and the firm has experience in the design and construction of similar facilities. Mr. Sandeep Saraf, P.E., Senior Project Manager with SCS Engineers, is the engineer of record for this application.

The City of Waco hereby herewith authorizes TCEQ to review and comment on such reports, planning material, and data on this project as SCS Engineers may submit to you.

By: City of Waco

[^4]
## FIGURES











## APPENDIX I/II-A <br> REGISTRATION RELATED CORRESPONDENCE

## APPENDIX I/II-A. 1

## HOTCOG CORRESPODENCE

Ms. Falen Bohannon, Coordinator<br>Environmental and Economic Development Heart of Texas Council of Governments<br>1514 S. New Road<br>Waco, Texas 76711

Re: Regional Solid Waste Conformance Review<br>City of Waco<br>TCEQ Permit Application for a Transfer Station<br>McLennan County, Texas

Dear Ms. Bohannon:
SCS Engineers (SCS) is preparing a TCEQ permit application on behalf of the City of Waco (City) for a municipal solid waste transfer station to be located on S. University Parks Drive, 0.1 mile north of Radle Rd. The approximate coordinates for the transfer station facility entrance are approximately $31^{\circ} 29^{\prime} 46.6^{\prime \prime}$ latitude and $97^{\circ} 4^{\prime} 56.6^{\prime \prime}$ W longitude. We have included maps that illustrate the proposed site location and boundary (see attached).

TCEQ regulation Title 30 Texas Administration Code (TAC) §330.61(p) requires evidence of coordination with the Regional Council of Government (Heart of Texas Council of Governments [HOTCOG]). The purpose of this letter is to inform HOTCOG of this proposed transfer station, and to demonstrate that this facility complies with the regional solid waste plan. As a part of this coordination with the HOTCOG, the City is requesting a regional conformance review for the above referenced facility. The following contact information is related to the transfer station permit application:
a. Applicant's Representative:

Kody Petillo, Director of Solid Waste
City of Waco
P.O. Box 2570

Waco, Texas 76702
Phone No. (254) 750-6627
KodyP@wacotx.gov
b. Applicant's Engineer

Sandeep Saraf, P.E., Senior Project Manager
SCS Engineers
1901 Central Drive, Suite 550
Bedford, Texas 76021
(407) 923-7013
ssaraf@scsengineers.com

## c. TCEQ staff person regarding review correspondence

## Ms. Megan Henson, Manager

MSW Permits Section, Waste Permits Division
Texas Commission on Environmental Quality
12100 Park 35 Circle
Austin, Texas 78753
(512) 239 -6616
megan.henson@tceq.texas.gov
Attachments to this letter are listed at the end of this letter.
Based on our review of the HOTCOG's Regional Solid Waste Management Plan (Plan), we find the information provided in the attached evaluation form substantiates conformance with this Plan. The following summarizes how the proposed facility complies with the overall goals and objectives of the solid waste management plan:

- Encouraging the establishment and expansion of transfer stations and citizens' collection stations in rural or underserved areas.
- This proposed facility will aid in reducing incidents of illegal dumping. In conjunction with hauling operations using this facility, this transfer station will assist in meeting the solid waste disposal needs of surrounding communities in McLennan County. This transfer station will provide an additional means to expand solid waste management opportunities.

In view of the above, it is our opinion the City's transfer station complies with the regional solid waste management plan. On the behalf of the City, we would appreciate your expediting the review to confirm conformance with the regional solid waste plan. If you have any questions or need additional information, please contact Sandeep Saraf at (407) 923-7013 or e-mail at ssaraf@scsengineers.com.

Sincerely,


Jeff Arrington, P.E.
Project Manager
SOS ENGINEERS


Sandeep Saraf P.E. Senior Project Manager
SSS ENGINEERS

TBPE Registration No. F-3407
Att.: Parts I/II of the Permit App. for the City of Waco Transfer Station Facility in McLennan County
cc: Mr. Kody Petillo, Director of Solid Waste, City of Waco
Mr. Ryan Kuntz, P.E., SCS Engineers

## APPENDIX I/II-A. 2

## ARCHAELOGICAL/HISTORICAL QUALITY REVIEW CORRESPONDENCE

October 13, 2023
SCS Project Number 16222063.00
Mr. Mark Wolfe
State Historical Preservation Officer
Texas Historical Commission
P.O. Box 12276

Austin, Texas 78711-2276

Re: Archaeological/Historical Review City of Waco<br>TCEQ Permit Application for a Transfer Station on a 43.5-acre Site McLennan County, Texas

Dear Mr. Wolfe:
SCS Engineers (SCS) is preparing a TCEQ permit application on behalf of the City of Waco (City) for a municipal solid waste transfer station on a closed landfill property. Being a proposed municipal waste transfer station, the undertaking must comply with 30 TAC §330.61(o) of the rules of the Texas Commission on Environmental Quality (TCEQ). The TCEQ requires compliance with the regulations of the Antiquities Code of Texas (ACT) for its permitted projects, even if they are located on privatelyowned land. On behalf of the City, SCS has prepared this initial consultation with your office regarding the proposed undertaking in compliance with the ACT.

## PROJECT DESCRIPTION

The undertaking consists of a municipal solid waste transfer station that will be permitted by the TCEQ, then constructed on a 43.5 -acre parcel located approximately 0.1 miles north of intersection of South University Parks Drive and Radle Road in McLennan County. It can be found on the US Geologic Service (USGS) 7.5-minute East Waco, Texas topographic quadrangle map. Within the project area is a closed landfill approximately 37.3 acres in size, which was closed in 1983. Maps of the Project Area are enclosed for your review.

## DATABASE REVIEW

Background research conducted via the Texas Historical Commission's (THC's) Texas Archeological Sites Atlas (TASA) online database indicated the presence of no previously recorded archeological sites or cemeteries within a 1-mile perimeter of the Project Area (THC 2023). Similarly, a review of the National Park Service's (NPS) National Register of Historic Places (NRHP) indicated the presence of no historic properties listed on the NRHP within the review perimeter (NPS 2020). No documented cultural resources, including any listed on the NRHP or formally designated as State Archeological Landmarks (SALs), are located within or immediately adjacent to the Project Area. Based on the Atlas database, no prior cultural resources surveys have been undertaken within the limits of the current Project Area.

As part of our role in preparing the permit application for the City of Waco, SCS is requesting an archaeological/historical review of the area located on or near the proposed site, as required by 30 TAC 330.61(o) of the TCEQ regulations.

## SOILS

The transfer station property is composed entirely of one soil type, according to the Natural Resource Conservation Service's Soil Geographic Database for McLennan County: Pits, gravel (Pg). This classification is most likely due to previous landfill activity at the site area. As the Project Area is located on an area that has been cleared in the past and used for landfilling, any cultural deposits within the area would likely have been disturbed by landfill excavation activities.

## PROBABILITY ASSESSMENT

Based on the location of the Project Area on a closed landfill, it is SCS's opinion that there exists a low potential for any intact and stratified prehistoric cultural deposits that would qualify for inclusion in the NRHP or for formal designation as an SAL within the Project Area.

## RECOMMENDATIONS

Based on the assessed low potential for undocumented and intact cultural resources that would qualify for inclusion in the NRHP or for formal designation as SAL within the current Project Area, it is SCS's opinion that a formal cultural resources survey of the Project Area is unwarranted. SCS therefore recommends that the City be allowed to proceed with the development of the Project Area relative to the jurisdiction of the ACT. However, in the unlikely event that any human remains or burial features are inadvertently discovered at any point during construction, use, or ongoing maintenance of the Project Area, all work at the location of the discovery should cease immediately, and the THC should be notified of the discovery.

Should you concur with our findings and recommendations, please sign below and return. Otherwise, SCS requests that your office respond with additional information pertaining to the type and intensity of cultural resources investigations that you require within the Project Area. If you require additional information for this review, please call Sandeep Saraf at 407-923-7013. Your assistance with this matter is greatly appreciated.

Sincerely,


TBPE Registration No. F-3407
Att.: Drawing No. I/II-1, Site Location Map
Drawing No. I/II-2, General Topographic Map
cc: Mr. Kody Petillo, Director of Solid Waste, City of Waco



## APPENDIX I/II-A. 3

## TXDOT CORRESPONDENCE

Subject:

From: Jared Biermann [ibiermann@walkerpartners.com](mailto:ibiermann@walkerpartners.com)
Sent: Tuesday, September 12, 2023 9:43 AM
To: Saraf, Sandeep [SSaraf@scsengineers.com](mailto:SSaraf@scsengineers.com)
Subject: FW: 1-03676: City of Waco Transfer Station - FM 3400 Roadway Improvements

This email originated from outside of SCS Engineers. Do not click links or open attachments unless you recognize the sender and know the content is safe.

See below for Transfer Station Submittal info.
We are following up this week to see if there are any updates.
Thanks,

JARED BIERMANN, P.E.
Project Manager

## Walker Partners

W 254.714.1402
M 254.495.3532

From: Kyle Dunlop [kdunlop@walkerpartners.com](mailto:kdunlop@walkerpartners.com)
Sent: Wednesday, August 16, 2023 11:39 AM
To: Rachelle Sandel [Rachelle.Sandel@txdot.gov](mailto:Rachelle.Sandel@txdot.gov)
Subject: RE: 1-03676: City of Waco Transfer Station - FM 3400 Roadway Improvements
Rachelle,
See my answers highlighted below.
Let me know if there are any additional questions and thank you for your help!

KYLE DUNLOP, P.E.
Project Engineer

## Walker Partners

W 254.714.1402 M 254.301.3979

From: Rachelle Sandel [Rachelle.Sandel@txdot.gov](mailto:Rachelle.Sandel@txdot.gov)
Sent: Wednesday, August 16, 2023 11:34 AM
To: Kyle Dunlop [kdunlop@walkerpartners.com](mailto:kdunlop@walkerpartners.com)
Subject: RE: 1-03676: City of Waco Transfer Station - FM 3400 Roadway Improvements

Kyle,
Can you please let me know the answers to F \& G below:
F: 6 or 12 months?
G: 6, 12, 18, 24, 30, or 36?

Thank you,

## 

District Local Government Project Coord.
Texas Department of Transportation
100 South Loop Drive
Waco, TX 76704
Cell: 817-266-4276


From: Kyle Dunlop [kdunlop@walkerpartners.com](mailto:kdunlop@walkerpartners.com)
Sent: Wednesday, August 16, 2023 10:14 AM
To: Rachelle Sandel [Rachelle.Sandel@txdot.gov](mailto:Rachelle.Sandel@txdot.gov)
Cc: Jared Biermann [jbiermann@walkerpartners.com](mailto:jbiermann@walkerpartners.com); kodyp@wacotx.gov
Subject: 1-03676: City of Waco Transfer Station - FM 3400 Roadway Improvements

This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Rachelle,
Walker Partners is working with the City of Waco and SCS Engineers on improvements to FM 3400 at the location listed below and shown on the attached location map. The project will include roadway improvements to FM 3400 , including road widening to accommodate a southbound left turn lane.

Please see below for the required information for a LOSA and please let me know if additional information and/or clarity is needed.

- Scope of work
- The project consists of the design and construction of a southbound left turn lane and pavement widening on FM 3400. The project will begin approximately 1,900' north of Radle Road and extend 150' south of Radle Road. See attached project location map for reference.
- Resolution
- To be executed after receipt of the Draft LOSA.
- Project Budget
- Environmental - \$0
- Right of Way - \$0
- Engineering - \$151,000
- Utility Work - \$0
- Construction \$800,000
- Subtotal for Project Phases - \$951,000
- Location Map
- See attached.
- Point of Contact (POC)
- Bradley Ford (City Manager) will be signing the LOSA; however, all contact prior to the DocuSign to go through:
- Kody Petillo (kodyp@wacotx.gov)
- Final signatory (to be listed on LOSA):
- Bradley Ford

City Manager
City of Waco
300 Austin Avenue
Waco, TX 76702
Thanks,

KYLE DUNLOP, P.E.
Project Engineer
$\square$
www.WalkerPartners.com
823 Washington Ave., Suite 100
Waco, Texas 76701
W 254.714.1402
M 254.301.3979

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Ms. Rachelle Sandal
District Local Government Project Coordinator
Texas Department of Transportation
100 South Loop Drive
Waco, Texas 76704
Re: Traffic and Location Restrictions
TCEQ Registration Application for a Transfer Station
McLennan County, Texas
Dear Ms. Sandal:
SCS Engineers (SCS) is preparing a TCEQ permit application on behalf of the City of Waco (City) for a municipal solid waste transfer station to be located on S. University Parks Drive, 0.1 mile north of Radle Rd. The approximate coordinates for the transfer station facility entrance are approximately $31^{\circ} 29^{\prime} 46.6^{\prime \prime}$ latitude and $97^{\circ} 4^{\prime} 56.6^{\prime \prime}$ W longitude. We have included maps that illustrate the proposed site location and boundary (see attached).

The purpose of this letter is to demonstrate coordination with the Texas Department of Transportation (TxDOT), consistent with TCEQ requirements (Title 30 of the Texas Administrative Code (TAC) Chapter $\S 330.61(\mathrm{i})(4)$ ). As such, please confirm if there are any traffic or location restrictions for the site. SCS respectfully requests TxDOT also provide, by return letter, confirmation of our having coordinated with TxDOT for this proposed facility.

Your assistance with this matter is greatly appreciated. If you have any questions or need additional information, please contact Sandeep Saraf at (407) 923-7013 or e-mail at ssaraf@scsengineers.com.

Sincerely,


TBPE Registration No. F-3407
Att.: Drawing No. I/II-1, Site Location Map Drawing No. I/II-2, General Topographic Map
cc: Mr. Kody Petillo, Director of Solid Waste, City of Waco



## APPENDIX I/II-B <br> WATERS OF THE UNITED STATES DELINEATION ASSESSMENT

15 July 2022

Mr. Jeff Arrington
SCS Engineers
1901 Central Drive; Suite 550
Bedford, Texas 76021
Re: Waco 1039 - Waters of the United States Delineation
Approximately 43 acres for the proposed transfer station located on South University Parks Drive, approximately 3,200 feet south of the intersection with East Tinsley Road in the City of Waco, McLennan County, Texas.

Dear Mr. Arrington,
Integrated Environmental Solutions, LLC. (IES) performed a site survey to identify any aquatic resources that meet a definition of a water of the United States on an approximately 43 acres for the proposed transfer station located on South University Parks Drive, approximately 3,200 feet south of the intersection with East Tinsley Road in the City of Waco, McLennan County, Texas (Attachment A, Figure 1). This report will ultimately assess and delineate potentially jurisdictional aquatic resources to ensure compliance with Clean Water Act (CWA) Sections 404 and 401.

## INTRODUCTION

Waters of the United States are protected under guidelines outlined in CWA Sections 401 and 404, in Executive Order (EO) 11990 (Protection of Wetlands), and by the review process of the Texas Commission on Environmental Quality (TCEQ). Agencies that regulate impacts to the nation's water resources within Texas include the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (USEPA), the U.S. Fish and Wildlife Service (USFWS), and the TCEQ. The USACE has the primary regulatory authority for enforcing CWA Section 404 requirements for waters of the United States.

The decision for whether a CWA Section 404 permit is required on a property is determined if there are waters of the United States present and the extent of losses of those features. The USACE and USEPA have gone through rulemaking to define what is a water of the United States, independently and jointly, several times since the initial CWA. The longest standing definitions of waters of the United States were those published in 1986; however, these definitions were challenged in 2001 and 2007 U.S. Supreme Court decisions. Since then, both the Obama and Trump administration completed rulemaking to modify the definitions of waters of the United States in the Clean Water Rule in 2016 and the Navigable Water Protection Rule (NWPR) in 2020. A recent federal district court decision in Arizona struck down the NWPR but was silent on which definitions of waters of the United States would replace it. As of the date of this letter report, the USACE Fort Worth District has provided verbal guidance that the USACE will be utilizing the pre-2015 definitions (i.e., 1986 definitions combined with the Rapanos and Carabell U.S. Supreme Court decisions) to define waters of the United States. USEPA has indicated that the pre-2015 definitions will be in place until new definitions have been developed as part of the new definitions rulemaking process that was started in June 2021, prior to the Arizona court decision.

## 1986 Waters of the United States Definitions and Rapanos Decision

The definition of waters of the United States, in 33 Code of Federal Regulations (CFR) 328.3, includes waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, wetlands, sloughs, wet meadows, or natural ponds and all impoundments of waters otherwise defined as waters of the United States. Also included are wetlands adjacent to waters (other than waters that are themselves wetlands). The term adjacent is defined as bordering, contiguous, or neighboring. Jurisdictional wetlands are a category of waters of the United States and have been defined by the USACE as areas that are inundated or saturated by surface or groundwater 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.

Waters of the United States are defined in 33 CFR 328.3 (a), 13 November 1986, as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:

- Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
- From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
- Which are used or could be used for industrial purposes by industries in interstate commerce;

4. All impoundments of waters otherwise defined as waters of the United States under the definition;
5. Tributaries of waters identified in paragraphs (a)(1)-(4) of this section;
6. The territorial seas;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section.

On 05 June 2007, the USACE and the USEPA issued joint guidance on delineation of waters on the United States based on the U.S. Supreme Court decisions in Rapanos and Carabell. Under this guidance, potential waters of the United States have been classified as traditional navigable waters (TNW), relatively permanent waters (RPW) (i.e., having flow most of the year or at least seasonally), or non-RPWs. This guidance states that TNWs and RPWs and contiguous or adjacent wetlands to these aquatic features are waters of the United States. Wetlands that are bordering, contiguous, or neighboring another water of the United States is considered adjacent. Additionally, wetlands that are within the 100-year floodplain of another water of the United States are also considered adjacent. Non-RPWs, wetlands contiguous or adjacent to non-RPWs, and isolated wetlands must undergo a "significant nexus" test on a case-by-case basis to determine the jurisdictional nature of these aquatic features. Under the "significant nexus" test a water feature must have substantial connection to a TNW by direct flow, or by indirect biological, hydrologic, or chemical connection. Under the "significant nexus" test the USACE District Engineer must submit the jurisdictional determination (JD) to the regional USEPA office, which makes the decision whether to move the JD to Headquarters USACE to make the final determination.

This guidance does not void the January 2001 decision of the U.S. Supreme Court in Solid Waste Agency of Northern Cook County (SWANCC) v. USACE which disallowed regulation of isolated wetlands under the CWA through the "Migratory Bird Rule." Previously, the USACE assumed jurisdiction over isolated waters of the United States based on its 1986 preamble stating that migratory birds used these habitats. The "Migratory Bird Rule" provided the nexus to interstate commerce and thus protection under the CWA. However, the new guidance does require that the "significant nexus" test be performed in addition to an analysis of other potential interstate commerce uses for isolated waters.

## METHODOLOGY

Prior to conducting fieldwork, the U.S. Geological Survey (USGS) topographic map (Attachment A, Figures 2A and 2B), the Soil Survey of McLennan County, Texas, and the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) digital soil databases for McLennan County (Attachment A, Figure 3), the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) (Attachment A, Figure 4), and recent and historic aerial photographs of the proposed survey area were studied to identify possible aquatic features that could meet the definition of waters of the United States and areas prone to wetland development. Mr. Rafael Gomez and Mr. Ryan Galovich of IES conducted the delineation in the field in accordance with the USACE procedures on 16 June 2022.

Wetland determinations and delineations were performed on location using the methodology outlined in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineer Wetland Delineation Manual: Great Plains Region (Version 2.0). The presence of a wetland is determined by the positive indication of three criteria (i.e., hydrophytic vegetation, hydrology, and hydric soils). Potential jurisdictional boundaries for other water features (i.e., non-wetland) were delineated in the field at the ordinary high-water mark (OHWM). The 33 CFR 328.3 (c)(7) defines OHWM as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on 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.

Water feature boundaries were recorded on a Trimble GeoExplorer XT Global Positioning System (GPS) unit capable of sub-meter accuracy. Photographs were also taken at representative points within the survey area (Attachment B).

## RESULTS

## Background Review

## Topographic Setting

The USGS topographic maps (Robinson 7.5' Quadrangle 1957, revised 1977 and Waco East 7.5' Quadrangle 1957, revised 1977) illustrated no aquatic features within the survey area. The 2019 Robinson and Waco East Quadrangle maps illustrate a large pit excavated within most of the survey area. Radle Road and South University Parks Drive are illustrated immediately outside the survey area. The site was illustrated as sloping east-to-west with a maximum elevation of approximately 415 feet above mean sea level (amsl) and a minimum elevation of approximately 405 feet amsl (Attachment A, Figure 2).

## Soils

The Soil Survey of McLennan County, Texas identified one soil map unit within the survey area, Pits, gravel. This soil map unit was not listed on the Hydric Soils of Texas list prepared by the National Technical Committee for Hydric Soils (accessed 11 July 2022, McLennan County, Texas). Hydric soils are described as those soils that are sufficiently wet in the upper part to develop anaerobic conditions during the growing season (see Attachment A, Figure 3).

## FEMA FIRM

The FEMA FIRM (McLennan County; Map Panels 48309C0575D and 48309C0390D; effective 19 December 2019) illustrates the entire survey area to be within Zone $X$ (Areas determined to be outside the 0.2 percent annual chance floodplain) (see Attachment A, Figure 4).

## Weather History

The weather history for Wunderground.com KT5DX weather station (KTXROBIN12) recorded 0.02 inch of precipitation during the 7 -day period and a total of 3.49 inches during the 30-day period, prior to the site visit.

## Field Investigation

The survey area was observed as a grassland vegetation community with forested fence lines. The grassland consisted of Johnsongrass (Sorghum halepense), western ragweed (Ambrosia psilostachya), field brome (Bromus
arvensis), silverleaf nightshade (Solanum elaeagnifolium), and prickly pear cactus (Opuntia engelmannii). The forested fence lines consisted of sugarberry (Celtis laevigata) and honey mesquite (Prosopis glandulosa).

The field evaluation revealed no aquatic resources within the survey area (Attachment A, Figure 5).

## CONCLUSIONS

No aquatic features were identified within the survey area. Under the 1986 waters of the United States definitions and the Rapanos decision, the site is void of jurisdictional features and nothing on site would be regulated under CWA Section 404.

This delineation is based on professional experience in the approved methodology and from experience with the USACE Fort Worth District regulators; however, this delineation does not constitute a jurisdictional determination of waters of the United States. This delineation has been based on the professional experience of IES staff and our interpretation of USACE regulations at 33 CFR 328.3, the joint USACE/USEPA guidance regarding the Rapanos and Carabell decisions and the Regulatory Guidance Letter (RGL) 08-02. While IES believes our delineation to be accurate, final authority to interpret the regulations lies solely with the USACE and USEPA. The USACE Headquarters in association with the USEPA often issue guidance that changes the interpretation of published regulations. USACE/USEPA guidance issued after the date of this report has the potential to invalidate the report conclusions and/or recommendations, which may create the need to reevaluate the report conclusions. IES has no regulatory authority, as such, proceeding based solely upon this report does not protect the Client from potential sanction or fines from the USACE/USEPA. The Client acknowledges that they can submit this report to the USACE for a preliminary jurisdictional determination for concurrence prior to proceeding with any work within aquatic features located on the survey area. If the Client elects not to do so, then the Client proceeds at their sole risk.

IES appreciates the opportunity to work with you and SCS Engineers on this project, and we hope we may be of assistance to you in the future. If you have any comments, questions, or concerns, please do not hesitate to contact us. We can be reached at 972-562-7672 or by email at rgomez@intenvsol.com or rreinecke@intenvsol.com.

Sincerely,

## Integrated Environmental Solutions, LLC.



Mr. Rafael Gomez
Biologist
Attachments
File ref: 04.306.006


Figure 1.
General Location Map

Waco 1039
City of Waco
McLennan County, Texas

| 1 in $=3,500$ feet | Fee |  |  |
| :---: | :---: | :---: | :---: |
|  | 0 | 3,500 |  |
| File Ref Date: | $\begin{array}{r} 04.306 .006 \\ \hline 6 / 21 / 2022 \end{array}$ |  |  |

Survey Area





## Figure 4. Federal Emergency Management Agency Flood Insurance Rate Map

Waco 1039
City of Waco
McLennan County, Texas


## $\square$ Survey Area

## FEMA FIRM Zone Descriptions

$\square$ Zone X - Areas determined to be outside the $0.2 \%$ annual chance floodplain

Zone X - Areas of 0.2\% annual chance flood; areas of $1 \%$ annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from $1 \%$ annual chance flood

Zone A - Special Flood Hazard Areas subject to inundation by the 1\% annual chance flood; No base flood elevations determined Zone AE - Special Flood Hazard Areas subject to inundation by the 1\% annual chance flood; Base flood elevations determined
V110
Zone AE - Floodway areas in Zone AE


Figure 5.
Aquatic Features Identified within the Survey Area

Waco 1039 City of Waco
McLennan County, Texas

| $1 \mathrm{in}=250$ feet |  | Feet |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | 250 |  |
| File Re |  | 04.306 .006 |  |  |
|  |  | 7/11/2022 |  |  |

## ATTACHMENT B

Site Photographs



Photograph 1


Photograph 3


Photograph 5


Photograph 7


Photograph 2


Photograph 4


Photograph 6


Photograph 8

## APPENDIX I/II-C

## ENDANGERED OR THREATENED SPECIES ASSESSMENT

12 August 2022

Mr. Jeff Arrington<br>SCS Engineers<br>1901 Central Drive; Suite 550<br>Bedford, TX 76021

Re: Waco 1039 - Protected Species Habitat Assessment
Approximately 43 acres for the proposed transfer station located on South University Parks Drive, Waco, McLennan County, Texas.

## Dear Mr. Arrington,

Integrated Environmental Solutions, LLC (IES) performed a protected species habitat assessment on approximately 43 acres for the proposed transfer station located on South University Parks Drive, approximately 3,200 feet south of the intersection with East Tinsley Road in the City of Waco, McLennan County, Texas (Attachment A, Figure 1). This habitat assessment was performed to satisfy the requirements regarding the Endangered Species Act (ESA). The following report is a list of the federal and state-listed protected species for McLennan County and their preferred vegetation assemblages, a summary of the vegetation communities identified on the site, an evaluation of whether or not the communities present on the site could support a protected species, and whether or not future proposed actions would affect listed species.

## INTRODUCTION

## Federal

The ESA of 1973 (Public Law [P.L.] 93-205) and the amendments of 1988 (P.L. 100-578) were enacted to provide a program of preservation for endangered and threatened species and to provide protection for ecosystems upon which these species depend for their survival. The ESA requires all federal agencies to implement protection programs for designated species and to use their authorities to further the purposes of the Act. Responsibility for the listing of an endangered or threatened species and for the development of recovery plans lies with the Secretary of Interior and Secretary of Commerce. The U.S. Fish and Wildlife Service (USFWS) is responsible for implementing the ESA within the United States.

An endangered species is a species, which is in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the near future throughout all or a significant portion of its range. Proposed species are those, which have been formally submitted to Congress for official listing as endangered or threatened.

In addition, the USFWS has identified species, which are candidates for possible addition to the list of Endangered and Threatened Wildlife and Plants ( 50 Code of Federal Regulations [CFR] 17.11 and 17.12) under the ESA. The USFWS maintains a candidate list to: (1) provide advance knowledge of potential listings that could affect land planning decisions, (2) solicit input to identify candidates not requiring protection or additional species that may require protection under the ESA, and (3) solicit information needed to prioritize the order in which species will be proposed for listing. Candidate species have no legal protection under the ESA.

The Migratory Bird Treaty Act of 1918 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 within the Act's policies and regulations. However, in a recent decision the U.S. Court of Appeals for the Fifth Circuit found that for an unlawful "taking" to occur, a "deliberate act done directly and intentionally to migratory birds" would need to occur. (United States v. CITGO Petroleum Corp., No. 14-40128 [5th Cir. Sept. 4, 2015]).

## State

The Texas Parks and Wildlife Department (TPWD) Wildlife Diversity Program (WDP), maintains computerized records of state-listed threatened and endangered species by county. The State of Texas does not list threatened and endangered species using the same criteria as the federal government. When the USFWS lists a plant species, the State of Texas then lists that plant. Thus, the list of threatened and endangered plants in Texas is the same as the Federal list. The state has separate laws governing the listing of animal species as threatened or endangered. Threatened and endangered animal species in Texas are those species so designated according to Chapters 67 and 68 of the Texas Parks and Wildlife Code and Section 65.171-65.184 of Title 31 of the Texas Administrative Code. Species that are not currently listed by the Federal government may be listed as threatened or endangered by the TPWD.

## METHODOLOGY

Prior to conducting fieldwork, the list of Endangered and Threatened Wildlife and Plants under the ESA was obtained through the USFWS Information, Planning, and Conservation System (IPaC) and from the TPWD WDP and the Texas Natural Diversity Database (TXNDD). The vegetation communities used by each species was obtained and is detailed below. During the field survey, vegetation composition within and adjacent to the project site were noted to determine whether there was any potential for protected species habitat. This survey was not designed to identify the presence of protected species; however, if any species were observed, they were recorded. Photographs were taken at representative points, illustrating common vegetation communities within the survey area (Attachment B).

## RESULTS

## Literature Review

According to the USFWS, four species; Golden-cheeked Warbler (Setophaga chrysoparia), Piping Plover (Charadrius melodus), Red Knot (Calidris canutus rufa), and Whooping Crane (Grus americana) are listed as federally protected (i.e., threatened or endangered) with the potential to occur within McLennan County. Two of these species are conditionally listed as threatened within McLennan County on the basis that the proposed project is for wind energy production, the Red Knot, and Piping Plover. The monarch butterfly (Danaus plexippus) is listed as candidate species with the potential to occur within McLennan County. The Texas Fawnsfoot (Truncilla macrodon) was listed as a proposed threatened with the potential to occur within McLennan County. No federally listed critical habitat for these species is located within the vicinity of the survey area. The TPWD lists 13 state protected species that could occur within McLennan County, four of which are also federally listed avian species. The review of the TXNDD files did not indicate any unique vegetation communities, parks or natural/managed areas within the survey area.

Attachment C identifies the state and federally protected species that could potentially occur within McLennan County from the IPAC and Rare and Threatened Endangered Species of Texas (RTEST) lists.

## Site Survey

Mr. Rafael Gomez and Mr. Ryan Galovich of IES evaluated the survey area on 16 June 2020. This survey was designed to provide a habitat evaluation of the overall survey area with the primary focus on the plant community.

The survey area was observed as a grassland vegetation community with forested fence lines. The grassland consisted of Johnsongrass (Sorghum halepense), western ragweed (Ambrosia psilostachya), field brome (Bromus arvensis), silverleaf nightshade (Solanum elaeagnifolium), and prickly pear cactus (Opuntia engelmannii). The forested fence lines consisted of sugarberry (Celtis laevigata) and honey mesquite (Prosopis glandulosa).

## CONCLUSIONS

## Preferred Habitat for Federally Protected Species

Table 1 provides a summary of the federally and state-listed species that could potentially occur within McLennan County, as well as a brief description of their habitat, whether this habitat is present within the survey area, and whether the proposed project would potentially affect the listed species.

Regarding federally listed threatened and endangered species, Golden-cheeked Warbler, Red Knot, Piping Plover, and Whooping Crane were listed for McLennan County. As these projects will not be related to wind energy, the Red Knot and Piping Plover will not be affected.

- The Golden-cheeked Warbler requires a habitat that includes forested areas dominated by Ashe juniper (Juniperus ashei) in mixed stands with various oaks (Quercus spp.). This unique vegetation community is not present within the survey area.
- Whooping Cranes utilize estuaries, prairie marshes, moist grasslands, croplands, and will use large shallow wetland areas associated with lakes for roosting and feeding. The survey area did not contain these types of vegetation communities.


## Preferred Habitat for State Protected Species

There were thirteen state-listed threatened and endangered species for McLennan County, which includes all the above federally listed species. The following provide a summary of why the site's habitat is not preferred for the state listed species that were not identified above.

- Wood Stork nests in large tracts of bald cypress and forges in prairie ponds, flooded pastures, or fields, which is not present on this site.
- Black Rail is found in salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps which are not included on this site.
- White-faced lbis prefers freshwater marshes, sloughs, and irrigated rice fields. Therefore, it will not be found within this habitat.
- Club Shiner, Sharpnose Shiner, Smalleye Shiner, Brazos heelsplitter, and Texas fawnsfoot are all aquatic species and there was not any rivers or creeks within the site.
- Texas horned lizard is found in semi-arid regions with sparse vegetation. The site contained too dense of vegetation cover for this species and would not be preferred by this species.


## Vegetation Communities

None of the vegetation observed within the survey areas would be considered unique or compose a unique vegetation type for the region. The vegetation communities described were composed of species that are not only common to grassland and forested areas, but to the Blackland Prairie eco-regions of Central Texas. It is IES' professional opinion that the proposed project will not have any effect on any unique vegetation, vegetation communities, or habitat types.

## Potential to Affect Protected Species

As previously noted, no preferred habitat for any of the federally or state-listed species was present within the survey area. As such, the proposed project is not expected to have any impacts on the federally or state- listed threatened or endangered species.

IES appreciates the opportunity to work with you and SCS Engineers on this project and hope we may be of assistance to you in the future. If you have any comments, questions, or concerns, please do not hesitate to contact me at 972-562-7672 or by email at rgomez@intenvsol.com or rreinecke@intenvsol.com.

Sincerely,
Integrated Environmental Solutions, LLC.


Mr. Rafael Gomez
Biologist

File ref: 04.306.006

Table 1. Federally- and State- listed Threatened and Endangered
Species Occurring or Potentially Occurring in McLennan County, Texas

| Species | State Status | Federal Status | Description of Habitat | Habitat Present ${ }^{1}$ | Species Effect ${ }^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| BIRDS |  |  |  |  |  |
| Golden-cheeked Warbler (Setophaga chrysoparia) | E | LE | Ashe juniper in mixed stands with various oaks (Quercus spp.). Edges of cedar brakes. Dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer. | No | No |
| Piping Plover <br> (Charadrius melodus) | T | LT | Wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats. | No | No |
| Red Knot (Calidris canutus rufa) | T | LT | Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward JulyOctober. The Red knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and tidal flat/shore. | No | No |
| Whooping Crane (Grus americana) | E | LE | Potential migrant via plains throughout most of the state to the coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties. Utilizes small ponds, marshes, and flooded grain fields for both roosting and foraging. | No | No |
| black rail (Laterallus jamaicensis) | T | --- | The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia | No | No |
| white-faced ibis (Plegadis chihi) | T | --- | The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats. | No | No |
| wood stork <br> (Mycteria americana) | T | --- | The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Prefers to nest in large tracts of baldcypress (Taxodium distichum) or red mangrove (Rhizophora mangle); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960. | No | No |
| FISH |  |  |  |  |  |
| chub shiner (Notropis potteri) | T | --- | Brazos, Colorado, San Jacinto, and Trinity River basins. Flowing water with silt or sand substrate | No | No |
| sharpnose shiner (Notropis oxyrhynchus) | E | --- | Range is now restricted to upper Brazos River upstream of Possum Kingdom Lake. May be native to Red River and Colorado River basins. Typically found in turbid water over mostly silt and shifting sand substrates. | No | No |
| smalleye shiner (Notropis buccula) | E | --- | Endemic to the Brazos River drainage; presumed to have been introduced into the Colorado River. Historically found in lower Brazos River as far south as Hempstead, Texas but appears to now be restricted to upper Brazos River system upstream of Possum Kingdom Lake. Typically found in turbid waters of broad, | No | No |

Protected Species Habitat Assessment - Waco 1039-Protected Species Habitat Assessment

| Species | State <br> Status | Federal Status | Description of Habitat | Habitat <br> Present ${ }^{1}$ | Species Effect ${ }^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | sandy channels of main stream, over substrate consisting mostly of shifting sand. |  |  |
| MOLLUSKS |  |  |  |  |  |
| Brazos heelsplitter (Potamilus streckersoni) | T | --- | Reported from streams, but not far into the headwaters, to large rivers, and some reservoirs. In riverine systems occurs most often in nearshore habitats such as banks and backwater pools but occasionally in mainchannel habitats such as riffles. Typically found in standing to slow-flowing water in soft substrates consisting of silt, mud or sand but occasionally in moderate flows with gravel and cobble substrates (Randklev et al. 2014b,c; Tsakiris and Randklev 2016b; Smith et al. 2019) [Mussels of Texas 2020] | No | No |
| Texas fawnsfoot (Truncilla macrodon) | T | --- | Occurs in large rivers but may also be found in medium-sized streams. Is found in protected near shore areas such as banks and backwaters but also riffles and point bar habitats with low to moderate water velocities. Typically occurs in substrates of mud, sandy mud, gravel and cobble. Considered intolerant of reservoirs (Randklev et al. 2010; Howells 20100; Randklev et al. 2014b,c; Randklev et al. 2017a,b). [Mussels of Texas 2019] | No | No |
| REPTILES |  |  |  |  |  |
| Texas horned lizard (Phrynosoma cornutum) | T | --- | Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds MarchSeptember. | No | No |

LE - Federally Listed Endangered, LT - Federally Listed Threatened, DL - Federally Delisted, E - State Listed Endangered, T - State Listed Threatened ${ }^{1}$ Habitat Present? - Does the habitat located within the survey area match the habitat requirements for that particular protected species? ${ }^{2}$ Species Effect? - Will the proposed project potentially affect a protected species?
Data Sources: USFWS IPaC (12 August 2022), TPWD (12 August 2022), and field survey of the project site

## ATTACHMENT A

Figures


Figure 1.
General Location Map

Waco 1039
City of Waco
McLennan County, Texas

| 1 in $=3,500$ feet | Fee |  |  |
| :---: | :---: | :---: | :---: |
|  | 0 | 3,500 |  |
| File Ref Date: | $\begin{array}{r} 04.306 .006 \\ \hline 6 / 21 / 2022 \end{array}$ |  |  |

Survey Area


ATTACHMENT B
Site Photographs



Photograph 1


Photograph 3


Photograph 5


Photograph 7


Photograph 2


Photograph 4


Photograph 6


Photograph 8

ATTACHMENT C
Protected Species Lists


# United States Department of the Interior 

FISH AND WILDLIFE SERVICE<br>Austin Ecological Services Field Office<br>10711 Burnet Road, Suite 200<br>Austin, TX 78758-4460<br>Phone: (512) 490-0057 Fax: (512) 490-0974

In Reply Refer To:
August 12, 2022
Project Code: 2022-0074196
Project Name: Waco 1039
Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:
The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations ( 50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological
evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF
Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-tobirds.php.

In addition to MBTA and BGEPA, Executive Order 13186: Responsibilities of Federal Agencies to Protect Migratory Birds, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/ executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List


## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:
Austin Ecological Services Field Office
10711 Burnet Road, Suite 200
Austin, TX 78758-4460
(512) 490-0057

## Project Summary

Project Code: 2022-0074196
Project Name: Waco 1039
Project Type: New Constr - Above Ground
Project Description: Residential development
Project Location:
Approximate location of the project can be viewed in Google Maps: https:// www.google.com/maps/@31.4978799,-97.0805705775407,14z


Counties: McLennan County, Texas

## Endangered Species Act Species

There is a total of 6 threatened, endangered, or candidate species on this species list.
Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries ${ }^{1}$, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Birds

STATUS
Golden-cheeked Warbler Setophaga chrysoparia
Endangered
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/33
Piping Plover Charadrius melodus
Threatened
Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.
There is final critical habitat for this species. The location of the critical habitat is not available.
This species only needs to be considered under the following conditions:

- Wind Energy Projects

Species profile: https://ecos.fws.gov/ecp/species/6039
Red Knot Calidris canutus rufa Threatened
There is proposed critical habitat for this species. The location of the critical habitat is not available.
This species only needs to be considered under the following conditions:

- Wind Energy Projects

Species profile: https://ecos.fws.gov/ecp/species/1864
Whooping Crane Grus americana
Endangered
Population: Wherever found, except where listed as an experimental population
There is final critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/758

## Clams

NAME
STATUS
Texas Fawnsfoot Truncilla macrodon
There is proposed critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/8965

## Insects

NAME STATUS

Monarch Butterfly Danaus plexippus
Candidate
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

## IPaC User Contact Information

Agency: Federal Emergency Management Agency
Name: Rafael Gomez
Address: 301 W eldorado pkwy
Address Line 2: suite 101
City:
McKinney
State:
TX
Zip:
Email
75069

Phone:
rgomez@intenvsol.com
9565795417

## MCLENNAN COUNTY

## Birds

## black rail

## Laterallus jamaicensis

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia
Federal Status: LT
Endemic: N

## golden-cheeked warbler Setophaga chrysoparia

Ashe juniper in mixed stands with various oaks (Quercus spp.). Edges of cedar brakes. Dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer.

Federal Status: LE
Endemic: N

State Status: T
Global Rank: G3

SGCN: Y
State Rank: S2

## piping plover

## Charadrius melodus

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway. Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.

Federal Status: LT
Endemic: N

## rufa red knot

Calidris canutus rufa
The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore. Bolivar Flats in Galveston County, sandy beaches Mustang Island, few on outer coastal and barrier beaches, tidal mudflats and salt marshes.

Federal Status: LT
Endemic: N

## white-faced ibis

State Status: T
Global Rank: G4T2

## SGCN: Y

State Rank: S2N

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

| Federal Status: | State Status: T | SGCN: Y |
| :--- | :--- | :--- |
| Endemic: N | Global Rank: G5 | State Rank: S4B |

## whooping crane

## Grus americana

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

| Federal Status: LE | State Status: E | SGCN: Y |
| :--- | :--- | :--- |
| Endemic: N | Global Rank: G1 | State Rank: S1S2N |

## wood stork Mycteria americana

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Prefers to nest in large tracts of baldcypress (Taxodium distichum) or red mangrove (Rhizophora mangle); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960.

| Federal Status: | State Status: T | SGCN: Y |
| :--- | :--- | :--- |
| Endemic: N | Global Rank: G4 | State Rank: SHB,S2N |

## FISH

chub shiner Notropis potteri

Brazos, Colorado, San Jacinto, and Trinity river basins. Flowing water with silt or sand substrate

| Federal Status: | State Status: T | SGCN: Y |
| :--- | :--- | :--- |
| Endemic: N | Global Rank: G4 | State Rank: S2 |

## sharpnose shiner Notropis oxyrhynchus

Range is now restricted to upper Brazos River upstream of Possum Kingdom Lake. May be native to Red River and Colorado River basins. Typically found in turbid water over mostly silt and shifting sand substrates.

| Federal Status: LE | State Status: E | SGCN: Y |
| :--- | :--- | :--- |
| Endemic: Y | Global Rank: G3 | State Rank: S1S2 |

## smalleye shiner Notropis buccula

Endemic to the Brazos River drainage; presumed to have been introduced into the Colorado River. Historically found in lower Brazos River as far south as Hempstead, Texas but appears to now be restricted to upper Brazos River system upstream of Possum Kingdom Lake. Typically found in turbid waters of broad, sandy channels of main stream, over substrate consisting mostly of shifting sand.

| Federal Status: LE | State Status: E | SGCN: Y |
| :--- | :--- | :--- |
| Endemic: Y | Global Rank: G2 | State Rank: S1S2 |

## MOLLUSKS

## Brazos heelsplitter

Potamilus streckersoni
Reported from streams, but not far into the headwaters, to large rivers, and some reservoirs. In riverine systems occurs most often in nearshore habitats such as banks and backwater pools but occasionally in mainchannel habitats such as riffles. Typically found in standing to slow-flowing water in soft substrates consisting of silt, mud or sand but occasionally in moderate flows with gravel and cobble substrates (Randklev et al. 2014b,c; Tsakiris and Randklev 2016b; Smith et al. 2019) [Mussels of Texas 2020]

| Federal Status: | State Status: T | SGCN: Y |
| :--- | :--- | :--- |
| Endemic: Y | Global Rank: GNR | State Rank: SNR |

## Texas fawnsfoot

Truncilla macrodon
Occurs in large rivers but may also be found in medium-sized streams. Is found in protected near shore areas such as banks and backwaters but also riffles and point bar habitats with low to moderate water velocities. Typically occurs in substrates of mud, sandy mud, gravel and cobble. Considered intolerant of reservoirs (Randklev et al. 2010; Howells 2010o; Randklev et al. 2014b,c; Randklev et al. 2017a,b). [Mussels of Texas 2019]

| Federal Status: PT | State Status: T | SGCN: Y |
| :--- | :--- | :--- |
| Endemic: Y | Global Rank: G1 | State Rank: S2 |

## REPTILES

## Texas horned lizard

## Phrynosoma cornutum

Terrestrial: Open habitats with sparse vegetation, including grass, prairie, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive. Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area.

| Federal Status: | State Status: T | SGCN: Y |
| :--- | :--- | :--- |
| Endemic: N | Global Rank: G4G5 | State Rank: S3 |

## APPENDIX I/II-D

## OIL AND WATER WELL LOCATION SUMMARY



## APPENDIX I/II-E <br> LAND OWNERSHIP LIST

Landowners List

| 1. | City of Waco <br> Attn: Property Management P.O. Box 2570 Waco, TX 76720 | 2. | DBA Loredo Trucking 1551 Old Bethany Road Bruceville, TX 76630 | 3. | Andrew James Et Al Heir 650 Jerico Road Waco, TX 76706 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 4. | Balderas, Julian 445 Radle Road Waco, TX 76706 | 5. | Balderas, Julian 445 Radle Road Waco, TX 76706 | 6. | Ware, Lisa M 499 Radle Road Waco, X 76706 |
| 7. | Ware, George D \& Lisa 499 Radle Road Waco, X 76706 | 8. | Brandon Mary Louise 525 Radle Road Waco, TX 76706 | 9. | Brandon Barrett Lee 525 Radle Road Waco, TX 76706 |
| 10. | Wiley, Kenneth 3309 Robinson Drive Apt 504 <br> Waco, TX 76706 | 11. | Wiley, Lula Margaret Etvir 577 Radle Road Waco, TX 76706 | 12. | Wiley, Freddie 577 Radle Road Waco, TX 76706 |
| 13. | Holmes Ida Mae 2728 Madison Drive Waco, TX 76706 | 14. | Anderson, Mike 123 M J R Road Waco, TX 76706 | 15. | Anderson, Michael Ray Etux <br> 123 M J R Road <br> Waco, TX 76706 |
| 16. | Transit Mix Concrete \& Materials Co 2525 N Stemmons Fwy Dallas, TX 75207 | 17. | Transit Mix Concrete \& Materials Co 2525 N Stemmons Fwy Dallas, TX 75207 | 18. | Radle, Bobby R 817 Val Verde Place Marlin, TX 76661 |
| 19. | Radle, Bobby R 817 Val Verde Place Marlin, TX 76661 | 20. | Radle, Bobby R 817 Val Verde Place Marlin, TX 76661 | 21. | Radle, Bobby R 817 Val Verde Place Marlin, TX 76661 |
| 22. | Radle, Bobby R 817 Val Verde Place Marlin, TX 76661 | 23. | Trinity Materials Inc P. 0 Box 373 Ferris, TX 75125 | 24. | Lushaj Dyzet \& Cindy 7506 Ledbetter Road Arlington, TX 76001 |
| 25. | Dona \& Wayland Howard Parks 7448 Yolanda Drive Ft Worth, TX 76112 | 26. | Naegeli Stephen B \& Lori A <br> 1315 Carnation Street <br> Katy, TX 77493 | 27. | Luna Alfonso P.O. Box 205 Waco, TX 76703 |
| 28. | H W H Company P.O. Box 1086 Hewitt, TX 76643 | 29. | Holzman Walter Richard Jr Etal <br> 2824 Washington Street Waco, TX 76710 | 30. | 3C Mechanical Technologies Inc 538 Jancy Street Robinson, TX 76706 |

## APPENDIX I/II-F

## TRAFFIC ANALYSIS

# TRAFFIC ANALYSIS FOR PROPOSED MSW TRANSFER STATION 

Prepared for:<br>SCS ENGINEERS<br>1901 CENTRAL DRIVE, SUITE 550<br>BEDFORD, TEXAS 76021



October 2023


October 23, 2023 PROJECT T2017.01

## EXECUTIVE SUMMARY

The purpose of this traffic study is to determine the adequacy of the surrounding transportation infrastructure with respect to the proposed City of Waco MSW Transfer Station to be located east of FM 3400 and south of SH 6 in McLennan County, Texas. The facility will provide a municipal solid waste transfer station and drop-off services to residents of the City of Waco and businesses in the City and surrounding areas.

Background traffic counts were collected in 2022 on the surrounding roadway network and then grown for use in the traffic analysis. Year 2022, 2025 (projected site opening) and 2059 (projected facility closure/design life) analyses are presented in this study. The total traffic analysis added the predicted peak hour traffic from the proposed site to the surrounding roadways during the AM peak hour, PM peak hour, and the anticipated site peak hour.

Based on the results of this study for the City of Waco MSW Transfer Station, the following conclusions are made:

- The proposed site is predicted to generate 1,424 trips per day when the facility is anticipated to open in 2025, including employee trips. This level of traffic is anticipated to remain steady throughout the facility's life.
- Roadway link capacity analyses for the year 2025 and 2059 for the adjacent roadway indicate that adequate capacity will be available to serve the additional traffic generated by the future operations of the proposed MSW Transfer Station along with assumed background growth.
- Intersection capacity analysis indicates intersections at the SH 6 interchange are predicted to operate poorly by 2059 with the existing multiway stop control. All other study intersections were predicted to operate acceptably.
- The following improvements should be considered at the SH 6 diamond interchange before 2059 with or without site development. These improvements will be necessary due to background growth in the area regardless of the presence of the proposed facility. The exact timing of the improvements should be based on operations and is unknown. These improvements are:

1. Stripe the northbound approach of FM 3400 to include a through lane and a shared through/right lane at the SH 6 EBFR. In order to accommodate two through lanes northbound, the roadway beneath the overpass will need restriped, and the northbound departure of FM 3400 will also require restriping and widening.
2. Signal control will be necessary before 2059 at this location with or without facility traffic. Intersection analysis indicates that the intersections will operate at acceptable levels of service during the opening year of 2025. TxDOT should monitor traffic operations at this interchange to determine when the level of service will benefit from the installation of signal control.

- At the proposed Site Driveway on FM 3400, install a southbound left turn lane with 915 feet of total length, including a 150 -foot taper.
- No additional changes to the surrounding roadway network are recommended to accommodate the site traffic generated by the predicted operations of the City of Waco MSW Transfer Station.


## TABLE OF CONTENTS

EXECUTIVE SUMMARY ..... i
INTRODUCTION ..... 1
EXISTING TRAFFIC VOLUMES ..... 6
BACKGROUND TRAFFIC VOLUMES ..... 9
TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT ..... 12
TOTAL TRAFFIC VOLUMES ..... 15
TRAFFIC ANALYSES ..... 20
AUXILIARY LANE ANALYSIS ..... 28
CONCLUSIONS AND RECOMMENDATIONS ..... 31
APPENDIX ..... 32


## LIST OF TABLES

Table 1: Traffic Volumes Collected ..... 6
Table 2: TxDOT Count Map Volumes ..... 9
Table 3: Hourly Traffic Breakdown - Existing Site South of Waco ..... 13
Table 4: Estimated Hourly Site Traffic Volumes in the Analysis Years ..... 14
Table 5: Level of Service Criteria for Two-Lane Highways. ..... 20
Table 6: Two-Lane Highway Analysis - FM 3400 between Lockwood Lane and Radle Road ..... 22
Table 7: Total Facility Traffic as a Percentage of Daily Traffic ..... 23
Table 8: Level of Service Criteria for Intersections ..... 24
Table 9: Intersection Capacity Analyses Results - Site Opening (2025) Background and Total
$\qquad$Traffic25
Table 10: Intersection Capacity Analyses Results - Site Closure (2059) Background and Total
Traffic ..... 26
Table 11: Intersection Capacity Analyses Results - Site Closure (2059) Background and TotalTraffic - With Mitigation27
Table 12: Analysis of Intersection Sight Distance ..... 30


## LIST OF FIGURES

Figure 1. Vicinity Map ..... 2
Figure 2. Existing Intersection Lane Configurations and Proposed Site Driveway Location ..... 5
Figure 3. Existing (2022) Peak Hour and Daily Traffic Volumes ..... 8
Figure 4. Site Opening (2025) Background Peak Hour Traffic Volumes ..... 10
Figure 5. Site Closure (2059) Background Peak Hour Traffic Volumes. ..... 11
Figure 6. Assumed Directional Distribution ..... 16
Figure 7. Site Generated Peak Hour Traffic Volumes ..... 17
Figure 8. Site Opening (2025) Total Peak Hour Traffic Volumes ..... 18
Figure 9. Site Closure (2059) Total Peak Hour Traffic Volumes ..... 19


## INTRODUCTION

The purpose of this traffic study is to determine the adequacy of the surrounding transportation infrastructure with respect to the proposed site. The City of Waco is planning to develop a new municipal solid waste transfer station over the closed landfill site located on S. University Parks Drive (MSW No. 1039) in Waco, Texas. The proposed facilities include a new MSW transfer station, scale house building and scales, a citizens collection station, and a new paved access drive with parking for trucks and vehicles. The proposed transfer station building will be constructed in the northeast corner of the site approximately 100 feet from the north and east property lines. A new paved access road will be constructed to connect the facility to South University Parks Dr. (FM 3400) located along the western boundary of the landfill. Additional paved areas will be constructed around the transfer station to provide for access to the building for collection and transfer trucks. A new citizens collection station will be constructed adjacent to the transfer station consisting of additional pavement and retaining walls to permit elevated unloading into open top containers.

The primary access route to the facility is via the proposed site access driveway on S. University Parks Drive (FM 3400). The proposed driveway will be located approximately 1.5 miles south of eastbound SH 6. The proposed facility is anticipated to be open from 7:00 AM to 5:00 PM Monday through Saturday. Hours may shift in response to operating needs. Figure 1 presents a vicinity map that depicts the general location of the proposed facility and the surrounding roadway network. A preliminary site plan is included in the appendix.

TCEQ Municipal Solid Waste Regulations require data and analysis for the expected life of the facility - currently estimated to be the year 2059. Other transportation industry organizations recommend shorter planning horizons. Peak traffic of 182 peak hour trips is estimated to occur in the year 2059.

Two analysis scenarios for the proposed facility are addressed as part of this study:

- Scenario 1: Assumed Site Opening Year (2025)
- Scenario 2: Peak Year Operations in the Year 2059 Prior to Site Closure

Figure 1. Vicinity Map


The study area for this traffic study is based on a review of likely access routes within one mile of the facility. A brief description of the existing area roadways selected for study is provided below:

Farm-to-Market Road 3400 (FM 3400) - FM 3400 (or S. University Parks Drive) is a two-lane undivided asphalt roadway with a posted speed limit of 70 miles per hour ( mph ) in the vicinity of the site. North of SH 6 the speed limit decreases to 45 mph . The roadway has shoulders on either
side, which vary in width from approximately 6 feet to approximately 9 feet. FM 3400 is classified as a Minor Arterial on the City of Waco Regional Thoroughfare Plan (2016). Based on TxDOT’s Statewide Planning Map, FM 3400 is classified as a Major Collector. The proposed site will have one (1) full-access site driveway along FM 3400 approximately 1.5 miles south of SH 6.

State Highway 6 (SH 6) - SH 6 is currently a four-lane divided highway with a posted speed limit of 65 mph . There are also one-way frontage roads along SH 6 in both the eastbound and westbound directions, both with a posted speed limit of 55 mph . SH 6 is classified as a Freeway on the City of Waco Regional Thoroughfare Plan (2016). Based on TxDOT's Statewide Planning Map, FM 3400 is classified as a Principal Arterial. The intersections of the SH 6 eastbound frontage road (EBFR) at FM 3400 and westbound frontage road (WBFR) at FM 3400 are both stopcontrolled on all approaches. There are also Texas U-turn lanes in both directions at the diamond interchange.

Tinsley Road - Tinsley Road is a two-lane undivided roadway with a posted speed limit of 40 mph which intersects FM 3400 approximately 0.7 miles north of the proposed site access point. Tinsley Road is an asphalt roadway with no curb and gutter or shoulders. Tinsley Road is classified as a Minor Arterial on the City of Waco Regional Thoroughfare Plan (2016) in the vicinity of the study area. Based on TxDOT's Statewide Planning Map, FM 3400 is classified as a Major Collector west of FM 3400 and a local roadway east of FM 3400 . An occasional private passenger vehicle may use this roadway to travel to the facility, but Tinsley Road will not serve as a primary access route to the facility due to the land use and transportation network in the area. The City of Waco will prohibit its waste collection and transfer vehicles traveling to or from the facility from utilizing Tinsley Road. Tinsley Road has been included in the analysis to be conservative due to its proximity to the facility.

Lockwood Lane - Lockwood Lane is currently a two-lane undivided roadway with a posted speed limit of 35 mph which intersects FM 3400 approximately 2,200 feet north of the proposed site access point. Lockwood Lane is an asphalt roadway approximately 18 feet wide. Lockwood Lane is classified as a local roadway on the City of Waco Regional Thoroughfare Plan (2012). An occasional private passenger vehicle may use this roadway to travel to the facility, but Lockwood Lane is unlikely to serve as a primary access route to the facility due to the land use and transportation network in the area. As currently constructed, Lockwood Lane does not appear to have an adequate pavement surface for waste collection vehicles. The City of Waco will prohibit its waste collection and transfer vehicles traveling to or from the facility from utilizing Lockwood Lane. Lockwood Lane has been included in the analysis to be conservative due to proximity to the facility.

Radle Road - Radle Road is currently a two-lane undivided roadway with no posted speed limit which intersects FM 3400 approximately 425 feet south of the proposed site access point and
which borders the southern edge of the proposed site. Radle Road is an asphalt roadway approximately 19 feet wide. Radle Road is classified as a local roadway on the City of Waco Regional Thoroughfare Plan (2012). An occasional private passenger vehicle may use this roadway to travel to the facility, but Radle Road is unlikely to serve as a primary access route to the facility due to the land use and transportation network in the area. As currently constructed, Radle Road does not appear to have an adequate pavement surface for waste collection vehicles. The City of Waco will prohibit its waste collection and transfer vehicles traveling to or from the facility from utilizing Radle Road. Radle Road has been included in the analysis to be conservative due to proximity to the facility.

The existing intersection lane configurations, existing traffic control, and the proposed driveway location are shown in Figure 2.


## EXISTING TRAFFIC VOLUMES

Twenty-four-hour turning movement traffic volumes were collected at the study intersections on Tuesday, May 10, 2022. The collected directional volumes in the study area are summarized in
Table 1. Raw data is included in the Appendix.
Table 1: Traffic Volumes Collected

| Roadway | Daily Volume | Direction ${ }^{1}$ | $\begin{gathered} \hline \text { AM Peak } \\ \text { 7:00-8:00 } \\ \text { AM } \\ \hline \end{gathered}$ | $\begin{gathered} \hline \hline \text { PM Peak } \\ \text { 4:00-5:00 } \\ \text { PM } \\ \hline \end{gathered}$ | $\begin{gathered} \hline \text { Site Peak } \\ \text { 10:00-11:00 } \\ \text { AM } \\ \hline \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| SH 6 EBFR- West of FM 3400 | 3,694 | EB | 257 | 361 | 174 |
| SH 6 EBFR- East of FM 3400 | 1,834 | EB | 119 | 140 | 92 |
| SH 6 WBFR- West of FM 3400 | 3,685 | WB | 290 | 303 | 187 |
| SH 6 WBFR- East of FM 3400 | 1,217 | WB | 86 | 80 | 73 |
| FM 3400 - North of SH 6 | 6,807 | NB | 291 | 296 | 167 |
|  |  | SB | 217 | 289 | 169 |
| FM 3400 - SH 6 to Tinsley Road | 4,332 | NB | 260 | 156 | 122 |
|  |  | SB | 115 | 147 | 91 |
| FM 3400 -Tinsley Road to Lockwood Lane | 3,056 | NB | 158 | 77 | 83 |
|  |  | SB | 108 | 135 | 86 |
| FM 3400 - Lockwood Lane to Radle Road | 2,623 | NB | 141 | 77 | 56 |
|  |  | SB | 74 | 115 | 71 |
| FM 3400 - South of Radle Road | 2,379 | NB | 121 | 59 | 67 |
|  |  | SB | 79 | 105 | 56 |
| Tinsley Road - West of FM 3400 | 723 | EB | 23 | 30 | 19 |
|  |  | WB | 26 | 28 | 18 |
| Tinsley Road - East of FM 3400 | 709 | EB | 6 | 12 | 8 |
|  |  | WB | 59 | 36 | 33 |
| Lockwood Lane - East of FM 3400 | 240 | EB | 2 | 10 | 10 |
|  |  | WB | 15 | 3 | 9 |
| Radle Road - East of FM 3400 | 105 | EB | 1 | 4 | 0 |
|  |  | WB | 8 | 2 | 3 |

${ }^{1} \mathrm{NB}=$ Northbound, $\mathrm{SB}=$ Southbound, $\mathrm{EB}=$ Eastbound, $\mathrm{WB}=$ Westbound

In addition to the roadway AM and PM peak hours, the 10:00 AM to 11:00 AM hour is presented in the table because the City of Waco MSW Transfer Station's peak traffic volumes are anticipated to occur during that time period (Facility Peak Hour). In addition, the AM and PM peak hours were selected based on the anticipated AM and PM peak hours of the site. In the morning, the
highest site volume is anticipated to occur between 7:00 and 8:00 AM. In the evening, the highest site volume is expected to occur between 4:00 and 5:00 PM. It should be noted that the AM peak hour of traffic at the study intersections is similar to the 7:00-8:00 AM time. In the evening, peak hour volumes occur slightly later; however, the site is anticipated to generate minimal volumes after 5:00 PM. Thus, analyzing traffic between 5:00-6:00 PM would provide little insight into the anticipated site impact.

Peak hour turning movement volumes for Existing (2022) conditions are shown in Figure 3.
Turning movement volumes collected on Tuesday, May 10, 2022. OCKWOOD LN
LEGEND

- Study Intersection
$\leftarrow$ AM Peak Hour (Site Peak Hour) [PM Peak Hour] 7:00-8:00 AM (10:00-11:00 AM) [4:00-5:00 PM] - \{24-Hour Volume\}


| $121(67)[59]$ |
| :---: |
| $0(0)[0]$ |





P

SH6WBFR

(11) [17]
$\leftarrow 14$ (12) [13]
$\leftarrow 14(12)[13]$
$\checkmark 38(26)[27]$
$\rightarrow 22$ (24) [23]

15 (9) [2]
$\vdash^{-0}(0)[1]$




SH 6 WBFR -


## BACKGROUND TRAFFIC VOLUMES

Lee Engineering gathered TxDOT historical count volumes at locations near the proposed site. These volumes are presented in Table 2 below. As can be seen from the historical data, there have been fluctuations in traffic volumes near the proposed site over the past several years.

Table 2: TxDOT Count Map Volumes

| TxDOT Count Year | FM 3400 <br> South of SH 6 | SH 6 EBFR <br> East of FM 3400 | SH 6 WBFR <br> East of FM 3400 | SH 6 <br> East of FM 3400 |
| :---: | :---: | :---: | :---: | :---: |
| 2011 | 3,500 | -- | -- | 12,230 |
| 2012 | 3,800 | 2,070 | 2,070 | 11,070 |
| 2013 | 3,799 | 1,486 | 2,149 | 12,034 |
| 2014 | 3,353 | 1,796 | 2,226 | 12,191 |
| 2015 | 3,734 | 1,613 | 792 | 13,658 |
| 2016 | 4,910 | 1,612 | 968 | 14,459 |
| 2017 | 3,449 | 2,078 | 1,055 | 14,311 |
| 2018 | 3,270 | 1,934 | 1,094 | 15,520 |
| 2019 | 3,906 | 2,434 | 1,471 | 15,520 |
| 2020 | 3,458 | 2,031 | 1,292 | 13,502 |
| 2021 | 3,579 | 2,031 | 1,337 | 14,042 |
| Average <br> Annual Growth | $\mathbf{0 \%}$ | $\mathbf{0 \%}$ | $\mathbf{- 5 \%}$ | $\mathbf{3 \%}$ |

In the TxDOT Statewide Planning Map, projections for 2037 traffic volumes are available for the study roadways. Based on that data, TxDOT projected the following annual growth percentages:

- $2.3 \%$ on SH 6 west of FM 3400 and on FM 3400 south of Tinsley,
- $1.7 \%$ on the SH 6 frontage roads, on SH 6 east of FM 3400 , on FM 3400 north of Tinsley, and on Tinsley west of FM 3400,
- $0 \%$ on all the other study roadways.

For the purposes of this study, an annual traffic volume growth rate of two percent (2\%) was selected to estimate background traffic volumes in the analysis years (2025 and 2059).

To calculate the Site Opening (2025) Background traffic volumes, the existing traffic volumes (Figure 3) were grown at an annual rate of two percent (2\%) for three years. The projected Site Opening (2025) Background traffic volumes are shown in Figure 4.

To calculate the Site Closure (2059) Background traffic volumes, the existing traffic volumes (Figure 3) were grown at an annual rate of two percent (2\%) for 37 years. The projected Site Closure (2059) Background traffic volumes are shown in Figure 5.



## TRIP GENERATION, DISTRIBUTION AND ASSIGNMENT

City of Waco representatives provided the average inbound number of vehicles accessing the existing Waco landfill facility in each hour of the day, based on data collected between September 2021 and August 2022. The existing landfill traffic is believed to be a conservative estimate of the amount of traffic the transfer station will experience because not all traffic at the present landfill is expected to relocate to the new transfer station. Some traffic from private haulers is expected to directly access other landfills in the region. Information was provided for both weekday operation and weekend operation and is included in the Appendix.

City representatives have indicated the site's allowable waste is a fixed number, therefore site traffic estimates are held constant between the assumed opening year (2025) and the assumed closure year (2059). Based on this information provided, the site is anticipated to have 712 inbound daily trips in 2025 and 712 inbound trips were also assumed for 2059.

The City representatives also provided an hourly breakdown of traffic at the existing site for a weekday. These hourly percentages were then used in identifying the peak hours and the hourly volumes. A summary of the collected data is shown in Table 3.

Based on the hourly break down provided in Table 3, the 10:00 AM to 11:00 AM hour is assumed as the Facility Peak Hour. This peak hour does not coincide with the typical 7:00 AM to 9:00 AM morning or 4:00 PM to 6:00 PM evening peak periods on typical roadway facilities. It should be noted that the facility generates relatively low traffic volumes during the 4:00 PM to 6:00 PM peak period (less than 10 percent of the facility traffic) and is unlikely to have a significant impact during that time period.

Table 3: Hourly Traffic Breakdown - Existing Site South of Waco

| Time | WEEKDAY INBOUND VEHICLE VOLUMES |  |  | Peak \% of Daily |
| :---: | :---: | :---: | :---: | :---: |
|  | Total Vehicles/Year/ Hour | Average Vehicles/Day/ Hour | Peak <br> Vehicles/Hour |  |
| 5:00 AM | 0 | 0 | 0 | 0.0\% |
| 6:00 AM | 378 | 1 | 4 | 0.5\% |
| 7:00 AM | 7,552 | 29 | 51 | 6.5\% |
| 8:00 AM | 11,236 | 44 | 80 | 10.3\% |
| 9:00 AM | 12,592 | 49 | 75 | 9.6\% |
| 10:00 AM | 13,180 | 51 | 97 | 12.4\% |
| 11:00 AM | 13,020 | 51 | 80 | 10.3\% |
| 12:00 PM | 13,185 | 51 | 81 | 10.4\% |
| 1:00 PM | 13,159 | 51 | 90 | 11.5\% |
| 2:00 PM | 12,844 | 50 | 78 | 10.0\% |
| 3:00 PM | 11,594 | 45 | 74 | 9.5\% |
| 4:00 PM | 5,941 | 23 | 63 | 8.1\% |
| 5:00 PM | 10 | 0 | 7 | 0.9\% |
| 6:00 PM | 0 | 0 | 0 | 0.0\% |
| 7:00 PM | 0 | 0 | 0 | 0.0\% |
| Total | 114,691 | 445 | 780 | 100.0\% |

As previously stated, the site was anticipated to have 712 inbound vehicle trips in both 2025 and 2059. This estimate is based on 602 vehicles accessing the landfill daily plus 90 transfer trucks daily plus assumed 20 employee trips. The above daily distribution was applied to the projected daily inbound non-employee vehicle volume (692) to obtain hourly inbound and outbound truck trips. It was assumed that an equal number of vehicles would enter and exit the site every hour.

Finally, based on information from City of Waco representatives, the site will include approximately 20 employees. For the purposes of this study, the employees were split into two shifts, with half entering the site from 7:00 AM-8:00 AM and half entering from 10:00 AM-11:00 AM. Employees were assumed to depart the site in the ninth hour after entering. Some of the employees are likely to arrive in the hour prior to facility opening. However, combining all the employees arriving during the 6:00 AM and 7:00 AM hours into the 7:00 AM arrival hour for analysis purposes results in a more conservative analysis of traffic operations and site impact by adding more employee traffic during the peak hour of the adjacent roadway (7:00 AM). Similarly the other half of employees have been shown entering during the 10:00 AM hour resulting in a more conservative analysis of traffic operations by adding employee traffic during the peak hour of the facility itself (10:00 AM). The estimated hourly site traffic volumes entering and exiting the site are shown in Table 4. The shaded rows indicated site traffic volumes added during the AM peak hour and the PM peak hour of the adjacent roadways, along with the site peak hour.

Table 4: Estimated Hourly Site Traffic Volumes in the Analysis Years

| Time | \% of <br> Daily | Estimated Total Non-Employee Trips |  | Employees |  | Total Site Trips (VPH) |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | In | Out | In | Out | In | Out | Total |
| 6:00 AM | 0.5\% | 4 | 4 |  |  | 4 | 4 | 8 |
| 7:00 AM | 6.5\% | 45 | 45 | 10 |  | 55 | 45 | 100 |
| 8:00 AM | 10.3\% | 71 | 71 |  |  | 71 | 71 | 142 |
| 9:00 AM | 9.6\% | 67 | 67 |  |  | 67 | 67 | 134 |
| 10:00 AM | 12.4\% | 86 | 86 | 10 |  | 96 | 86 | 182 |
| 11:00 AM | 10.3\% | 71 | 71 |  |  | 71 | 71 | 142 |
| 12:00 PM | 10.4\% | 72 | 72 |  |  | 72 | 72 | 144 |
| 1:00 PM | 11.5\% | 80 | 80 |  |  | 80 | 80 | 160 |
| 2:00 PM | 10.0\% | 69 | 69 |  |  | 69 | 69 | 138 |
| 3:00 PM | 9.5\% | 66 | 66 |  |  | 66 | 66 | 132 |
| 4:00 PM | 8.1\% | 56 | 56 |  | 10 | 56 | 66 | 122 |
| 5:00 PM | 0.9\% | 6 | 6 |  |  | 6 | 6 | 12 |
| 6:00 PM | 0.0\% | 0 | 0 |  |  | 0 | 0 | 0 |
| 7:00 PM | 0.0\% | 0 | 0 |  | 10 | 0 | 10 | 10 |
| $\begin{gathered} \text { 8:00 PM - } \\ \text { 6:00 AM } \\ \hline \end{gathered}$ | 0.0\% | 0 | 0 |  |  | 0 | 0 | 8 |
| Total | 100.0\% | 692 | 692 | 20 | 20 | 712 | 712 | 1,424 |

Based on the facility specific hourly data, the facility generates the most traffic during the 10:00 AM to 11:00 AM peak hour when 12.4 percent of the daily facility traffic occurs. During the facility peak hour, approximately 182 trips are estimated to occur, with 96 vehicles arriving at the facility and 86 vehicles expected to leave the facility. These volumes include all vehicles entering the complex including both light and heavy vehicles as well as employee vehicles.

## TOTAL TRAFFIC VOLUMES

## Trip Distribution

The distribution and assignment of site generated trips to the study area roadways and intersections were performed based on the local traffic patterns, knowledge of the study area, and the proposed location of the site access point. Site traffic was assumed to go to and come from the Waco city limits to the north, with most traffic utilizing SH 6. All City of Waco operators will be required to access the facility from the north. No City of Waco transfer trucks or route collection vehicles are anticipated to approach the facility from the south. The assumed directional distribution percentages for the proposed development are shown in Figure 6.

## Site Traffic Assignment

Traffic volumes expected to be generated by the proposed development were assigned to the area roadways and site access point based on the assumed directional distribution identified in Figure 6. The estimated site generated traffic volumes for Site Opening (2025) of the development are shown in Figure 7 during the weekday AM peak, site peak, and PM peak hours. The estimated site generated traffic volumes for Site Closure (2059) are anticipated to be the same as at Site Opening. The entering and exiting site traffic volumes for each scenario were previously identified in Table 4.

## Projected Total Traffic Volumes

To obtain the projected total traffic volumes at Site Opening (2025), the estimated 2025 site generated traffic volumes (Figure 7) were added to the 2025 background traffic volumes (Figure 4). The projected total traffic volumes for Site Opening (2025) are shown in Figure 9.

Similarly, to obtain the projected total traffic volumes at Site Closure (2059), the estimated 2059 site generated traffic volumes (Figure 8) were added to the 2059 background traffic volumes (Figure 5). The projected total traffic volumes for Site Closure (2059) are shown in Figure 10.





## TRAFFIC ANALYSES

## Roadway Link Analysis

Planning level roadway link capacity analysis allows for the assessment of a roadway's ability to adequately serve the projected traffic volumes by comparing projected volumes to the service volume or capacity, of that roadway.

The Highway Capacity Manual provides methodology for analyzing the operation on uninterrupted-flow facilities. HCM defines levels of service for automobiles on two-lane highways such as FM 3400 based on the follower density (in followers per mile), as shown in Table 5. Criteria also differs based on the posted speed limit of the facility.

Table 5: Level of Service Criteria for Two-Lane Highways

| Level-of-Service <br> (LOS) | Follower Density (followers/mile) |  |
| :---: | :---: | :---: |
|  | Higher-Speed Highways <br> Posted Speed Limit $\mathbf{\geq 5 0} \mathbf{~ m p h}$ | Lower-Speed Highways <br> Posted Speed Limit <50 $\mathbf{~ m p h}$ |
| A | $\leq 2.0$ | $\leq 2.5$ |
| B | $>2.0$ to 4.0 | $>2.5$ to 5.0 |
| C | $>4.0$ to 8.0 | $>5.0$ to 10.0 |
| D | $>8.0$ to 12.0 | $>10.0$ to 15.0 |
| E | $>12.0$ | $>15.0$ |
| F | LOS F exists when demand exceeds capacity. |  |

SOURCE: Highway Capacity Manual ${ }^{\text {th }}$ Edition, Transportation Research Board, 2016.

The Highway Capacity Manual defines levels of service for automobiles within a range from " A " to " $F$ " with " $A$ " being free-flow, higher-speed, low-density operation and " $F$ " being a dense traffic stream with constrained or congested operations.

Roadway link analysis was performed using the methodologies in McTrans HCS 7 software for the following scenarios:

- Existing (2022) Traffic Volumes;
- Site Opening (2025) Background Traffic Volumes;
- Site Closure (2059) Background Traffic Volumes;
- Site Opening (2025) Total Traffic Volumes; and
- Site Closure (2059) Total Traffic Volumes.

Roadway link analysis was performed for FM 3400 adjacent to the site between Lockwood Lane and Radle Road, with the results shown in Table 7. HCS 7 output sheets are included in the Appendix for each scenario. For the 'Total' traffic scenarios, only the roadway segment of

FM 3400 between Lockwood Lane and the Site Drive was reanalyzed, as no site traffic was assumed to travel to/from the south. Thus, operations for the portion of FM 3400 between the Site Drive and Radle Road would remain the same as background operations.

FM 3400 was considered a higher-speed two-lane highway for this analysis. As shown, FM 3400 is anticipated to operate at LOS A between SH 6 and Tinsley Road for all scenarios.

Table 6: Two-Lane Highway Analysis - FM 3400 between Lockwood Lane and Radle Road

| Scenario |  | Direction | AM Peak Hour |  |  | PM Peak Hour |  |  | Facility Peak 10:00 AM to 11:00 AM |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Volume | Follower Density ${ }^{1}$ | LOS | Volume | Follower Density ${ }^{1}$ | LOS | Volume | Follower Density ${ }^{1}$ | LOS |
| 2022 Existing |  |  | NB | 129 | 0.4 | A | 60 | 0.3 | A | 69 | 0.1 | A |
|  |  | SB | 80 | 108 |  |  | 55 |  |  |  |  |
| 2025 Background |  | NB | 137 | 0.5 | A | 64 | 0.4 | A | 73 | 0.1 | A |  |
|  |  | SB | 85 |  |  | 115 |  |  | 58 |  |  |  |
| 2059 Background |  | NB | 268 | 1.5 | A | 125 | 1.3 | A | 144 | 0.5 | A |  |
|  |  | SB | 166 |  |  | 225 |  |  | 114 |  |  |  |
| 2025 Total | Lockwood Lane to | NB | 208 | 1.0 | A | 130 | 0.8 | A | 159 | 0.6 | A |  |
|  | Site Drive | SB | 166 |  |  | 171 |  |  | 154 |  |  |  |
|  | Site Drive to | NB | 137 | 0.5 | A | 64 | 0.4 | A | 73 | 0.1 | A |  |
|  | Radle Road | SB | 85 |  |  | 115 |  |  | 58 |  |  |  |
| 2059 Total | Lockwood Lane to | NB | 339 | 2.4 | B | 191 | 1.9 | A | 230 | 1.2 | A |  |
|  | Site Drive | SB | 247 |  |  | 281 |  |  | 210 |  |  |  |
|  | Site Drive to Radle Road | NB | 268 | 1.5 | A | 125 | 1.3 | A | 144 | 0.5 | A |  |
|  |  | SB | 166 |  |  | 225 |  |  | 114 |  |  |  |

${ }^{1}$ Follower Density in followers per mile

## Facility Percent of Daily Traffic

For reference, the estimated average daily facility generated traffic was compared to the total daily roadway volume and the resulting percentage of facility traffic along each link was calculated, as shown in Table 7. The data indicates that the facility traffic would constitute an average of approximately 10 percent of traffic on the SH 6 frontage roads. South of the site, north of SH 6, and on the other study roadways intersecting FM 3400 the facility traffic is predicted to account for a very minor percent of the total daily traffic. On the other hand, due to the low existing traffic volumes between the site driveway and SH 6, the facility site traffic is anticipated to account for up to half of the total daily traffic on FM 3400 by the opening year (2025). By the site closure year (2059), site traffic is anticipated to account for approximately one quarter of traffic on FM 3400 between SH 6 and the site driveway due to background growth.

Table 7: Total Facility Traffic as a Percentage of Daily Traffic

| Roadway | Background Traffic |  |  | Site Traffic |  | Site Traffic Percent of Total Daily Traffic ${ }^{1}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2022 Daily Volume | 2025 Daily Volume | 2059 Daily Volume | 2025 Daily Volume | 2059 Daily Volume | 2025 | 2059 |
| SH 6 EBFR - West of FM 3400 | 3,694 | 3,920 | 7,686 | 427 | 427 | 11\% | 6\% |
| SH 6 EBFR - East of FM 3400 | 1,834 | 1,946 | 3,816 | 214 | 214 | 11\% | 6\% |
| SH 6 WBFR - West of FM 3400 | 3,685 | 3,911 | 7,667 | 427 | 427 | 11\% | 6\% |
| SH 6 WBFR - East of FM 3400 | 1,217 | 1,291 | 2,532 | 214 | 214 | 17\% | 8\% |
| FM 3400 - North of SH 6 | 6,807 | 7,224 | 14,163 | 142 | 142 | 2\% | 1\% |
| FM 3400 - SH 6 to Tinsley | 4,332 | 4,597 | 9,014 | 1,424 | 1,424 | 31\% | 16\% |
| FM 3400 - Tinsley to Lockwood | 3,056 | 3,243 | 6,359 | 1,424 | 1,424 | 44\% | 22\% |
| FM 3400 -Lockwood to Site Dwy | 2,623 | 2,784 | 5,458 | 1,424 | 1,424 | 51\% | 26\% |
| FM 3400 - Site Dwy to Radle | 2,623 | 2,784 | 5,458 | 0 | 0 | 0\% | 0\% |
| FM 3400 - South of Radle | 2,379 | 2,525 | 4,950 | 0 | 0 | 0\% | 0\% |
| Tinsley Road - West of FM 3400 | 723 | 767 | 1,504 | 0 | 0 | 0\% | 0\% |
| Tinsley Road - East of FM 3400 | 709 | 752 | 1,475 | 0 | 0 | 0\% | 0\% |
| Lockwood Lane - East of FM 3400 | 240 | 255 | 499 | 0 | 0 | 0\% | 0\% |
| Radle Road - East of FM 3400 | 105 | 111 | 218 | 0 | 0 | 0\% | 0\% |

${ }^{1}$ Total Daily Traffic $=$ Background Traffic + Site Traffic

## Intersection Capacity Analysis

Intersection capacity analysis was conducted using both the 2025 and the 2059 background and total traffic volumes. If an intersection operates acceptably under the 2025 volumes, then it is reasonable to conclude that the intersections should also perform acceptably under the existing 2022 volumes absent any changes in the proposed lane configuration or intersection control. Intersection capacity analysis results for 2022 existing traffic conditions are included in the Appendix for reference, along with output sheets for all other scenarios.

The Highway Capacity Manual defines levels of service for automobiles at intersections based on the amount of average delay, in seconds/vehicle, experienced at the intersection. The Level of Service (LOS) of an intersection is a qualitative measure of the capacity and operating conditions and is directly related to vehicle delay.

For unsignalized and signalized intersections, the levels of service, as shown in Table 8, are defined by average control delay in seconds per vehicle. LOS is given a letter designation from A to F , with LOS A representing shorter delays and LOS F representing longer delays.

Table 8: Level of Service Criteria for Intersections

| Level-of-Service <br> (LOS) | Average Control Delay (seconds/vehicle) |  |
| :---: | :---: | :---: |
|  | Unsignalized | Signalized |
| A | $\leq 10.0$ | $\leq 10.0$ |
| B | 10.1 to 15.0 | 10.1 to 20.0 |
| C | 15.1 to 25.0 | 20.1 to 35.0 |
| D | 25.1 to 35.0 | 35.1 to 55.0 |
| E | 35.1 to 50.0 | 55.1 to 80.0 |
| F | $>50.0$ | $>80.0$ |

SOURCE: Highway Capacity Manual 6 ${ }^{\text {th }}$ Edition, Transportation Research Board, 2016.

Unsignalized two-way stop control and multiway stop control analysis was performed for the existing intersections along FM 3400 in the vicinity of the site as well as the proposed site access roadway intersection with FM 3400 . It should be noted that HCM methodology does not provide intersection-wide delay or level of service for intersections operating under two-way stop control.

Based on the existing 24-hour automated traffic counts (Figure 3), the 10:00 AM to 11:00 AM site peak hour is a relatively low volume period for background traffic as compared to the peak AM and PM periods. However, site traffic volumes are anticipated to be higher during the site peak hour, so this time period was also included in the analysis.

Existing peak hour factors (PHF) from the count data were used in the analysis. The PHF at the site driveway was assumed based on the existing PHF of traffic on FM 3400 north of Radle Road.

Existing truck percentages for each movement were obtained from the collected traffic volume data and utilized for analysis of background traffic. Truck percentages were recalculated for Total conditions based on background and site truck volumes.

## Site Opening (2025) Traffic Conditions

Table 9 presents the results of the 2025 background and total capacity analyses for the study area intersections. The existing lane configurations shown in Figure 2 and the traffic volumes shown in Figures 4 and 8 were used for this analysis.

Table 9: Intersection Capacity Analyses Results - Site Opening (2025) Background and Total Traffic

| Intersection |  | Movement | AM Peak Hour |  | PM Peak Hour |  | Site Peak Hour |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Background | Total | Background | Total | Background | Total |
| 1 | FM 3400 at SH 6 WBFR (MWSC ${ }^{1}$ ) |  | Intersection | 13.2 (B) ${ }^{4}$ | 14.8 (B) | 11.6 (B) | 12.5 (B) | 9.4 (A) | 10.4 (B) |
|  |  | WB | 11.0 (B) | 12.4 (B) | 9.9 (A) | 10.9 (B) | 9.6 (A) | 10.8 (B) |
|  |  | NB | 15.0 (B) | 17.0 (C) | 13.2 (B) | 14.2 (B) | 10.0 (A) | 11.1 (B) |
|  |  | SB | 10.6 (B) | 11.3 (B) | 10.0 (A) | 10.6 (B) | 8.6 (A) | 9.2 (A) |
| 2 | FM 3400 at SH 6 EBFR (MWSC) | Intersection | 13.4 (B) | 16.6 (C) | 11.5 (B) | 12.8 (B) | 9.9 (A) | 11.5 (B) |
|  |  | EB | 13.1 (B) | 14.0 (B) | 12.1 (B) | 13.0 (B) | 10.0 (A) | 10.9 (B) |
|  |  | NB | 14.5 (B) | 20.3 (C) | 11.1 (B) | 13.2 (B) | 9.8 (A) | 12.3 (B) |
|  |  | SB | 11.7 (B) | 13.7 (B) | 10.4 (B) | 11.8 (B) | 9.7 (A) | 11.4 (B) |
| 3 | FM 3400 at Tinsley Road (TWSC²) | EB | 11.5 (B) | 13.5 (B) | 10.3 (B) | 11.3 (B) | 9.9 (A) | 11.3 (B) |
|  |  | WB | 10.2 (B) | 11.2 (B) | 9.4 (A) | 10.0 (B) | 9.5 (A) | 10.4 (B) |
|  |  | NB Left | 7.9 (A) | 8.1 (A) | 7.9 (A) | 8.1 (A) | 7.4 (A) | 7.6 (A) |
|  |  | SB Left | 7.6 (A) | 7.8 (A) | 7.4 (A) | 7.6 (A) | 7.4 (A) | 7.6 (A) |
| 4 | FM 3400 at Lockwood Lane (TWSC) | WB | 9.5 (A) | 10.1 (B) | 10.0 (B) | 10.7 (B) | 9.3 (A) | 10.0 (B) |
|  |  | $\mathrm{NB}^{3}$ | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) |
|  |  | SB Left | 8.1 (A) | 8.3 (A) | 7.8 (A) | 8.0 (A) | 8.1 (A) | 8.4 (A) |
| 5 | FM 3400 at Radle Road (TWSC) | WB | 9.0 (A) | 9.0 (A) | 9.8 (A) | 9.8 (A) | 9.3 (A) | 9.3 (A) |
|  |  | $\mathrm{NB}^{3}$ | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) |
|  |  | SB Left | 7.5 (A) | 7.5 (A) | 7.4 (A) | 7.4 (A) | 0.0 (A) | 0.0 (A) |
| 6 | FM 3400 at Site Driveway (TWSC) | WB | - | 10.9 (B) | - | 10.0 (B) | - | 10.4 (B) |
|  |  | $\mathrm{NB}^{3}$ | - | 0.0 (A) | - | 0.0 (A) | - | 0.0 (A) |
|  |  | SB Left | - | 8.8 (A) | - | 8.6 (A) | - | 8.6 (A) |
| Note: |  | 1 - Multiway Stop-Control (MWSC) |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  | 3 - In the unsignalized intersection analyses, the northbound and southbound through traffic movements on FM 3400 will experience no delay with no left turning volumes at the TWSC intersections and are predicted to operate at levels of service " $A$ " in all analysis years. |  |  |  |  |  |  |

As can be seen in the table, the analysis indicates that the study intersections are predicted to operate in an acceptable fashion for the predicted 2025 background traffic volumes. In addition, the intersections are predicted to continue to operate acceptably with the addition of site traffic in 2025.

## Site Closure (2059) Traffic Conditions

Table 9 presents the results of the 2059 background and total capacity analyses for the study area intersections. The existing lane configurations shown in Figure 2 and the traffic volumes shown in Figures 5 and 9 were used for this analysis. Shaded cells indicate intersections or movements which are predicted to operate beyond acceptable levels of service (LOS E or F).

Table 10: Intersection Capacity Analyses Results - Site Closure (2059) Background and Total Traffic

| Intersection |  | Movement | AM Peak Hour |  | PM Peak Hour |  | Site Peak Hour |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Background | Total | Background | Total | Background | Total |
| 1 | FM 3400 at SH 6 WBFR (MWSC ${ }^{1}$ ) |  | Intersection | 99.3 (F) ${ }^{4}$ | 111.9 (F) | 67.1 (F) | 73.2 (F) | 13.7 (B) | 15.3 (C) |
|  |  | WB | 14.6 (B) | 16.6 (C) | 12.5 (B) | 13.5 (B) | 11.4 (B) | 12.8 (B) |
|  |  | NB | 154.8 (F) | 174.7 (F) | 112.6 (F) | 121.9 (F) | 16.0 (C) | 18.0 (C) |
|  |  | SB | 20.4 (C) | 22.4 (C) | 22.6 (C) | 24.4 (C) | 11.4 (B) | 12.4 (B) |
| 2 | $\begin{gathered} \text { FM } 3400 \text { at SH } \\ 6 \text { EBFR } \\ \text { (MWSC) } \end{gathered}$ | Intersection | 88.9 (F) | 114.7 (F) | 41.8 (E) | 49.6 (E) | 14.2 (B) | 17.6 (C) |
|  |  | EB | 61.1 (F) | 61.0 (F) | 60.1 (F) | 70.0 (F) | 14.9 (B) | 16.4 (C) |
|  |  | NB | 146.5 (F) | 204.4 (F) | 23.5 (C) | 33.8 (D) | 14.5 (B) | 20.7 (C) |
|  |  | SB | 20.7 (C) | 25.8 (D) | 16.7 (C) | 19.6 (C) | 12.5 (B) | 15.2 (C) |
| 3 | FM 3400 at Tinsley Road (TWSC²) | EB | 18.4 (C) | 24.0 () | 13.4 (B) | 15.3 (C) | 11.7 (B) | 13.9 (B) |
|  |  | WB | 13.5 (B) | 15.5 () | 10.7 (B) | 11.6 (B) | 10.7 (B) | 11.9 (B) |
|  |  | NB Left | 8.2 (A) | 8.5 (A) | 8.4 (A) | 8.6 (A) | 7.6 (A) | 7.9 (A) |
|  |  | SB Left | 8.0 (A) | 8.2 (A) | 7.6 (A) | 7.8 (A) | 7.6 (A) | 7.8 (A) |
| 4 | FM 3400 at Lockwood Lane (TWSC) | WB | 10.8 (B) | 11.5 (B) | 11.3 (B) | 12.3 (B) | 9.8 (A) | 10.7 (B) |
|  |  | $\mathrm{NB}^{3}$ | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) |
|  |  | SB Left | 8.6 (A) | 8.9 (A) | 8.1 (A) | 8.3 (A) | 8.3 (A) | 8.7 (A) |
| 5 | FM 3400 at Radle Road (TWSC) | WB | 9.9 (A) | 9.9 (A) | 11.1 (B) | 11.1 (B) | 10.0 (B) | 10.0 (B) |
|  |  | $\mathrm{NB}^{3}$ | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) | 0.0 (A) |
|  |  | SB Left | 7.8 (A) | 7.8 (A) | 7.5 (A) | 7.5 (A) | 0.0 (A) | 0.0 (A) |
| 6 | FM 3400 at Site Driveway (TWSC) | WB |  | 12.5 (B) |  | 10.6 (B) |  | 11.2 (B) |
|  |  | $\mathrm{NB}^{3}$ |  | 0.0 (A) |  | 0.0 (A) |  | 0.0 (A) |
|  |  | SB Left |  | 9.5 (A) |  | 8.8 (A) |  | 8.9 (A) |
| Note: |  |  |  |  |  |  |  |  |
|  |  | 3 - In the unsignalized intersection analyses, the northbound and southbound through traffic movements on FM 3400 will experience no delay with no left turning volumes at the TWSC intersections and are predicted to operate at levels of service " A " in all analysis years. <br> 4 - Delay in seconds/vehicle (Level of Service) |  |  |  |  |  |  |

As shown, the existing two-way stop-controlled study intersections are anticipated to operate at acceptable levels of service in 2059 for both background and total traffic volumes.

The operations at the diamond interchange of SH 6 and FM 3400 are predicted to degrade as traffic grows and signalization will be necessary prior to 2059 based on the poor MWSC analysis results for both background and total traffic conditions during the AM and PM peak hours. Acceptable operation as multi-way stop intersections is still predicted for the site peak hour (10:00-11:00 AM) in 2059.

## Intersection Improvements SH 6 and FM 3400

Based on these results, two improvements will be necessary between site opening in 2025 and 2059 with or without site development:

1) Installation of traffic signal control at the SH 6 and FM 3400 interchange will be necessary prior to 2059, with or without site development.
2) Based on predicted traffic volumes, two (2) northbound through lanes will be necessary on the northbound approach to the eastbound frontage road at the interchange. In order to accommodate two through lanes northbound, the roadway beneath the overpass will need restriped, and the northbound departure of FM 3400 will also require restriping and widening to provide two (2) northbound lanes departing the interchange.

The improvements will be necessary regardless of the proposed site development and timelines for these improvements is unknown and should be identified by TxDOT based on operations at the interchange.

For reference, predicted operation with traffic signal control and this restriping is shown in Table 11. As shown, acceptable operation is anticipated for both 2059 background and total conditions.

Table 11: Intersection Capacity Analyses Results - Site Closure (2059) Background and Total Traffic With Mitigation

| Intersection |  | Movement | AM Peak Hour |  | PM Peak Hour |  | Site Peak Hour |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Background | Total | Background | Total | Background | Total |
| 1 | FM 3400 at SH <br> 6 WBFR (SIGNALIZED) |  | Intersection | 15.2 (B) ${ }^{1}$ | 16.5 (B) | 14.5 (B) | 15.5 (B) | 11.9 (B) | 13.0 (B) |
|  |  | WB | 33.3 (C) | 34.9 (C) | 27.8 (C) | 29.3 (C) | 25.5 (C) | 27.4 (C) |
|  |  | NB | 6.5 (A) | 6.8 (A) | 4.4 (A) | 4.5 (A) | 1.6 (A) | 1.7 (A) |
|  |  | SB | 26.1 (C) | 29.3 (C) | 24.2 (C) | 26.6 (C) | 20.9 (C) | 23.4 (C) |
| 2 | FM 3400 at SH 6 EBFR (SIGNALIZED) | Intersection | 28.6 (C) | 31.1 (C) | 23.4 (C) | 24.7 (C) | 17.1 (B) | 18.2 (B) |
|  |  | EB | 35.5 (D) | 34.8 (C) | 28.7 (C) | 29.1 (C) | 23.7 (C) | 23.3 (C) |
|  |  | NB | 33.4 (C) | 40.1 (D) | 27.6 (C) | 30.8 (C) | 20.1 (C) | 23.5 (C) |
|  |  | SB | 4.2 (A) | 4.7 (A) | 4.4 (A) | 5.2 (A) | 1.7 (A) | 1.9 (A) |

Note: 1 - Delay in seconds/vehicle (Level of Service)

## AUXILIARY LANE ANALYSIS

## Deceleration Lanes

Access to the proposed driveway will be provided via a proposed driveway connection to FM 3400. This driveway will be newly constructed and will be approximately 1.5 miles south of SH 6.

Guidelines contained in TxDOT's Access Management Manual for roadways with a posted speed limit greater than 45 mph indicate that right turn deceleration lanes should be considered for right turn volumes greater than 50 vehicles per hour. Based on the anticipated directional distribution (Figure 6), minimal right turn traffic is projected at this site. It is possible that a few employees may come from the south, but all traffic from City of Waco operations will be required to come from the north. Therefore, it is unlikely to exceed 50 northbound right turns per hour during the life of the facility. The proposed site driveway does not warrant a northbound rightturn deceleration lane based on the projected volumes approaching from the south.

The latest TxDOT Roadway Design Manual contains information related to the need for left-turn deceleration lanes. The proposed site traffic volumes exceed the thresholds for including a leftturn lane, and due to the high-speed nature of FM 3400 Lee Engineering recommends that a southbound left turn lane on FM 3400 at the site access be constructed. Based on Walker Partners coordination with TxDOT Waco, a left-turn deceleration lane with the following dimensions should be provided and is shown in the appendix:

- Total Length: 915 feet (includes taper and storage)
- Taper Length: 150 feet
- Storage Length: 100 feet
- Deceleration Length: 815 feet (includes taper)


## Acceleration Lanes

Guidelines in TxDOT's Access Management Manual indicate that right turn acceleration lanes should be considered where right turn egress volumes exceed 200 vehicles per hour. The facility peak hour is predicted to generate 86 exiting vehicles during the facility peak. Based on the predicted volumes being below the TxDOT threshold, TxDOT indicated during coordination with Walker Partners that no northbound acceleration lane leaving the site should be provided.

## Intersection Sight Distance

As part of this traffic analysis, the required and available sight distances for motorists accessing the proposed site were evaluated. Guidelines for providing sight distance on roadways and intersections are provided by the American Association of State Highway and Transportation Officials (AASHTO) and published in the 2018 edition of A Policy on Geometric Design of Highways
and Streets. Text from this document, discussing the minimum (stopping sight) and desirable (intersection) sight distances, is provided below:

Stopping sight distance is provided continuously along each roadway so that drivers have a view of the roadway ahead that is sufficient to allow drivers to stop. The provision of stopping sight distance at all locations along each roadway, including intersection approaches, is fundamental to intersection operation. (p. 9-35)

If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, a major-road vehicle may need to slow or stop to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances that exceed stopping sight distances are desirable along the major road. (p.9-35)

For the intersection of the site driveway and FM 3400, the minimum required (based on stopping sight distance) and desirable (based on intersection sight distance) sight distances were estimated using procedures published in AASHTO's A Policy on Geometric Design of Highways and Streets (2018). The design vehicle used was a combination truck which has an initial time gap of 11.5 seconds. This time gap is suitable for left turn maneuvers from the site driveway directly into the southbound lane of FM 3400. This time gap results in a calculated desirable intersection sight distance value of approximately 1,185 feet for the combination truck.

A passenger car has an initial time gap of 7.5 seconds. The calculated desirable intersection sight distance for a passenger car is approximately 775 feet.

In order to evaluate the adequacy of existing sight distances looking left and right from the proposed site driveway, the available intersection sight distances were determined by field measurement. Lee Engineering measured the lines of sight looking to the left and the right from the proposed sight driveway location. The observer was positioned at the approximate driver's eye location in the exit lane of the proposed site driveway. A target object with a height of 3.5 feet above the pavement was used to determine the maximum available sight distance looking left (to the south) and right (to the north) along FM 3400.

Based on the field measurements, adequate sight distance is available at the proposed site driveway. The summary of the sight distance evaluation is presented in Table 12. The proposed location of the site driveway will provide adequate sight distance to the south and to the north for both combination trucks and passenger cars exiting the site.

Table 12: Analysis of Intersection Sight Distance

| Major Roadway | FM 3400 |  |
| :---: | :---: | :---: |
| Posted Speed Limit | 70 mph |  |
| Minor Roadway | Site Drive |  |
| Design Vehicle | Passenger Car | Combination Truck WB 67 |
| Driver's Eye (Observation) Height | 3.5' | 7.6' |
| Target Object Height | $3.5{ }^{\prime}$ | $3.5{ }^{\prime}$ |
| MINIMUM Sight Distance (Stopping) | $730{ }^{\prime}$ | 730 |
| DESIRABLE Sight Distance (Intersection) | $775{ }^{\prime}$ | 1,185' |
| Available Sight Distance to the Left | >2,000 ${ }^{\prime}$ |  |
| Available Sight Distance to the Right | >2,000 |  |
| Sight Distance Available > MINIMUM |  |  |
| To the Left | YES | YES |
| To the Right | YES | YES |
| Sight Distance Available > DESIRABLE |  |  |
| To the Left | YES | YES |
| To the Right | YES | YES |

## CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this study for the City of Waco MSW Transfer Station, the following conclusions are made:

- The proposed site is predicted to generate 1,424 trips per day when the facility is anticipated to open in 2025, including employee trips. This level of traffic is anticipated to remain throughout the facility's design life.
- Roadway link capacity analyses for the year 2025 and 2059 for the adjacent roadway indicate that adequate capacity will be available to serve the additional traffic generated by the future operations of the proposed MSW Transfer Station along with assumed background growth.
- Intersection capacity analysis indicates that the study intersections are anticipated to operate at acceptable levels of service for predicted background and total traffic operations in 2025 and 2059 except for the diamond interchange of FM 3400 and SH 6.
- The existing multiway stop control intersections at the SH 6 and FM 3400 diamond are predicted to operate poorly by the year 2059. The following improvements should be considered at the SH 6 diamond interchange before 2059 with or without site development. These improvements will be necessary due to background growth in the area regardless of the presence of the proposed facility. The exact timing of the improvements should be based on operations and is unknown. These improvements are:

1. Stripe the northbound approach of FM 3400 to include a through lane and a shared through/right lane at the SH 6 EBFR. In order to accommodate two through lanes northbound, the roadway beneath the overpass will need restriped, and the northbound departure of FM 3400 will also require restriping and widening.
2. Signal control will be necessary before 2059 at this location before 2059 with or without facility traffic. Intersection analysis indicates that the existing multiway stop control intersections will operate at acceptable levels of service during the opening year of 2025 with the addition of facility traffic. TxDOT should monitor traffic operations at this interchange to determine when the level of service will benefit from the installation of signal control.

- At the proposed Site Driveway on FM 3400, install a southbound left turn lane with 915 feet of total length, including a 150-foot taper.
- No additional changes to the surrounding roadway network are recommended to accommodate the site traffic generated by the predicted operations of the City of Waco MSW Transfer Station.


## APPENDIX

Appendix A: Conceptual Site Layout and Preliminary FM 3400 Driveway Layout
Appendix B: Collected Traffic Volumes
Appendix C: TxDOT 20-Year Growth Projections
Appendix D: Existing Landfill Data
Appendix E: HCS Output Sheets
Appendix F: Synchro Output Sheets
Appendix G: TxDOT Access Management Manual Extract Appendix H: TxDOT Roadway Design Manual Extract

# Appendix A: Conceptual Site Layout and Preliminary FM 3400 Driveway Layout 




## Appendix B: Collected Traffic Volumes

Turning Movement Data

| Start Time | FM 3400 Southbound |  |  |  |  | Left |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Left | Thru | Right | U-Turn | App. Total |  |
| 12:00 AM | 0 | 3 | 1 | 0 | 4 | 0 |
| 12:15 AM | 0 | 2 | 7 | 0 | 9 | 1 |
| 12:30 AM | 0 | 4 | 2 | 0 | 6 | 1 |
| 12:45 AM | 0 | 2 | 2 | 0 | 4 | 0 |
| Hourly Total | 0 | 11 | 12 | 0 | 23 | 2 |
| 1:00 AM | 0 | 3 | 0 | 0 | 3 | 0 |
| 1:15 AM | 0 | 4 | 2 | 0 | 6 | 0 |
| 1:30 AM | 0 | 5 | 2 | 0 | 7 | 1 |
| 1:45 AM | 0 | 2 | 2 | 0 | 4 | 1 |
| Hourly Total | 0 | 14 | 6 | 0 | 20 | 2 |
| 2:00 AM | 0 | 3 | 0 | 0 | 3 | 0 |
| 2:15 AM | 0 | 5 | 0 | 0 | 5 | 0 |
| 2:30 AM | 0 | 3 | 1 | 0 | 4 | 2 |
| 2:45 AM | 0 | 1 | 2 | 0 | 3 | 0 |
| Hourly Total | 0 | 12 | 3 | 0 | 15 | 2 |
| 3:00 AM | 0 | 4 | 1 | 0 | 5 | 1 |
| 3:15 AM | 0 | 5 | 3 | 0 | 8 | 1 |
| 3:30 AM | 0 | 1 | 5 | 0 | 6 | 0 |
| 3:45 AM | 0 | 4 | 3 | 0 | 7 | 1 |
| Hourly Total | 0 | 14 | 12 | 0 | 26 | 3 |
| 4:00 AM | 0 | 4 | 1 | 0 | 5 | 0 |
| 4:15 AM | 0 | 6 | 4 | 0 | 10 | 0 |
| 4:30 AM | 0 | 3 | 3 | 0 | 6 | 2 |
| 4:45 AM | 0 | 8 | 1 | 0 | 9 | 0 |
| Hourly Total | 0 | 21 | 9 | 0 | 30 | 2 |
| 5:00 AM | 0 | 6 | 3 | 0 | 9 | 5 |
| 5:15 AM | 0 | 6 | 6 | 0 | 12 | 5 |
| 5:30 AM | 0 | 7 | 6 | 0 | 13 | 4 |
| 5:45 AM | 0 | 5 | 12 | 0 | 17 | 6 |
| Hourly Total | 0 | 24 | 27 | 0 | 51 | 20 |
| 6:00 AM | 0 | 4 | 9 | 0 | 13 | 4 |
| 6:15 AM | 0 | 12 | 10 | 0 | 22 | 4 |
| 6:30 AM | 0 | 9 | 18 | 0 | 27 | 10 |
| 6:45 AM | 0 | 14 | 20 | 0 | 34 | 11 |
| Hourly Total | 0 | 39 | 57 | 0 | 96 | 29 |
| 7:00 AM | 0 | 19 | 12 | 0 | 31 | 10 |
| 7:15 AM | 0 | 21 | 40 | 0 | 61 | 8 |
| 7:30 AM | 0 | 17 | 58 | 0 | 75 | 10 |
| 7:45 AM | 0 | 26 | 24 | 0 | 50 | 10 |

SH 6 WBFR
Westbound

FM 3400
Northbound Right U-TU

SH 6 WBFR
Eastbound

| 0 | 2 | 2 | 1 | 9 |
| :---: | :---: | :---: | :---: | :---: |
| 0 | 1 | 2 | 1 | 8 |
| 0 | 0 | 1 | 2 | 3 |

App. Total

| Left | Eastbound |  |  | App. Total | Int. Total |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Thru | Right | U-Turn |  |  |
| 0 | 0 | 0 | 0 | 0 | 16 |
| 0 | 0 | 0 | 0 | 0 | 20 |
| 0 | 0 | 0 | 0 | 0 | 12 |
| 0 | 0 | 0 | 0 | 0 | 15 |
| 0 | 0 | 0 | 0 | 0 | 63 |
| 0 | 0 | 0 | 0 | 0 | 12 |
| 0 | 0 | 0 | 0 | 0 | 17 |
| 0 | 0 | 0 | 0 | 0 | 12 |
| 0 | 0 | 0 | 0 | 0 | 12 |
| 0 | 0 | 0 | 0 | 0 | 53 |
| 0 | 0 | 0 | 0 | 0 | 7 |
| 0 | 0 | 0 | 0 | 0 | 8 |
| 0 | 0 | 0 | 0 | 0 | 10 |
| 0 | 0 | 0 | 0 | 0 | 7 |
| 0 | 0 | 0 | 0 | 0 | 32 |
| 0 | 0 | 0 | 0 | 0 | 8 |
| 0 | 0 | 0 | 0 | 0 | 14 |
| 0 | 0 | 0 | 0 | 0 | 17 |
| 0 | 0 | 0 | 0 | 0 | 18 |
| 0 | 0 | 0 | 0 | 0 | 57 |
| 0 | 0 | 0 | 0 | 0 | 11 |
| 0 | 0 | 0 | 0 | 0 | 19 |
| 0 | 0 | 0 | 0 | 0 | 21 |
| 0 | 0 | 0 | 0 | 0 | 17 |
| 0 | 0 | 0 | 0 | 0 | 68 |
| 0 | 0 | 0 | 0 | 0 | 35 |
| 0 | 0 | 0 | 0 | 0 | 37 |
| 0 | 0 | 0 | 0 | 0 | 45 |
| 0 | 0 | 0 | 0 | 0 | 53 |
| 0 | 0 | 0 | 0 | 0 | 170 |
| 0 | 0 | 0 | 0 | 0 | 47 |
| 0 | 0 | 0 | 0 | 0 | 68 |
| 0 | 0 | 0 | 0 | 0 | 97 |
| 0 | 0 | 0 | 0 | 0 | 113 |
| 0 | 0 | 0 | 0 | 0 | 325 |
| 0 | 0 | 0 | 0 | 0 | 122 |
| 0 | 0 | 0 | 0 | 0 | 167 |
| 0 | 0 | 0 | 0 | 0 | 221 |
| 0 | 0 |  | 0 | 0 |  |

Appendix B - Page 1 of 40

| Hourly Total | 0 | 83 | 134 | 0 | 217 | 38 | 14 | 12 | 22 | 86 | 127 | 279 | 0 | 0 | 406 | 0 | 0 | 0 | 0 | 0 | 709 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8:00 AM | 0 | 19 | 23 | 0 | 42 | 5 | 3 | 1 | 8 | 17 | 26 | 85 | 0 | 0 | 111 | 0 | 0 | 0 | 0 | 0 | 170 |
| 8:15 AM | 0 | 12 | 24 | 0 | 36 | 7 | 1 | 4 | 10 | 22 | 11 | 54 | 0 | 0 | 65 | 0 | 0 | 0 | 0 | 0 | 123 |
| 8:30 AM | 0 | 21 | 39 | 0 | 60 | 7 | 3 | 7 | 6 | 23 | 26 | 47 | 0 | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 156 |
| 8:45 AM | 0 | 15 | 27 | 0 | 42 | 6 | 1 | 4 | 5 | 16 | 24 | 48 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 130 |
| Hourly Total | 0 | 67 | 113 | 0 | 180 | 25 | 8 | 16 | 29 | 78 | 87 | 234 | 0 | 0 | 321 | 0 | 0 | 0 | 0 | 0 | 579 |
| 9:00 AM | 0 | 18 | 17 | 0 | 35 | 5 | 0 | 5 | 9 | 19 | 17 | 30 | 0 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 101 |
| 9:15 AM | 0 | 10 | 16 | 0 | 26 | 5 | 0 | 0 | 7 | 12 | 10 | 44 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 92 |
| 9:30 AM | 0 | 13 | 22 | 0 | 35 | 6 | 2 | 5 | 6 | 19 | 19 | 28 | 0 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 101 |
| 9:45 AM | 0 | 10 | 26 | 0 | 36 | 8 | 1 | 4 | 9 | 22 | 15 | 35 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 108 |
| Hourly Total | 0 | 51 | 81 | 0 | 132 | 24 | 3 | 14 | 31 | 72 | 61 | 137 | 0 | 0 | 198 | 0 | 0 | 0 | 0 | 0 | 402 |
| 10:00 AM | 0 | 15 | 19 | 0 | 34 | 4 | 5 | 2 | 7 | 18 | 13 | 35 | 0 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 100 |
| 10:15 AM | 0 | 20 | 24 | 0 | 44 | 7 | 5 | 6 | 7 | 25 | 15 | 34 | 0 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 118 |
| 10:30 AM | 0 | 18 | 22 | 0 | 40 | 9 | 2 | 1 | 6 | 18 | 15 | 43 | 0 | 0 | 58 | 0 | 0 | 0 | 0 | 0 | 116 |
| 10:45 AM | 0 | 13 | 38 | 0 | 51 | 6 | 0 | 2 | 4 | 12 | 14 | 44 | 0 | 0 | 58 | 0 | 0 | 0 | 0 | 0 | 121 |
| Hourly Total | 0 | 66 | 103 | 0 | 169 | 26 | 12 | 11 | 24 | 73 | 57 | 156 | 0 | 0 | 213 | 0 | 0 | 0 | 0 | 0 | 455 |
| 11:00 AM | 0 | 14 | 35 | 0 | 49 | 10 | 2 | 3 | 5 | 20 | 17 | 42 | 0 | 0 | 59 | 0 | 0 | 0 | 0 | 0 | 128 |
| 11:15 AM | 0 | 10 | 30 | 0 | 40 | 5 | 2 | 3 | 8 | 18 | 15 | 39 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 112 |
| 11:30 AM | 0 | 16 | 20 | 0 | 36 | 2 | 2 | 0 | 9 | 13 | 17 | 34 | 0 | 0 | 51 | 0 | 0 | 0 | 0 | 0 | 100 |
| 11:45 AM | 0 | 17 | 35 | 0 | 52 | 6 | 4 | 4 | 13 | 27 | 9 | 46 | 0 | 0 | 55 | 0 | 0 | 0 | 0 | 0 | 134 |
| Hourly Total | 0 | 57 | 120 | 0 | 177 | 23 | 10 | 10 | 35 | 78 | 58 | 161 | 0 | 0 | 219 | 0 | 0 | 0 | 0 | 0 | 474 |
| 12:00 PM | 0 | 13 | 25 | 0 | 38 | 7 | 7 | 3 | 14 | 31 | 13 | 35 | 0 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 117 |
| 12:15 PM | 0 | 17 | 32 | 0 | 49 | 5 | 2 | 6 | 6 | 19 | 17 | 53 | 0 | 0 | 70 | 0 | 0 | 0 | 0 | 0 | 138 |
| 12:30 PM | 0 | 19 | 29 | 0 | 48 | 9 | 0 | 5 | 11 | 25 | 15 | 48 | 0 | 0 | 63 | 0 | 0 | 0 | 0 | 0 | 136 |
| 12:45 PM | 0 | 13 | 24 | 0 | 37 | 6 | 3 | 3 | 8 | 20 | 15 | 41 | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 113 |
| Hourly Total | 0 | 62 | 110 | 0 | 172 | 27 | 12 | 17 | 39 | 95 | 60 | 177 | 0 | 0 | 237 | 0 | 0 | 0 | 0 | 0 | 504 |
| 1:00 PM | 0 | 13 | 34 | 0 | 47 | 4 | 3 | 2 | 8 | 17 | 14 | 35 | 0 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 113 |
| 1:15 PM | 0 | 14 | 30 | 0 | 44 | 4 | 1 | 2 | 2 | 9 | 8 | 46 | 0 | 0 | 54 | 0 | 0 | 0 | 0 | 0 | 107 |
| 1:30 PM | 0 | 14 | 36 | 0 | 50 | 9 | 4 | 3 | 11 | 27 | 11 | 30 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 118 |
| 1:45 PM | 0 | 15 | 37 | 0 | 52 | 4 | 3 | 2 | 5 | 14 | 20 | 38 | 0 | 0 | 58 | 0 | 0 | 0 | 0 | 0 | 124 |
| Hourly Total | 0 | 56 | 137 | 0 | 193 | 21 | 11 | 9 | 26 | 67 | 53 | 149 | 0 | 0 | 202 | 0 | 0 | 0 | 0 | 0 | 462 |
| 2:00 PM | 0 | 15 | 28 | 0 | 43 | 3 | 4 | 3 | 9 | 19 | 17 | 50 | 0 | 0 | 67 | 0 | 0 | 0 | 0 | 0 | 129 |
| 2:15 PM | 0 | 26 | 37 | 0 | 63 | 8 | 1 | 4 | 4 | 17 | 14 | 35 | 0 | 0 | 49 | 0 | 0 | 0 | 0 | 0 | 129 |
| 2:30 PM | 0 | 20 | 44 | 0 | 64 | 5 | 0 | 3 | 6 | 14 | 16 | 31 | 0 | 0 | 47 | 0 | 0 | 0 | 0 | 0 | 125 |
| 2:45 PM | 0 | 17 | 43 | 0 | 60 | 10 | 2 | 5 | 11 | 28 | 17 | 53 | 0 | 0 | 70 | 0 | 0 | 0 | 0 | 0 | 158 |
| Hourly Total | 0 | 78 | 152 | 0 | 230 | 26 | 7 | 15 | 30 | 78 | 64 | 169 | 0 | 0 | 233 | 0 | 0 | 0 | 0 | 0 | 541 |
| 3:00 PM | 0 | 23 | 20 | 0 | 43 | 5 | 5 | 3 | 5 | 18 | 17 | 49 | 0 | 0 | 66 | 0 | 0 | 0 | 0 | 0 | 127 |
| 3:15 PM | 0 | 16 | 29 | 0 | 45 | 20 | 1 | 4 | 3 | 28 | 14 | 48 | 0 | 0 | 62 | 0 | 0 | 0 | 0 | 0 | 135 |
| 3:30 PM | 0 | 15 | 54 | 0 | 69 | 6 | 5 | 3 | 10 | 24 | 24 | 68 | 0 | 0 | 92 | 0 | 0 | 0 | 0 | 0 | 185 |
| 3:45 PM | 0 | 29 | 35 | 0 | 64 | 11 | 2 | 5 | 11 | 29 | 16 | 66 | 0 | 0 | 82 | 0 | 0 | 0 | 0 | 0 | 175 |
| Hourly Total | 0 | 83 | 138 | 0 | 221 | 42 | 13 | 15 | 29 | 99 | 71 | 231 | 0 | 0 | 302 | 0 | 0 | 0 | 0 | 0 | 622 |
| 4:00 PM | 0 | 25 | 51 | 0 | 76 | 6 | 1 | 2 | 5 | 14 | 21 | 59 | 0 | 0 | 80 | 0 | 0 | 0 | 0 | 0 | 170 |
| 4:15 PM | 0 | 24 | 35 | 1 | 60 | 9 | 4 | 3 | 10 | 26 | 24 | 66 | 0 | 0 | 90 | 0 | 0 | 0 | 0 | 0 | 176 |
| 4:30 PM | 0 | 26 | 42 | 0 | 68 | 5 | 2 | 3 | 4 | 14 | 17 | 74 | 0 | 0 | 91 | 0 | 0 | 0 | 0 | 0 | 173 |
| 4:45 PM | 0 | 25 | 61 | 0 | 86 | 7 | 6 | 9 | 4 | 26 | 9 | 80 | 0 | 0 | 89 | 0 | 0 | 0 | 0 | 0 | 201 |
| Hourly Total | 0 | 100 | 189 | 1 | 290 | 27 | 13 | 17 | 23 | 80 | 71 | 279 | 0 | 0 | 350 | 0 | 0 | 0 | 0 | 0 | 720 |
| 5:00 PM | 0 | 33 | 82 | 0 | 115 | 15 | 10 | 5 | 7 | 37 | 19 | 83 | 0 | 0 | 102 | 0 | 0 | 0 | 0 | 0 | 254 |
| 5:15 PM | 0 | 27 | 71 | 0 | 98 | 16 | 0 | 0 | 6 | 22 | 29 | 76 | 0 | 0 | 105 | 0 | 0 | 0 | 0 | 0 | 225 |
| 5:30 PM | 0 | 20 | 66 | 0 | 86 | 12 | 0 | 3 | 4 | 19 | 18 | 63 | 0 | 0 | 81 | 0 | 0 | 0 | 0 | 0 | 186 |
| 5:45 PM | 0 | 17 | 47 | 0 | 64 | 11 | 2 | 6 | 8 | 27 | 12 | 68 | 0 | 0 | 80 | 0 | 0 | 0 | 0 | 0 | 171 |
| Hourly Total | 0 | 97 | 266 | 0 | 363 | 54 | 12 | 14 | 25 | 105 | 78 | 290 | 0 | 0 | 368 | 0 | 0 | 0 | 0 | 0 | 836 |
| 6:00 PM | 0 | 15 | 35 | 0 | 50 | 4 | 0 | 6 | 5 | 15 | 12 | 60 | 0 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 137 |

Appendix B - Page 2 of 40

| 6:15 PM | 0 | 21 | 34 | 0 | 55 | 6 | 0 | 1 | 4 | 11 | 17 | 54 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 137 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6:30 PM | 0 | 16 | 28 | 0 | 44 | 7 | 1 | 4 | 2 | 14 | 11 | 67 | 0 | 0 | 78 | 0 | 0 | 0 | 0 | 0 | 136 |
| 6:45 PM | 0 | 19 | 27 | 0 | 46 | 7 | 1 | 5 | 7 | 20 | 13 | 52 | 0 | 0 | 65 | 0 | 0 | 0 | 0 | 0 | 131 |
| Hourly Total | 0 | 71 | 124 | 0 | 195 | 24 | 2 | 16 | 18 | 60 | 53 | 233 | 0 | 0 | 286 | 0 | 0 | 0 | 0 | 0 | 541 |
| 7:00 PM | 0 | 15 | 23 | 0 | 38 | 4 | 1 | 1 | 2 | 8 | 10 | 45 | 0 | 0 | 55 | 0 | 0 | 0 | 0 | 0 | 101 |
| 7:15 PM | 0 | 12 | 21 | 0 | 33 | 4 | 2 | 2 | 3 | 11 | 10 | 48 | 0 | 0 | 58 | 0 | 0 | 0 | 0 | 0 | 102 |
| 7:30 PM | 0 | 13 | 25 | 0 | 38 | 2 | 0 | 7 | 6 | 15 | 9 | 28 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 90 |
| 7:45 PM | 0 | 14 | 26 | 0 | 40 | 6 | 1 | 3 | 4 | 14 | 14 | 32 | 0 | 0 | 46 | 0 | 0 | 0 | 0 | 0 | 100 |
| Hourly Total | 0 | 54 | 95 | 0 | 149 | 16 | 4 | 13 | 15 | 48 | 43 | 153 | 0 | 0 | 196 | 0 | 0 | 0 | 0 | 0 | 393 |
| 8:00 PM | 0 | 22 | 28 | 0 | 50 | 1 | 0 | 2 | 2 | 5 | 8 | 31 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 94 |
| 8:15 PM | 0 | 9 | 24 | 0 | 33 | 2 | 0 | 0 | 1 | 3 | 6 | 34 | 0 | 0 | 40 | 0 | 0 | 0 | 0 | 0 | 76 |
| 8:30 PM | 0 | 17 | 23 | 0 | 40 | 7 | 0 | 4 | 4 | 15 | 10 | 29 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 94 |
| 8:45 PM | 0 | 12 | 19 | 0 | 31 | 3 | 0 | 1 | 1 | 5 | 11 | 25 | 0 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 72 |
| Hourly Total | 0 | 60 | 94 | 0 | 154 | 13 | 0 | 7 | 8 | 28 | 35 | 119 | 0 | 0 | 154 | 0 | 0 | 0 | 0 | 0 | 336 |
| 9:00 PM | 0 | 11 | 18 | 0 | 29 | 2 | 0 | 1 | 0 | 3 | 7 | 28 | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 67 |
| 9:15 PM | 0 | 13 | 17 | 0 | 30 | 2 | 0 | 3 | 3 | 8 | 3 | 25 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 66 |
| 9:30 PM | 0 | 12 | 37 | 0 | 49 | 4 | 0 | 2 | 1 | 7 | 3 | 21 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 80 |
| 9:45 PM | 0 | 13 | 48 | 0 | 61 | 4 | 0 | 1 | 1 | 6 | 2 | 24 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 93 |
| Hourly Total | 0 | 49 | 120 | 0 | 169 | 12 | 0 | 7 | 5 | 24 | 15 | 98 | 0 | 0 | 113 | 0 | 0 | 0 | 0 | 0 | 306 |
| 10:00 PM | 0 | 9 | 11 | 0 | 20 | 3 | 0 | 3 | 2 | 8 | 0 | 23 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 51 |
| 10:15 PM | 0 | 5 | 5 | 1 | 11 | 4 | 0 | 0 | 0 | 4 | 3 | 18 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 36 |
| 10:30 PM | 0 | 9 | 12 | 0 | 21 | 1 | 2 | 1 | 1 | 5 | 4 | 11 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 41 |
| 10:45 PM | 0 | 3 | 6 | 0 | 9 | 4 | 0 | 2 | 1 | 7 | 6 | 9 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 31 |
| Hourly Total | 0 | 26 | 34 | 1 | 61 | 12 | 2 | 6 | 4 | 24 | 13 | 61 | 0 | 0 | 74 | 0 | 0 | 0 | 0 | 0 | 159 |
| 11:00 PM | 0 | 7 | 5 | 0 | 12 | 0 | 1 | 1 | 2 | 4 | 2 | 18 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 36 |
| 11:15 PM | 0 | 5 | 4 | 0 | 9 | 1 | 0 | 1 | 2 | 4 | 3 | 11 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 27 |
| 11:30 PM | 0 | 2 | 4 | 0 | 6 | 1 | 0 | 0 | 2 | 3 | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 23 |
| 11:45 PM | 0 | 5 | 7 | 0 | 12 | 0 | 0 | 0 | 1 | 1 | 1 | 7 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 21 |
| Hourly Total | 0 | 19 | 20 | 0 | 39 | 2 | 1 | 2 | 7 | 12 | 6 | 50 | 0 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 107 |
| Grand Total | 0 | 1214 | 2156 | 2 | 3372 | 472 | 130 | 206 | 409 | 1217 | 1098 | 3227 | 0 | 0 | 4325 | 0 | 0 | 0 | 0 | 0 | 8914 |
| Approach \% | 0.0 | 36.0 | 63.9 | 0.1 | - | 38.8 | 10.7 | 16.9 | 33.6 | - | 25.4 | 74.6 | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| Total \% | 0.0 | 13.6 | 24.2 | 0.0 | 37.8 | 5.3 | 1.5 | 2.3 | 4.6 | 13.7 | 12.3 | 36.2 | 0.0 | 0.0 | 48.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - |
| Lights | 0 | 940 | 2077 | 2 | 3019 | 302 | 110 | 178 | 219 | 809 | 901 | 2798 | 0 | 0 | 3699 | 0 | 0 | 0 | 0 | 0 | 7527 |
| \% Lights | - | 77.4 | 96.3 | 100.0 | 89.5 | 64.0 | 84.6 | 86.4 | 53.5 | 66.5 | 82.1 | 86.7 | - | - | 85.5 | - | - | - | - | - | 84.4 |
| Mediums | 0 | 164 | 30 | 0 | 194 | 60 | 10 | 17 | 76 | 163 | 79 | 190 | 0 | 0 | 269 | 0 | 0 | 0 | 0 | 0 | 626 |
| \% Mediums | - | 13.5 | 1.4 | 0.0 | 5.8 | 12.7 | 7.7 | 8.3 | 18.6 | 13.4 | 7.2 | 5.9 | $\checkmark$ | - | 6.2 | - | - | - | - | - | 7.0 |
| Articulated Trucks | 0 | 110 | 49 | 0 | 159 | 110 | 10 | 11 | 114 | 245 | 118 | 239 | 0 | 0 | 357 | 0 | 0 | 0 | 0 | 0 | 761 |
| \% Articulated Trucks | - | 9.1 | 2.3 | 0.0 | 4.7 | 23.3 | 7.7 | 5.3 | 27.9 | 20.1 | 10.7 | 7.4 | - | - | 8.3 | - | - | - | - | - | 8.5 |



Turning Movement Data Plot

Turning Movement Peak Hour Data (7:15 AM)



Turning Movement Peak Hour Data Plot (7:15 AM)

Turning Movement Peak Hour Data (4:45 PM)

| Start Time | FM 3400 <br> Southbound |  |  |  |  | SH 6 WBFR Westbound |  |  |  |  | FM 3400 <br> Northbound |  |  |  |  | SH 6 WBFR <br> Eastbound |  |  |  |  | Int. Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total |  |
| 4:45 PM | 0 | 25 | 61 | 0 | 86 | 7 | 6 | 9 | 4 | 26 | 9 | 80 | 0 | 0 | 89 | 0 | 0 | 0 | 0 | 0 | 201 |
| 5:00 PM | 0 | 33 | 82 | 0 | 115 | 15 | 10 | 5 | 7 | 37 | 19 | 83 | 0 | 0 | 102 | 0 | 0 | 0 | 0 | 0 | 254 |
| 5:15 PM | 0 | 27 | 71 | 0 | 98 | 16 | 0 | 0 | 6 | 22 | 29 | 76 | 0 | 0 | 105 | 0 | 0 | 0 | 0 | 0 | 225 |
| 5:30 PM | 0 | 20 | 66 | 0 | 86 | 12 | 0 | 3 | 4 | 19 | 18 | 63 | 0 | 0 | 81 | 0 | 0 | 0 | 0 | 0 | 186 |
| Total | 0 | 105 | 280 | 0 | 385 | 50 | 16 | 17 | 21 | 104 | 75 | 302 | 0 | 0 | 377 | 0 | 0 | 0 | 0 | 0 | 866 |
| Approach \% | 0.0 | 27.3 | 72.7 | 0.0 | - | 48.1 | 15.4 | 16.3 | 20.2 | - | 19.9 | 80.1 | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| Total \% | 0.0 | 12.1 | 32.3 | 0.0 | 44.5 | 5.8 | 1.8 | 2.0 | 2.4 | 12.0 | 8.7 | 34.9 | 0.0 | 0.0 | 43.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - |
| PHF | 0.000 | 0.795 | 0.854 | 0.000 | 0.837 | 0.781 | 0.400 | 0.472 | 0.750 | 0.703 | 0.647 | 0.910 | 0.000 | 0.000 | 0.898 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.852 |
| Lights | 0 | 99 | 279 | 0 | 378 | 46 | 14 | 16 | 18 | 94 | 69 | 291 | 0 | 0 | 360 | 0 | 0 | 0 | 0 | 0 | 832 |
| \% Lights | - | 94.3 | 99.6 | - | 98.2 | 92.0 | 87.5 | 94.1 | 85.7 | 90.4 | 92.0 | 96.4 | - | - | 95.5 | - | - | - | - | - | 96.1 |
| Mediums | 0 | 4 | 1 | 0 | 5 | 3 | 1 | 0 | 3 | 7 | 6 | 5 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 23 |
| \% Mediums | - | 3.8 | 0.4 | - | 1.3 | 6.0 | 6.3 | 0.0 | 14.3 | 6.7 | 8.0 | 1.7 | - | - | 2.9 | - | - | - | - | - | 2.7 |
| Articulated Trucks | 0 | 2 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 3 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 11 |
| \% Articulated Trucks | - | 1.9 | 0.0 | - | 0.5 | 2.0 | 6.3 | 5.9 | 0.0 | 2.9 | 0.0 | 2.0 | - | - | 1.6 | - | - | - | - | - | 1.3 |



Turning Movement Peak Hour Data Plot (4:45 PM)

Turning Movement Data

| Start Time | FM 3400 <br> Southbound |  |  |  |  | SH 6 EBFR <br> Westbound |  |  |  | FM 3400 <br> Northbound |  |  |  |  | SH 6 EBFR <br> Eastbound |  |  |  |  | Int. Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total |  |
| 12:00 AM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 8 | 0 | 2 | 0 | 10 | 15 |
| 12:15 AM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 | 6 | 3 | 0 | 2 | 11 | 17 |
| 12:30 AM | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 1 | 3 | 0 | 0 | 4 | 14 |
| 12:45 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 6 | 0 | 1 | 0 | 7 | 11 |
| Hourly Total | 1 | 12 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 0 | 12 | 21 | 6 | 3 | 2 | 32 | 57 |
| 1:00 AM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 2 | 1 | 0 | 0 | 3 | 11 |
| 1:15 AM | 1 | 3 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 1 | 2 | 0 | 8 | 17 |
| 1:30 AM | 2 | 4 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 2 | 12 |
| 1:45 AM | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 1 | 2 | 0 | 3 | 12 |
| Hourly Total | 4 | 11 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 21 | 7 | 5 | 4 | 0 | 16 | 52 |
| 2:00 AM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 5 |
| 2:15 AM | 2 | 4 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 10 |
| 2:30 AM | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 1 | 0 | 1 | 2 | 12 |
| 2:45 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 4 | 7 |
| Hourly Total | 3 | 12 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 9 | 6 | 1 | 1 | 2 | 10 | 34 |
| 3:00 AM | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 7 |
| 3:15 AM | 1 | 5 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 4 | 1 | 2 | 0 | 0 | 3 | 13 |
| 3:30 AM | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 1 | 0 | 7 | 3 | 0 | 0 | 0 | 3 | 11 |
| 3:45 AM | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 5 | 2 | 1 | 1 | 9 | 19 |
| Hourly Total | 3 | 14 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 16 | 2 | 0 | 18 | 9 | 4 | 1 | 1 | 15 | 50 |
| 4:00 AM | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 2 | 5 | 0 | 7 | 15 |
| 4:15 AM | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 8 | 2 | 3 | 1 | 1 | 7 | 20 |
| 4:30 AM | 2 | 4 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 0 | 9 | 2 | 2 | 3 | 2 | 9 | 24 |
| 4:45 AM | 4 | 4 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 6 | 2 | 0 | 8 | 1 | 2 | 1 | 0 | 4 | 20 |
| Hourly Total | 8 | 14 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 26 | 4 | 0 | 30 | 5 | 9 | 10 | 3 | 27 | 79 |
| 5:00 AM | 1 | 10 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 12 | 6 | 0 | 18 | 6 | 2 | 1 | 0 | 9 | 38 |
| 5:15 AM | 1 | 10 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 13 | 4 | 0 | 17 | 5 | 0 | 1 | 0 | 6 | 34 |
| 5:30 AM | 6 | 4 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 18 | 5 | 0 | 23 | 7 | 1 | 4 | 1 | 13 | 46 |
| 5:45 AM | 5 | 6 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 27 | 7 | 0 | 34 | 2 | 4 | 6 | 0 | 12 | 57 |
| Hourly Total | 13 | 30 | 0 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 70 | 22 | 0 | 92 | 20 | 7 | 12 | 1 | 40 | 175 |
| 6:00 AM | 2 | 6 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 16 | 5 | 0 | 21 | 11 | 4 | 5 | 0 | 20 | 49 |
| 6:15 AM | 5 | 11 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 29 | 8 | 0 | 37 | 9 | 4 | 4 | 0 | 17 | 70 |
| 6:30 AM | 3 | 16 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 42 | 4 | 0 | 46 | 16 | 5 | 8 | 2 | 31 | 96 |
| 6:45 AM | 7 | 18 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 44 | 9 | 0 | 53 | 12 | 10 | 14 | 3 | 39 | 117 |
| Hourly Total | 17 | 51 | 0 | 0 | 68 | 0 | 0 | 0 | 0 | 0 | 131 | 26 | 0 | 157 | 48 | 23 | 31 | 5 | 107 | 332 |
| 7:00 AM | 5 | 24 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 42 | 12 | 0 | 54 | 22 | 5 | 4 | 2 | 33 | 116 |
| 7:15 AM | 13 | 17 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 53 | 7 | 0 | 60 | 42 | 9 | 6 | 3 | 60 | 150 |
| 7:30 AM | 8 | 19 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 76 | 8 | 0 | 84 | 49 | 10 | 10 | 6 | 75 | 186 |
| 7:45 AM | 10 | 25 | 0 | 0 | 35 | 0 | 0 | 0 | 0 | 0 | 60 | 2 | 0 | 62 | 67 | 8 | 10 | 4 | 89 | 186 |


| Hourly Total | 36 | 85 | 0 | 0 | 121 | 0 | 0 | 0 | 0 | 0 | 231 | 29 | 0 | 260 | 180 | 32 | 30 | 15 | 257 | 638 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8:00 AM | 14 | 10 | 0 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 52 | 9 | 0 | 61 | 57 | 10 | 12 | 1 | 80 | 165 |
| 8:15 AM | 7 | 12 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 30 | 11 | 0 | 41 | 32 | 11 | 12 | 6 | 61 | 121 |
| 8:30 AM | 9 | 19 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 46 | 4 | 0 | 50 | 30 | 9 | 9 | 4 | 52 | 130 |
| 8:45 AM | 5 | 13 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 43 | 14 | 0 | 57 | 29 | 9 | 13 | 3 | 54 | 129 |
| Hourly Total | 35 | 54 | 0 | 0 | 89 | 0 | 0 | 0 | 0 | 0 | 171 | 38 | 0 | 209 | 148 | 39 | 46 | 14 | 247 | 545 |
| 9:00 AM | 10 | 12 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 25 | 11 | 0 | 36 | 22 | 6 | 12 | 7 | 47 | 105 |
| 9:15 AM | 7 | 8 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 33 | 5 | 0 | 38 | 19 | 7 | 10 | 14 | 50 | 103 |
| 9:30 AM | 10 | 9 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 29 | 6 | 0 | 35 | 20 | 5 | 12 | 13 | 50 | 104 |
| 9:45 AM | 1 | 17 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 33 | 7 | 0 | 40 | 18 | 7 | 4 | 11 | 40 | 98 |
| Hourly Total | 28 | 46 | 0 | 0 | 74 | 0 | 0 | 0 | 0 | 0 | 120 | 29 | 0 | 149 | 79 | 25 | 38 | 45 | 187 | 410 |
| 10:00 AM | 6 | 11 | 0 | 1 | 18 | 0 | 0 | 0 | 0 | 0 | 23 | 8 | 0 | 31 | 25 | 3 | 7 | 4 | 39 | 88 |
| 10:15 AM | 9 | 18 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 29 | 3 | 0 | 32 | 20 | 6 | 5 | 4 | 35 | 94 |
| 10:30 AM | 8 | 20 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 26 | 1 | 0 | 27 | 31 | 1 | 10 | 2 | 44 | 99 |
| 10:45 AM | 8 | 11 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 24 | 8 | 0 | 32 | 36 | 6 | 9 | 5 | 56 | 107 |
| Hourly Total | 31 | 60 | 0 | 1 | 92 | 0 | 0 | 0 | 0 | 0 | 102 | 20 | 0 | 122 | 112 | 16 | 31 | 15 | 174 | 388 |
| 11:00 AM | 7 | 10 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 28 | 10 | 0 | 38 | 26 | 10 | 9 | 4 | 49 | 104 |
| 11:15 AM | 3 | 11 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 31 | 4 | 0 | 35 | 25 | 5 | 14 | 10 | 54 | 103 |
| 11:30 AM | 6 | 12 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 26 | 9 | 0 | 35 | 25 | 8 | 6 | 5 | 44 | 97 |
| 11:45 AM | 9 | 9 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 22 | 5 | 0 | 27 | 36 | 4 | 12 | 4 | 56 | 101 |
| Hourly Total | 25 | 42 | 0 | 0 | 67 | 0 | 0 | 0 | 0 | 0 | 107 | 28 | 0 | 135 | 112 | 27 | 41 | 23 | 203 | 405 |
| 12:00 PM | 11 | 11 | 0 | 0 | 22 | 0 | 0 | 1 | 1 | 0 | 22 | 2 | 0 | 24 | 26 | 3 | 11 | 6 | 46 | 93 |
| 12:15 PM | 11 | 9 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 29 | 5 | 0 | 34 | 37 | 9 | 10 | 7 | 63 | 117 |
| 12:30 PM | 6 | 23 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 34 | 7 | 0 | 41 | 31 | 5 | 10 | 13 | 59 | 129 |
| 12:45 PM | 3 | 15 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 24 | 3 | 0 | 27 | 30 | 6 | 7 | 4 | 47 | 92 |
| Hourly Total | 31 | 58 | 0 | 0 | 89 | 0 | 0 | 1 | 1 | 0 | 109 | 17 | 0 | 126 | 124 | 23 | 38 | 30 | 215 | 431 |
| 1:00 PM | 5 | 13 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 27 | 2 | 0 | 29 | 24 | 8 | 11 | 9 | 52 | 99 |
| 1:15 PM | 6 | 11 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 20 | 6 | 0 | 26 | 32 | 5 | 8 | 7 | 52 | 95 |
| 1:30 PM | 8 | 18 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 25 | 6 | 0 | 31 | 17 | 5 | 7 | 5 | 34 | 91 |
| 1:45 PM | 6 | 13 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 29 | 3 | 0 | 32 | 29 | 13 | 3 | 2 | 47 | 98 |
| Hourly Total | 25 | 55 | 0 | 0 | 80 | 0 | 0 | 0 | 0 | 0 | 101 | 17 | 0 | 118 | 102 | 31 | 29 | 23 | 185 | 383 |
| 2:00 PM | 7 | 10 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 30 | 4 | 0 | 34 | 37 | 9 | 9 | 5 | 60 | 111 |
| 2:15 PM | 8 | 26 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 27 | 1 | 0 | 28 | 23 | 6 | 11 | 9 | 49 | 111 |
| 2:30 PM | 4 | 21 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 25 | 7 | 0 | 32 | 23 | 6 | 4 | 5 | 38 | 95 |
| 2:45 PM | 5 | 22 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 33 | 5 | 0 | 38 | 37 | 7 | 11 | 6 | 61 | 126 |
| Hourly Total | 24 | 79 | 0 | 0 | 103 | 0 | 0 | 0 | 0 | 0 | 115 | 17 | 0 | 132 | 120 | 28 | 35 | 25 | 208 | 443 |
| 3:00 PM | 7 | 21 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 33 | 3 | 0 | 36 | 32 | 11 | 11 | 5 | 59 | 123 |
| 3:15 PM | 8 | 29 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 26 | 3 | 0 | 29 | 37 | 13 | 5 | 8 | 63 | 129 |
| 3:30 PM | 4 | 15 | 0 | 1 | 20 | 0 | 0 | 0 | 0 | 0 | 42 | 7 | 0 | 49 | 48 | 12 | 15 | 9 | 84 | 153 |
| 3:45 PM | 16 | 23 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 38 | 0 | 0 | 38 | 43 | 13 | 5 | 4 | 65 | 142 |
| Hourly Total | 35 | 88 | 0 | 1 | 124 | 0 | 0 | 0 | 0 | 0 | 139 | 13 | 0 | 152 | 160 | 49 | 36 | 26 | 271 | 547 |
| 4:00 PM | 10 | 23 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 34 | 3 | 0 | 37 | 45 | 19 | 15 | 12 | 91 | 161 |
| 4:15 PM | 8 | 25 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 34 | 7 | 1 | 42 | 56 | 13 | 11 | 4 | 84 | 159 |
| 4:30 PM | 11 | 19 | 0 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 39 | 7 | 0 | 46 | 55 | 11 | 21 | 8 | 95 | 171 |
| 4:45 PM | 8 | 23 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 27 | 5 | 0 | 32 | 60 | 15 | 10 | 6 | 91 | 154 |
| Hourly Total | 37 | 90 | 0 | 0 | 127 | 0 | 0 | 0 | 0 | 0 | 134 | 22 | 1 | 157 | 216 | 58 | 57 | 30 | 361 | 645 |
| 5:00 PM | 9 | 39 | 0 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 42 | 9 | 0 | 51 | 59 | 15 | 8 | 4 | 86 | 185 |
| 5:15 PM | 6 | 36 | 0 | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 46 | 6 | 0 | 52 | 61 | 20 | 24 | 5 | 110 | 204 |
| 5:30 PM | 7 | 25 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 40 | 9 | 0 | 49 | 40 | 7 | 10 | 5 | 62 | 143 |
| 5:45 PM | 5 | 23 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 26 | 6 | 0 | 32 | 55 | 9 | 10 | 1 | 75 | 135 |
| Hourly Total | 27 | 123 | 0 | 0 | 150 | 0 | 0 | 0 | 0 | 0 | 154 | 30 | 0 | 184 | 215 | 51 | 52 | 15 | 333 | 667 |
| 6:00 PM | 7 | 13 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 25 | 2 | 0 | 27 | 46 | 4 | 8 | 3 | 61 | 108 |

Appendix B - Page 10 of 40

| 6:15 PM | 4 | 22 | 0 | 1 | 27 | 0 | 0 | 0 | 0 | 0 | 30 | 5 | 0 | 35 | 44 | 7 | 15 | 3 | 69 | 131 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6:30 PM | 7 | 15 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 30 | 4 | 0 | 34 | 45 | 14 | 13 | 2 | 74 | 130 |
| 6:45 PM | 5 | 20 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 26 | 3 | 0 | 29 | 38 | 9 | 12 | 3 | 62 | 116 |
| Hourly Total | 23 | 70 | 0 | 1 | 94 | 0 | 0 | 0 | 0 | 0 | 111 | 14 | 0 | 125 | 173 | 34 | 48 | 11 | 266 | 485 |
| 7:00 PM | 5 | 14 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 24 | 3 | 0 | 27 | 31 | 12 | 6 | 3 | 52 | 98 |
| 7:15 PM | 5 | 11 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 21 | 2 | 0 | 23 | 36 | 8 | 11 | 3 | 58 | 97 |
| 7:30 PM | 5 | 10 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 13 | 1 | 0 | 14 | 25 | 3 | 9 | 0 | 37 | 66 |
| 7:45 PM | 2 | 19 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 23 | 5 | 0 | 28 | 21 | 3 | 9 | 4 | 37 | 86 |
| Hourly Total | 17 | 54 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 81 | 11 | 0 | 92 | 113 | 26 | 35 | 10 | 184 | 347 |
| 8:00 PM | 6 | 16 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 22 | 2 | 0 | 24 | 19 | 6 | 10 | 2 | 37 | 83 |
| 8:15 PM | 5 | 7 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 27 | 12 | 5 | 9 | 1 | 27 | 66 |
| 8:30 PM | 5 | 18 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 22 | 2 | 0 | 24 | 17 | 9 | 7 | 1 | 34 | 81 |
| 8:45 PM | 7 | 9 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 24 | 1 | 0 | 25 | 14 | 7 | 4 | 0 | 25 | 66 |
| Hourly Total | 23 | 50 | 0 | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 95 | 5 | 0 | 100 | 62 | 27 | 30 | 4 | 123 | 296 |
| 9:00 PM | 2 | 11 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 20 | 5 | 0 | 25 | 12 | 2 | 3 | 0 | 17 | 55 |
| 9:15 PM | 8 | 6 | 0 | 1 | 15 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 7 | 23 | 7 | 2 | 0 | 32 | 54 |
| 9:30 PM | 5 | 12 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 6 | 3 | 0 | 9 | 18 | 7 | 2 | 0 | 27 | 53 |
| 9:45 PM | 6 | 10 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 8 | 4 | 0 | 12 | 19 | 7 | 6 | 0 | 32 | 60 |
| Hourly Total | 21 | 39 | 0 | 1 | 61 | 0 | 0 | 0 | 0 | 0 | 39 | 14 | 0 | 53 | 72 | 23 | 13 | 0 | 108 | 222 |
| 10:00 PM | 4 | 8 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 | 7 | 19 | 5 | 2 | 0 | 26 | 45 |
| 10:15 PM | 2 | 7 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 8 | 2 | 0 | 10 | 12 | 5 | 4 | 0 | 21 | 40 |
| 10:30 PM | 4 | 6 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 8 | 8 | 4 | 1 | 0 | 13 | 31 |
| 10:45 PM | 1 | 6 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 8 | 3 | 0 | 11 | 7 | 3 | 3 | 1 | 14 | 32 |
| Hourly Total | 11 | 27 | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 28 | 8 | 0 | 36 | 46 | 17 | 10 | 1 | 74 | 148 |
| 11:00 PM | 2 | 5 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 9 | 12 | 3 | 0 | 0 | 15 | 31 |
| 11:15 PM | 1 | 5 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 7 | 5 | 4 | 0 | 16 | 27 |
| 11:30 PM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 8 | 2 | 1 | 0 | 11 | 20 |
| 11:45 PM | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 4 | 4 | 1 | 0 | 9 | 18 |
| Hourly Total | 4 | 17 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 24 | 0 | 0 | 24 | 31 | 14 | 6 | 0 | 51 | 96 |
| Grand Total | 482 | 1181 | 0 | 4 | 1667 | 0 | 0 | 1 | 1 | 0 | 2144 | 368 | 1 | 2513 | 2181 | 575 | 637 | 301 | 3694 | 7875 |
| Approach \% | 28.9 | 70.8 | 0.0 | 0.2 | - | 0.0 | 0.0 | 100.0 | - | 0.0 | 85.3 | 14.6 | 0.0 | - | 59.0 | 15.6 | 17.2 | 8.1 | - | - |
| Total \% | 6.1 | 15.0 | 0.0 | 0.1 | 21.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 27.2 | 4.7 | 0.0 | 31.9 | 27.7 | 7.3 | 8.1 | 3.8 | 46.9 | - |
| Lights | 398 | 823 | 0 | 4 | 1225 | 0 | 0 | 1 | 1 | 0 | 1662 | 262 | 1 | 1925 | 2031 | 478 | 480 | 245 | 3234 | 6385 |
| \% Lights | 82.6 | 69.7 | - | 100.0 | 73.5 | - | - | 100.0 | 100.0 | - | 77.5 | 71.2 | 100.0 | 76.6 | 93.1 | 83.1 | 75.4 | 81.4 | 87.5 | 81.1 |
| Mediums | 44 | 180 | 0 | 0 | 224 | 0 | 0 | 0 | 0 | 0 | 232 | 47 | 0 | 279 | 40 | 89 | 44 | 20 | 193 | 696 |
| \% Mediums | 9.1 | 15.2 | - | 0.0 | 13.4 | - | - | 0.0 | 0.0 | - | 10.8 | 12.8 | 0.0 | 11.1 | 1.8 | 15.5 | 6.9 | 6.6 | 5.2 | 8.8 |
| Articulated Trucks | 40 | 178 | 0 | 0 | 218 | 0 | 0 | 0 | 0 | 0 | 250 | 59 | 0 | 309 | 110 | 8 | 113 | 36 | 267 | 794 |
| \% Articulated Trucks | 8.3 | 15.1 | - | 0.0 | 13.1 | - | - | 0.0 | 0.0 | - | 11.7 | 16.0 | 0.0 | 12.3 | 5.0 | 1.4 | 17.7 | 12.0 | 7.2 | 10.1 |



Turning Movement Data Plot

Turning Movement Peak Hour Data (7:15 AM)



Turning Movement Peak Hour Data Plot (7:15 AM)

Turning Movement Peak Hour Data (4:30 PM)



Turning Movement Peak Hour Data Plot (4:30 PM)

Turning Movement Data

| Start Time |  |  | FM 3400 <br> Southbound |  |  |  |  | TINSLEY RD Westbound |  |  |  |  | FM 3400 <br> Northbound |  |  |  |  | TINSLEY RD <br> Eastbound |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Int. Total |
| 12:00 AM | 0 | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 12:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| 12:30 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| 12:45 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Hourly Total | 0 | 4 | 1 | 0 | 5 | 0 | 0 | 2 | 0 | 2 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 10 |
| 1:00 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 1:15 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 5 |
| 1:30 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| 1:45 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Hourly Total | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 5 | 0 | 5 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 16 |
| 2:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2:15 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 2:30 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| 2:45 AM | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| Hourly Total | 1 | 5 | 0 | 0 | 6 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 9 |
| 3:00 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 3:15 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 3:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| 3:45 AM | 0 | 2 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 6 |
| Hourly Total | 0 | 5 | 1 | 0 | 6 | 0 | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 0 | 5 | 1 | 0 | 0 | 0 | 1 | 14 |
| 4:00 AM | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 9 |
| 4:15 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 3 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 7 |
| 4:30 AM | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 13 |
| 4:45 AM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 4 | 0 | 4 | 1 | 3 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 1 | 12 |
| Hourly Total | 1 | 15 | 0 | 0 | 16 | 0 | 0 | 8 | 0 | 8 | 2 | 14 | 0 | 0 | 16 | 1 | 0 | 0 | 0 | 1 | 41 |
| 5:00 AM | 0 | 9 | 1 | 0 | 10 | 0 | 0 | 2 | 0 | 2 | 0 | 9 | 0 | 0 | 9 | 2 | 0 | 0 | 0 | 2 | 23 |
| 5:15 AM | 0 | 7 | 0 | 0 | 7 | 0 | 2 | 6 | 0 | 8 | 0 | 4 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 4 | 23 |
| 5:30 AM | 0 | 9 | 0 | 0 | 9 | 0 | 1 | 3 | 0 | 4 | 0 | 11 | 0 | 0 | 11 | 3 | 0 | 0 | 0 | 3 | 27 |
| 5:45 AM | 0 | 11 | 0 | 0 | 11 | 0 | 2 | 7 | 0 | 9 | 2 | 12 | 0 | 0 | 14 | 3 | 0 | 0 | 0 | 3 | 37 |
| Hourly Total | 0 | 36 | 1 | 0 | 37 | 0 | 5 | 18 | 0 | 23 | 2 | 36 | 0 | 0 | 38 | 12 | 0 | 0 | 0 | 12 | 110 |
| 6:00 AM | 1 | 12 | 1 | 0 | 14 | 0 | 1 | 5 | 0 | 6 | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 37 |
| 6:15 AM | 1 | 12 | 1 | 0 | 14 | 0 | 0 | 7 | 0 | 7 | 2 | 21 | 0 | 0 | 23 | 7 | 0 | 0 | 0 | 7 | 51 |
| 6:30 AM | 0 | 25 | 1 | 0 | 26 | 0 | 1 | 12 | 0 | 13 | 3 | 27 | 0 | 0 | 30 | 3 | 1 | 1 | 0 | 5 | 74 |
| 6:45 AM | 0 | 31 | 0 | 0 | 31 | 0 | 3 | 9 | 0 | 12 | 3 | 42 | 0 | 0 | 45 | 4 | 3 | 1 | 0 | 8 | 96 |
| Hourly Total | 2 | 80 | 3 | 0 | 85 | 0 | 5 | 33 | 0 | 38 | 8 | 107 | 0 | 0 | 115 | 14 | 4 | 2 | 0 | 20 | 258 |
| 7:00 AM | 0 | 26 | 1 | 0 | 27 | 1 | 2 | 10 | 0 | 13 | 1 | 29 | 0 | 0 | 30 | 0 | 2 | 1 | 0 | 3 | 73 |
| 7:15 AM | 0 | 21 | 0 | 0 | 21 | 0 | 4 | 10 | 0 | 14 | 4 | 39 | 0 | 0 | 43 | 5 | 0 | 0 | 0 | 5 | 83 |
| 7:30 AM | 0 | 25 | 2 | 0 | 27 | 1 | 4 | 11 | 0 | 16 | 3 | 46 | 0 | 0 | 49 | 6 | 0 | 1 | 0 | 7 | 99 |
| 7:45 AM | 1 | 30 | 3 | 0 | 34 | 0 | 2 | 14 | 0 | 16 | 0 | 36 | 0 | 0 | 36 | 3 | 3 | 2 | 0 | 8 | 94 |

Appendix B - Page 17 of 40

| Hourly Total | 1 | 102 | 6 | 0 | 109 | 2 | 12 | 45 | 0 | 59 | 8 | 150 | 0 | 0 | 158 | 14 | 5 | 4 | 0 | 23 | 349 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8:00 AM | 0 | 19 | 2 | 0 | 21 | 0 | 0 | 14 | 0 | 14 | 4 | 39 | 0 | 0 | 43 | 1 | 1 | 2 | 0 | 4 | 82 |
| 8:15 AM | 0 | 24 | 1 | 0 | 25 | 0 | 0 | 8 | 0 | 8 | 2 | 33 | 1 | 0 | 36 | 4 | 3 | 2 | 0 | 9 | 78 |
| 8:30 AM | 1 | 13 | 3 | 0 | 17 | 0 | 1 | 8 | 0 | 9 | 0 | 19 | 0 | 0 | 19 | 2 | 1 | 2 | 0 | 5 | 50 |
| 8:45 AM | 1 | 24 | 0 | 0 | 25 | 0 | 1 | 8 | 0 | 9 | 1 | 34 | 0 | 0 | 35 | 3 | 2 | 0 | 0 | 5 | 74 |
| Hourly Total | 2 | 80 | 6 | 0 | 88 | 0 | 2 | 38 | 0 | 40 | 7 | 125 | 1 | 0 | 133 | 10 | 7 | 6 | 0 | 23 | 284 |
| 9:00 AM | 0 | 21 | 2 | 0 | 23 | 0 | 0 | 5 | 0 | 5 | 0 | 22 | 0 | 0 | 22 | 2 | 1 | 0 | 0 | 3 | 53 |
| 9:15 AM | 1 | 17 | 1 | 0 | 19 | 0 | 0 | 4 | 0 | 4 | 0 | 19 | 0 | 0 | 19 | 2 | 0 | 1 | 0 | 3 | 45 |
| 9:30 AM | 0 | 18 | 3 | 0 | 21 | 0 | 1 | 6 | 0 | 7 | 0 | 25 | 0 | 0 | 25 | 1 | 0 | 0 | 0 | 1 | 54 |
| 9:45 AM | 0 | 22 | 1 | 0 | 23 | 0 | 2 | 11 | 0 | 13 | 0 | 21 | 0 | 0 | 21 | 2 | 1 | 1 | 0 | 4 | 61 |
| Hourly Total | 1 | 78 | 7 | 0 | 86 | 0 | 3 | 26 | 0 | 29 | 0 | 87 | 0 | 0 | 87 | 7 | 2 | 2 | 0 | 11 | 213 |
| 10:00 AM | 0 | 16 | 1 | 0 | 17 | 0 | 1 | 8 | 0 | 9 | 0 | 16 | 1 | 0 | 17 | 5 | 2 | 1 | 0 | 8 | 51 |
| 10:15 AM | 1 | 20 | 3 | 0 | 24 | 0 | 2 | 6 | 0 | 8 | 1 | 23 | 0 | 0 | 24 | 2 | 1 | 2 | 0 | 5 | 61 |
| 10:30 AM | 0 | 23 | 3 | 0 | 26 | 0 | 4 | 4 | 0 | 8 | 2 | 18 | 0 | 0 | 20 | 0 | 0 | 1 | 0 | 1 | 55 |
| 10:45 AM | 1 | 20 | 0 | 0 | 21 | 0 | 1 | 7 | 0 | 8 | 0 | 22 | 0 | 0 | 22 | 0 | 2 | 3 | 0 | 5 | 56 |
| Hourly Total | 2 | 79 | 7 | 0 | 88 | 0 | 8 | 25 | 0 | 33 | 3 | 79 | 1 | 0 | 83 | 7 | 5 | 7 | 0 | 19 | 223 |
| 11:00 AM | 0 | 16 | 2 | 0 | 18 | 0 | 2 | 3 | 0 | 5 | 2 | 21 | 0 | 0 | 23 | 5 | 1 | 1 | 0 | 7 | 53 |
| 11:15 AM | 0 | 22 | 1 | 0 | 23 | 0 | 2 | 3 | 0 | 5 | 1 | 23 | 0 | 0 | 24 | 0 | 1 | 2 | 0 | 3 | 55 |
| 11:30 AM | 1 | 14 | 1 | 0 | 16 | 0 | 3 | 7 | 0 | 10 | 0 | 21 | 0 | 0 | 21 | 2 | 0 | 0 | 0 | 2 | 49 |
| 11:45 AM | 1 | 19 | 3 | 0 | 23 | 0 | 3 | 4 | 0 | 7 | 1 | 13 | 0 | 0 | 14 | 2 | 1 | 0 | 0 | 3 | 47 |
| Hourly Total | 2 | 71 | 7 | 0 | 80 | 0 | 10 | 17 | 0 | 27 | 4 | 78 | 0 | 0 | 82 | 9 | 3 | 3 | 0 | 15 | 204 |
| 12:00 PM | 0 | 21 | 2 | 0 | 23 | 0 | 4 | 4 | 0 | 8 | 1 | 18 | 2 | 0 | 21 | 3 | 3 | 1 | 0 | 7 | 59 |
| 12:15 PM | 2 | 15 | 1 | 0 | 18 | 0 | 1 | 7 | 0 | 8 | 2 | 19 | 0 | 0 | 21 | 2 | 2 | 4 | 0 | 8 | 55 |
| 12:30 PM | 2 | 26 | 1 | 0 | 29 | 0 | 1 | 5 | 0 | 6 | 0 | 30 | 0 | 0 | 30 | 2 | 4 | 2 | 0 | 8 | 73 |
| 12:45 PM | 2 | 15 | 2 | 0 | 19 | 1 | 3 | 4 | 0 | 8 | 1 | 22 | 0 | 0 | 23 | 3 | 2 | 0 | 0 | 5 | 55 |
| Hourly Total | 6 | 77 | 6 | 0 | 89 | 1 | 9 | 20 | 0 | 30 | 4 | 89 | 2 | 0 | 95 | 10 | 11 | 7 | 0 | 28 | 242 |
| 1:00 PM | 0 | 21 | 4 | 0 | 25 | 0 | 1 | 5 | 0 | 6 | 0 | 13 | 1 | 0 | 14 | 1 | 0 | 2 | 0 | 3 | 48 |
| 1:15 PM | 2 | 14 | 2 | 0 | 18 | 0 | 1 | 2 | 0 | 3 | 1 | 18 | 0 | 0 | 19 | 2 | 2 | 1 | 0 | 5 | 45 |
| 1:30 PM | 1 | 20 | 1 | 0 | 22 | 0 | 2 | 5 | 0 | 7 | 0 | 25 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 3 | 57 |
| 1:45 PM | 0 | 16 | 1 | 0 | 17 | 0 | 3 | 5 | 0 | 8 | 0 | 22 | 0 | 0 | 22 | 1 | 4 | 1 | 0 | 6 | 53 |
| Hourly Total | 3 | 71 | 8 | 0 | 82 | 0 | 7 | 17 | 0 | 24 | 1 | 78 | 1 | 0 | 80 | 4 | 6 | 7 | 0 | 17 | 203 |
| 2:00 PM | 0 | 17 | 4 | 0 | 21 | 0 | 1 | 8 | 0 | 9 | 0 | 24 | 0 | 0 | 24 | 3 | 2 | 1 | 0 | 6 | 60 |
| 2:15 PM | 1 | 30 | 5 | 0 | 36 | 0 | 4 | 4 | 0 | 8 | 1 | 16 | 0 | 0 | 17 | 2 | 1 | 3 | 0 | 6 | 67 |
| 2:30 PM | 3 | 24 | 3 | 0 | 30 | 0 | 3 | 7 | 0 | 10 | 0 | 20 | 0 | 0 | 20 | 1 | 1 | 1 | 0 | 3 | 63 |
| 2:45 PM | 2 | 22 | 2 | 0 | 26 | 0 | 2 | 8 | 0 | 10 | 1 | 24 | 0 | 0 | 25 | 1 | 0 | 1 | 0 | 2 | 63 |
| Hourly Total | 6 | 93 | 14 | 0 | 113 | 0 | 10 | 27 | 0 | 37 | 2 | 84 | 0 | 0 | 86 | 7 | 4 | 6 | 0 | 17 | 253 |
| 3:00 PM | 0 | 29 | 4 | 0 | 33 | 0 | 5 | 8 | 0 | 13 | 0 | 20 | 0 | 0 | 20 | 3 | 2 | 0 | 0 | 5 | 71 |
| 3:15 PM | 0 | 25 | 4 | 0 | 29 | 0 | 1 | 5 | 0 | 6 | 1 | 18 | 0 | 0 | 19 | 1 | 2 | 1 | 0 | 4 | 58 |
| 3:30 PM | 3 | 21 | 5 | 0 | 29 | 0 | 4 | 7 | 0 | 11 | 3 | 30 | 0 | 0 | 33 | 3 | 1 | 2 | 0 | 6 | 79 |
| 3:45 PM | 1 | 22 | 2 | 0 | 25 | 0 | 2 | 6 | 0 | 8 | 1 | 18 | 2 | 0 | 21 | 4 | 2 | 6 | 0 | 12 | 66 |
| Hourly Total | 4 | 97 | 15 | 0 | 116 | 0 | 12 | 26 | 0 | 38 | 5 | 86 | 2 | 0 | 93 | 11 | 7 | 9 | 0 | 27 | 274 |
| 4:00 PM | 1 | 30 | 4 | 0 | 35 | 0 | 0 | 7 | 0 | 7 | 0 | 15 | 0 | 0 | 15 | 1 | 2 | 1 | 0 | 4 | 61 |
| 4:15 PM | 0 | 32 | 8 | 0 | 40 | 0 | 3 | 7 | 0 | 10 | 1 | 21 | 0 | 1 | 23 | 2 | 2 | 6 | 0 | 10 | 83 |
| 4:30 PM | 2 | 32 | 4 | 0 | 38 | 0 | 1 | 10 | 0 | 11 | 1 | 26 | 0 | 0 | 27 | 3 | 1 | 3 | 0 | 7 | 83 |
| 4:45 PM | 0 | 28 | 2 | 0 | 30 | 0 | 3 | 5 | 0 | 8 | 0 | 12 | 0 | 0 | 12 | 2 | 4 | 3 | 0 | 9 | 59 |
| Hourly Total | 3 | 122 | 18 | 0 | 143 | 0 | 7 | 29 | 0 | 36 | 2 | 74 | 0 | 1 | 77 | 8 | 9 | 13 | 0 | 30 | 286 |
| 5:00 PM | 2 | 30 | 10 | 0 | 42 | 1 | 1 | 12 | 0 | 14 | 1 | 26 | 0 | 0 | 27 | 5 | 3 | 6 | 0 | 14 | 97 |
| 5:15 PM | 0 | 48 | 10 | 0 | 58 | 0 | 1 | 8 | 0 | 9 | 2 | 34 | 0 | 0 | 36 | 0 | 6 | 2 | 0 | 8 | 111 |
| 5:30 PM | 2 | 22 | 6 | 0 | 30 | 0 | 4 | 6 | 0 | 10 | 5 | 28 | 0 | 0 | 33 | 2 | 2 | 6 | 0 | 10 | 83 |
| 5:45 PM | 0 | 28 | 2 | 0 | 30 | 0 | 1 | 2 | 0 | 3 | 3 | 20 | 0 | 0 | 23 | 1 | 0 | 3 | 0 | 4 | 60 |
| Hourly Total | 4 | 128 | 28 | 0 | 160 | 1 | 7 | 28 | 0 | 36 | 11 | 108 | 0 | 0 | 119 | 8 | 11 | 17 | 0 | 36 | 351 |
| 6:00 PM | 1 | 17 | 3 | 0 | 21 | 0 | 2 | 4 | 0 | 6 | 0 | 15 | 0 | 0 | 15 | 4 | 5 | 2 | 0 | 11 | 53 |

Appendix B - Page 18 of 40

| 6:15 PM | 0 | 28 | 1 | 0 | 29 | 0 | 3 | 8 | 0 | 11 | 0 | 18 | 1 | 0 | 19 | 3 | 2 | 0 | 0 | 5 | 64 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6:30 PM | 1 | 24 | 1 | 0 | 26 | 0 | 0 | 1 | 0 | 1 | 1 | 21 | 0 | 1 | 23 | 5 | 3 | 1 | 0 | 9 | 59 |
| 6:45 PM | 0 | 25 | 2 | 0 | 27 | 0 | 3 | 4 | 0 | 7 | 2 | 15 | 0 | 0 | 17 | 2 | 2 | 3 | 0 | 7 | 58 |
| Hourly Total | 2 | 94 | 7 | 0 | 103 | 0 | 8 | 17 | 0 | 25 | 3 | 69 | 1 | 1 | 74 | 14 | 12 | 6 | 0 | 32 | 234 |
| 7:00 PM | 2 | 15 | 1 | 0 | 18 | 0 | 1 | 4 | 0 | 5 | 2 | 16 | 0 | 0 | 18 | 2 | 0 | 1 | 0 | 3 | 44 |
| 7:15 PM | 2 | 13 | 5 | 0 | 20 | 0 | 2 | 5 | 0 | 7 | 4 | 10 | 0 | 0 | 14 | 2 | 2 | 4 | 0 | 8 | 49 |
| 7:30 PM | 1 | 11 | 6 | 0 | 18 | 0 | 4 | 4 | 0 | 8 | 0 | 6 | 0 | 0 | 6 | 1 | 3 | 1 | 0 | 5 | 37 |
| 7:45 PM | 1 | 19 | 2 | 0 | 22 | 0 | 1 | 6 | 0 | 7 | 0 | 15 | 0 | 0 | 15 | 1 | 3 | 2 | 0 | 6 | 50 |
| Hourly Total | 6 | 58 | 14 | 0 | 78 | 0 | 8 | 19 | 0 | 27 | 6 | 47 | 0 | 0 | 53 | 6 | 8 | 8 | 0 | 22 | 180 |
| 8:00 PM | 1 | 19 | 5 | 0 | 25 | 0 | 2 | 2 | 0 | 4 | 1 | 11 | 0 | 0 | 12 | 3 | 2 | 1 | 0 | 6 | 47 |
| 8:15 PM | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 2 | 0 | 2 | 0 | 16 | 0 | 0 | 16 | 0 | 1 | 1 | 0 | 2 | 33 |
| 8:30 PM | 3 | 18 | 2 | 0 | 23 | 0 | 0 | 2 | 0 | 2 | 0 | 11 | 0 | 0 | 11 | 1 | 1 | 0 | 0 | 2 | 38 |
| 8:45 PM | 2 | 10 | 1 | 0 | 13 | 0 | 1 | 4 | 0 | 5 | 1 | 17 | 0 | 0 | 18 | 1 | 2 | 2 | 0 | 5 | 41 |
| Hourly Total | 6 | 60 | 8 | 0 | 74 | 0 | 3 | 10 | 0 | 13 | 2 | 55 | 0 | 0 | 57 | 5 | 6 | 4 | 0 | 15 | 159 |
| 9:00 PM | 0 | 9 | 4 | 0 | 13 | 1 | 0 | 2 | 0 | 3 | 0 | 10 | 1 | 0 | 11 | 5 | 1 | 0 | 0 | 6 | 33 |
| 9:15 PM | 0 | 6 | 2 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 11 |
| 9:30 PM | 0 | 9 | 2 | 0 | 11 | 0 | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 2 | 0 | 2 | 20 |
| 9:45 PM | 0 | 10 | 2 | 0 | 12 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 0 | 5 | 2 | 1 | 0 | 0 | 3 | 21 |
| Hourly Total | 0 | 34 | 10 | 0 | 44 | 1 | 0 | 4 | 0 | 5 | 0 | 24 | 1 | 0 | 25 | 7 | 2 | 2 | 0 | 11 | 85 |
| 10:00 PM | 0 | 5 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 10 |
| 10:15 PM | 0 | 8 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 1 | 0 | 0 | 0 | 1 | 15 |
| 10:30 PM | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 11 |
| 10:45 PM | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 8 | 0 | 1 | 1 | 0 | 2 | 15 |
| Hourly Total | 1 | 21 | 1 | 0 | 23 | 0 | 0 | 2 | 0 | 2 | 1 | 22 | 0 | 0 | 23 | 1 | 1 | 1 | 0 | 3 | 51 |
| 11:00 PM | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 1 | 11 |
| 11:15 PM | 1 | 4 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 7 |
| 11:30 PM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| 11:45 PM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Hourly Total | 1 | 13 | 1 | 0 | 15 | 0 | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 0 | 5 | 0 | 1 | 2 | 0 | 3 | 25 |
| Grand Total | 54 | 1429 | 169 | 0 | 1652 | 5 | 117 | 420 | 0 | 542 | 71 | 1432 | 9 | 2 | 1514 | 156 | 104 | 106 | 0 | 366 | 4074 |
| Approach \% | 3.3 | 86.5 | 10.2 | 0.0 | - | 0.9 | 21.6 | 77.5 | 0.0 | - | 4.7 | 94.6 | 0.6 | 0.1 | - | 42.6 | 28.4 | 29.0 | 0.0 | - | - |
| Total \% | 1.3 | 35.1 | 4.1 | 0.0 | 40.5 | 0.1 | 2.9 | 10.3 | 0.0 | 13.3 | 1.7 | 35.1 | 0.2 | 0.0 | 37.2 | 3.8 | 2.6 | 2.6 | 0.0 | 9.0 | - |
| Lights | 50 | 1012 | 155 | 0 | 1217 | 2 | 109 | 355 | 0 | 466 | 59 | 1036 | 8 | 2 | 1105 | 144 | 98 | 92 | 0 | 334 | 3122 |
| \% Lights | 92.6 | 70.8 | 91.7 | - | 73.7 | 40.0 | 93.2 | 84.5 | - | 86.0 | 83.1 | 72.3 | 88.9 | 100.0 | 73.0 | 92.3 | 94.2 | 86.8 |  | 91.3 | 76.6 |
| Mediums | 4 | 103 | 9 | 0 | 116 | 2 | 8 | 52 | 0 | 62 | 11 | 81 | 1 | 0 | 93 | 9 | 5 | 11 | 0 | 25 | 296 |
| \% Mediums | 7.4 | 7.2 | 5.3 | - | 7.0 | 40.0 | 6.8 | 12.4 | - | 11.4 | 15.5 | 5.7 | 11.1 | 0.0 | 6.1 | 5.8 | 4.8 | 10.4 | - | 6.8 | 7.3 |
| Articulated Trucks | 0 | 314 | 5 | 0 | 319 | 1 | 0 | 13 | 0 | 14 | 1 | 315 | 0 | 0 | 316 | 3 | 1 | 3 | 0 | 7 | 656 |
| \% Articulated Trucks | 0.0 | 22.0 | 3.0 | - | 19.3 | 20.0 | 0.0 | 3.1 | - | 2.6 | 1.4 | 22.0 | 0.0 | 0.0 | 20.9 | 1.9 | 1.0 | 2.8 | - | 1.9 | 16.1 |



Turning Movement Data Plot

Turning Movement Peak Hour Data (7:15 AM)

| Start Time | Turning Movement Peak Hour Data (7:15 AM) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | FM 3400 |  |  |  |  | TINSLEY RDWestbound |  |  |  |  | FM 3400Northbound |  |  |  |  | TINSLEY RD |  |  |  |  | Int. Total |
|  | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total |  |
| 7:15 AM | 0 | 21 | 0 | 0 | 21 | 0 | 4 | 10 | 0 | 14 | 4 | 39 | 0 | 0 | 43 | 5 | 0 | 0 | 0 | 5 | 83 |
| 7:30 AM | 0 | 25 | 2 | 0 | 27 | 1 | 4 | 11 | 0 | 16 | 3 | 46 | 0 | 0 | 49 | 6 | 0 | 1 | 0 | 7 | 99 |
| 7:45 AM | 1 | 30 | 3 | 0 | 34 | 0 | 2 | 14 | 0 | 16 | 0 | 36 | 0 | 0 | 36 | 3 | 3 | 2 | 0 | 8 | 94 |
| 8:00 AM | 0 | 19 | 2 | 0 | 21 | 0 | 0 | 14 | 0 | 14 | 4 | 39 | 0 | 0 | 43 | 1 | 1 | 2 | 0 | 4 | 82 |
| Total | 1 | 95 | 7 | 0 | 103 | 1 | 10 | 49 | 0 | 60 | 11 | 160 | 0 | 0 | 171 | 15 | 4 | 5 | 0 | 24 | 358 |
| Approach \% | 1.0 | 92.2 | 6.8 | 0.0 | - | 1.7 | 16.7 | 81.7 | 0.0 | - | 6.4 | 93.6 | 0.0 | 0.0 | - | 62.5 | 16.7 | 20.8 | 0.0 | - | - |
| Total \% | 0.3 | 26.5 | 2.0 | 0.0 | 28.8 | 0.3 | 2.8 | 13.7 | 0.0 | 16.8 | 3.1 | 44.7 | 0.0 | 0.0 | 47.8 | 4.2 | 1.1 | 1.4 | 0.0 | 6.7 | - |
| PHF | 0.250 | 0.792 | 0.583 | 0.000 | 0.757 | 0.250 | 0.625 | 0.875 | 0.000 | 0.938 | 0.688 | 0.870 | 0.000 | 0.000 | 0.872 | 0.625 | 0.333 | 0.625 | 0.000 | 0.750 | 0.904 |
| Lights | 1 | 55 | 5 | 0 | 61 | 0 | 10 | 43 | 0 | 53 | 8 | 121 | 0 | 0 | 129 | 14 | 4 | 5 | 0 | 23 | 266 |
| \% Lights | 100.0 | 57.9 | 71.4 | - | 59.2 | 0.0 | 100.0 | 87.8 | - | 88.3 | 72.7 | 75.6 | - | - | 75.4 | 93.3 | 100.0 | 100.0 | - | 95.8 | 74.3 |
| Mediums | 0 | 11 | 1 | 0 | 12 | 0 | 0 | 6 | 0 | 6 | 3 | 6 | 0 | 0 | 9 | 1 | 0 | 0 | 0 | 1 | 28 |
| \% Mediums | 0.0 | 11.6 | 14.3 | - | 11.7 | 0.0 | 0.0 | 12.2 | - | 10.0 | 27.3 | 3.8 | - | - | 5.3 | 6.7 | 0.0 | 0.0 | - | 4.2 | 7.8 |
| Articulated Trucks | 0 | 29 | 1 | 0 | 30 | 1 | 0 | 0 | 0 | 1 | 0 | 33 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 64 |
| \% Articulated Trucks | 0.0 | 30.5 | 14.3 | - | 29.1 | 100.0 | 0.0 | 0.0 | - | 1.7 | 0.0 | 20.6 | - | - | 19.3 | 0.0 | 0.0 | 0.0 | - | 0.0 | 17.9 |



Turning Movement Peak Hour Data Plot (7:15 AM)

Turning Movement Peak Hour Data (5:00 PM)

| Start Time | Turning Movement Peak Hour Data (5:00 PM) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | FM 3400 |  |  |  |  | TINSLEY RD |  |  |  |  | FM 3400 <br> Northbound |  |  |  |  | tinsley Rd |  |  |  |  | Int. Total |
|  | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total |  |
| 5:00 PM | 2 | 30 | 10 | 0 | 42 | 1 | 1 | 12 | 0 | 14 | 1 | 26 | 0 | 0 | 27 | 5 | 3 | 6 | 0 | 14 | 97 |
| 5:15 PM | 0 | 48 | 10 | 0 | 58 | 0 | 1 | 8 | 0 | 9 | 2 | 34 | 0 | 0 | 36 | 0 | 6 | 2 | 0 | 8 | 111 |
| 5:30 PM | 2 | 22 | 6 | 0 | 30 | 0 | 4 | 6 | 0 | 10 | 5 | 28 | 0 | 0 | 33 | 2 | 2 | 6 | 0 | 10 | 83 |
| 5:45 PM | 0 | 28 | 2 | 0 | 30 | 0 | 1 | 2 | 0 | 3 | 3 | 20 | 0 | 0 | 23 | 1 | 0 | 3 | 0 | 4 | 60 |
| Total | 4 | 128 | 28 | 0 | 160 | 1 | 7 | 28 | 0 | 36 | 11 | 108 | 0 | 0 | 119 | 8 | 11 | 17 | 0 | 36 | 351 |
| Approach \% | 2.5 | 80.0 | 17.5 | 0.0 | - | 2.8 | 19.4 | 77.8 | 0.0 | - | 9.2 | 90.8 | 0.0 | 0.0 | - | 22.2 | 30.6 | 47.2 | 0.0 | - | - |
| Total \% | 1.1 | 36.5 | 8.0 | 0.0 | 45.6 | 0.3 | 2.0 | 8.0 | 0.0 | 10.3 | 3.1 | 30.8 | 0.0 | 0.0 | 33.9 | 2.3 | 3.1 | 4.8 | 0.0 | 10.3 | - |
| PHF | 0.500 | 0.667 | 0.700 | 0.000 | 0.690 | 0.250 | 0.438 | 0.583 | 0.000 | 0.643 | 0.550 | 0.794 | 0.000 | 0.000 | 0.826 | 0.400 | 0.458 | 0.708 | 0.000 | 0.643 | 0.791 |
| Lights | 4 | 119 | 27 | 0 | 150 | 0 | 7 | 27 | 0 | 34 | 11 | 102 | 0 | 0 | 113 | 8 | 11 | 16 | 0 | 35 | 332 |
| \% Lights | 100.0 | 93.0 | 96.4 | - | 93.8 | 0.0 | 100.0 | 96.4 | - | 94.4 | 100.0 | 94.4 | - | - | 95.0 | 100.0 | 100.0 | 94.1 | - | 97.2 | 94.6 |
| Mediums | 0 | 7 | 1 | 0 | 8 | 1 | 0 | 1 | 0 | 2 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 1 | 17 |
| \% Mediums | 0.0 | 5.5 | 3.6 | - | 5.0 | 100.0 | 0.0 | 3.6 | - | 5.6 | 0.0 | 5.6 | - | - | 5.0 | 0.0 | 0.0 | 5.9 | - | 2.8 | 4.8 |
| Articulated Trucks | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| \% Articulated Trucks | 0.0 | 1.6 | 0.0 | - | 1.3 | 0.0 | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | - | - | 0.0 | 0.0 | 0.0 | 0.0 | - | 0.0 | 0.6 |



Turning Movement Peak Hour Data Plot (5:00 PM)

Turning Movement Data

| Start Time | FM 3400 <br> Southbound |  |  |  |  | LOCKWOOD LN <br> Westbound |  |  |  |  | FM 3400 Northbound |  |  |  |  | Eastbound St. Eastbound |  |  |  |  | Int. Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total |  |
| 12:00 AM | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 7 |
| 12:15 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| 12:30 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 12:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hourly Total | 0 | 8 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 12 |
| 1:00 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 1:15 AM | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 7 |
| 1:30 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| 1:45 AM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Hourly Total | 0 | 9 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 15 |
| 2:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2:15 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 |
| 2:30 AM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| 2:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Hourly Total | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 7 |
| 3:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 |
| 3:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:30 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 6 |
| 3:45 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Hourly Total | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 2 | 0 | 2 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 11 |
| 4:00 AM | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 1 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 8 |
| 4:15 AM | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 |
| 4:30 AM | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 9 |
| 4:45 AM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 8 |
| Hourly Total | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 2 | 0 | 2 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 29 |
| 5:00 AM | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 14 |
| 5:15 AM | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 11 |
| 5:30 AM | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 27 |
| 5:45 AM | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 2 | 0 | 2 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 25 |
| Hourly Total | 0 | 34 | 0 | 0 | 34 | 0 | 0 | 2 | 0 | 2 | 0 | 41 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 77 |
| 6:00 AM | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 27 |
| 6:15 AM | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 37 |
| 6:30 AM | 0 | 22 | 0 | 0 | 22 | 0 | 0 | 1 | 0 | 1 | 0 | 31 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 54 |
| 6:45 AM | 2 | 25 | 0 | 0 | 27 | 0 | 0 | 3 | 0 | 3 | 0 | 26 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 56 |
| Hourly Total | 2 | 66 | 0 | 0 | 68 | 0 | 0 | 4 | 0 | 4 | 0 | 102 | 0 | 0 | 102 | 0 | 0 | 0 | 0 | 0 | 174 |
| 7:00 AM | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 4 | 0 | 4 | 0 | 31 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 51 |
| 7:15 AM | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 3 | 0 | 3 | 0 | 42 | 0 | 0 | 42 | 0 | 0 | 0 | 0 | 0 | 66 |
| 7:30 AM | 1 | 14 | 0 | 0 | 15 | 0 | 0 | 4 | 0 | 4 | 0 | 39 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 58 |
| 7:45 AM | 1 | 23 | 0 | 0 | 24 | 0 | 0 | 4 | 0 | 4 | 0 | 29 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 57 |

Appendix B - Page 25 of 40

| Hourly Total | 2 | 74 | 0 | 0 | 76 | 0 | 0 | 15 | 0 | 15 | 0 | 141 | 0 | 0 | 141 | 0 | 0 | 0 | 0 | 0 | 232 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8:00 AM | 1 | 21 | 0 | 0 | 22 | 0 | 0 | 1 | 0 | 1 | 0 | 28 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 51 |
| 8:15 AM | 1 | 18 | 0 | 0 | 19 | 0 | 0 | 1 | 0 | 1 | 0 | 22 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 42 |
| 8:30 AM | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 40 |
| 8:45 AM | 2 | 20 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 1 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 38 |
| Hourly Total | 4 | 74 | 0 | 0 | 78 | 0 | 0 | 2 | 0 | 2 | 0 | 90 | 1 | 0 | 91 | 0 | 0 | 0 | 0 | 0 | 171 |
| 9:00 AM | 2 | 18 | 0 | 0 | 20 | 1 | 0 | 2 | 0 | 3 | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 40 |
| 9:15 AM | 1 | 17 | 0 | 0 | 18 | 0 | 0 | 2 | 0 | 2 | 0 | 19 | 2 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 41 |
| 9:30 AM | 1 | 18 | 0 | 0 | 19 | 0 | 0 | 1 | 0 | 1 | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 41 |
| 9:45 AM | 2 | 16 | 0 | 0 | 18 | 0 | 0 | 2 | 0 | 2 | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 34 |
| Hourly Total | 6 | 69 | 0 | 0 | 75 | 1 | 0 | 7 | 0 | 8 | 0 | 71 | 2 | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 156 |
| 10:00 AM | 2 | 23 | 0 | 0 | 25 | 0 | 0 | 3 | 0 | 3 | 0 | 19 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 47 |
| 10:15 AM | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 2 | 0 | 2 | 0 | 9 | 2 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 28 |
| 10:30 AM | 2 | 17 | 0 | 0 | 19 | 0 | 0 | 2 | 0 | 2 | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 37 |
| 10:45 AM | 3 | 16 | 0 | 0 | 19 | 0 | 0 | 2 | 0 | 2 | 0 | 9 | 1 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 31 |
| Hourly Total | 7 | 71 | 0 | 0 | 78 | 0 | 0 | 9 | 0 | 9 | 0 | 53 | 3 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 143 |
| 11:00 AM | 1 | 20 | 0 | 0 | 21 | 1 | 0 | 3 | 0 | 4 | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 46 |
| 11:15 AM | 1 | 19 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 33 |
| 11:30 AM | 2 | 11 | 0 | 0 | 13 | 0 | 0 | 3 | 0 | 3 | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 30 |
| 11:45 AM | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 29 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 41 |
| Hourly Total | 4 | 62 | 0 | 0 | 66 | 1 | 0 | 6 | 0 | 7 | 0 | 77 | 0 | 0 | 77 | 0 | 0 | 0 | 0 | 0 | 150 |
| 12:00 PM | 0 | 24 | 0 | 0 | 24 | 0 | 0 | 3 | 0 | 3 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 40 |
| 12:15 PM | 3 | 29 | 0 | 0 | 32 | 0 | 0 | 1 | 0 | 1 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 46 |
| 12:30 PM | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 1 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 34 |
| 12:45 PM | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 3 | 0 | 3 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 28 |
| Hourly Total | 3 | 83 | 0 | 0 | 86 | 0 | 0 | 7 | 0 | 7 | 0 | 54 | 1 | 0 | 55 | 0 | 0 | 0 | 0 | 0 | 148 |
| 1:00 PM | 0 | 23 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 43 |
| 1:15 PM | 2 | 17 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 37 |
| 1:30 PM | 2 | 12 | 0 | 0 | 14 | 1 | 0 | 3 | 0 | 4 | 0 | 19 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 37 |
| 1:45 PM | 3 | 20 | 0 | 0 | 23 | 0 | 0 | 4 | 0 | 4 | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 44 |
| Hourly Total | 7 | 72 | 0 | 0 | 79 | 1 | 0 | 7 | 0 | 8 | 0 | 74 | 0 | 0 | 74 | 0 | 0 | 0 | 0 | 0 | 161 |
| 2:00 PM | 1 | 17 | 0 | 0 | 18 | 0 | 0 | 1 | 0 | 1 | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 40 |
| 2:15 PM | 5 | 21 | 0 | 0 | 26 | 0 | 0 | 3 | 0 | 3 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 44 |
| 2:30 PM | 3 | 18 | 0 | 0 | 21 | 0 | 0 | 3 | 0 | 3 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 35 |
| 2:45 PM | 1 | 22 | 0 | 0 | 23 | 0 | 0 | 3 | 0 | 3 | 0 | 26 | 1 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 53 |
| Hourly Total | 10 | 78 | 0 | 0 | 88 | 0 | 0 | 10 | 0 | 10 | 0 | 73 | 1 | 0 | 74 | 0 | 0 | 0 | 0 | 0 | 172 |
| 3:00 PM | 2 | 31 | 0 | 0 | 33 | 0 | 0 | 2 | 0 | 2 | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 53 |
| 3:15 PM | 2 | 34 | 0 | 0 | 36 | 1 | 0 | 2 | 0 | 3 | 0 | 27 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 66 |
| 3:30 PM | 5 | 28 | 0 | 0 | 33 | 0 | 0 | 3 | 0 | 3 | 0 | 27 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 63 |
| 3:45 PM | 1 | 21 | 0 | 0 | 22 | 0 | 0 | 3 | 0 | 3 | 0 | 22 | 2 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 49 |
| Hourly Total | 10 | 114 | 0 | 0 | 124 | 1 | 0 | 10 | 0 | 11 | 0 | 94 | 2 | 0 | 96 | 0 | 0 | 0 | 0 | 0 | 231 |
| 4:00 PM | 1 | 37 | 0 | 0 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 56 |
| 4:15 PM | 2 | 30 | 0 | 0 | 32 | 0 | 0 | 1 | 0 | 1 | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 50 |
| 4:30 PM | 5 | 20 | 0 | 0 | 25 | 1 | 0 | 1 | 0 | 2 | 0 | 23 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 50 |
| 4:45 PM | 2 | 27 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 48 |
| Hourly Total | 10 | 114 | 0 | 0 | 124 | 1 | 0 | 2 | 0 | 3 | 0 | 77 | 0 | 0 | 77 | 0 | 0 | 0 | 0 | 0 | 204 |
| 5:00 PM | 3 | 34 | 0 | 0 | 37 | 0 | 0 | 1 | 0 | 1 | 0 | 30 | 1 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 69 |
| 5:15 PM | 3 | 31 | 0 | 0 | 34 | 0 | 0 | 2 | 0 | 2 | 0 | 25 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 61 |
| 5:30 PM | 2 | 29 | 0 | 0 | 31 | 0 | 0 | 5 | 0 | 5 | 0 | 15 | 2 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 53 |
| 5:45 PM | 1 | 32 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 59 |
| Hourly Total | 9 | 126 | 0 | 0 | 135 | 0 | 0 | 8 | 0 | 8 | 0 | 96 | 3 | 0 | 99 | 0 | 0 | 0 | 0 | 0 | 242 |
| 6:00 PM | 1 | 22 | 0 | 0 | 23 | 0 | 0 | 2 | 0 | 2 | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 45 |

Appendix B - Page 26 of 40

| 6:15 PM | 2 | 21 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 39 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6:30 PM | 1 | 11 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 1 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 28 |
| 6:45 PM | 1 | 23 | 0 | 0 | 24 | 1 | 0 | 3 | 0 | 4 | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 46 |
| Hourly Total | 5 | 77 | 0 | 0 | 82 | 1 | 0 | 6 | 0 | 7 | 0 | 69 | 0 | 0 | 69 | 0 | 0 | 0 | 0 | 0 | 158 |
| 7:00 PM | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 1 | 0 | 1 | 0 | 8 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 24 |
| 7:15 PM | 2 | 16 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 29 |
| 7:30 PM | 1 | 15 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 25 |
| 7:45 PM | 4 | 13 | 0 | 0 | 17 | 0 | 0 | 4 | 0 | 4 | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 37 |
| Hourly Total | 7 | 59 | 0 | 0 | 66 | 0 | 0 | 5 | 0 | 5 | 0 | 44 | 0 | 0 | 44 | 0 | 0 | 0 | 0 | 0 | 115 |
| 8:00 PM | 3 | 9 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 1 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 17 |
| 8:15 PM | 5 | 13 | 0 | 0 | 18 | 0 | 0 | 1 | 0 | 1 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 25 |
| 8:30 PM | 1 | 8 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 20 |
| 8:45 PM | 1 | 9 | 0 | 0 | 10 | 1 | 0 | 3 | 0 | 4 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 27 |
| Hourly Total | 10 | 39 | 0 | 0 | 49 | 1 | 0 | 5 | 0 | 6 | 0 | 34 | 0 | 0 | 34 | 0 | 0 | 0 | 0 | 0 | 89 |
| 9:00 PM | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 2 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 11 |
| 9:15 PM | 2 | 12 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 18 |
| 9:30 PM | 2 | 14 | 0 | 0 | 16 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 22 |
| 9:45 PM | 1 | 9 | 0 | 0 | 10 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 16 |
| Hourly Total | 5 | 42 | 0 | 0 | 47 | 0 | 0 | 4 | 0 | 4 | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 67 |
| 10:00 PM | 0 | 11 | 0 | 0 | 11 | 1 | 0 | 1 | 0 | 2 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 18 |
| 10:15 PM | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 2 | 0 | 2 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 14 |
| 10:30 PM | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 10 |
| 10:45 PM | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 7 |
| Hourly Total | 1 | 26 | 0 | 0 | 27 | 1 | 0 | 3 | 0 | 4 | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 49 |
| 11:00 PM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 11:15 PM | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 11:30 PM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 11:45 PM | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 16 |
| Hourly Total | 1 | 15 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 29 |
| Grand Total | 103 | 1332 | 0 | 0 | 1435 | 8 | 0 | 116 | 0 | 124 | 0 | 1270 | 13 | 0 | 1283 | 0 | 0 | 0 | 0 | 0 | 2842 |
| Approach \% | 7.2 | 92.8 | 0.0 | 0.0 | - | 6.5 | 0.0 | 93.5 | 0.0 |  | 0.0 | 99.0 | 1.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| Total \% | 3.6 | 46.9 | 0.0 | 0.0 | 50.5 | 0.3 | 0.0 | 4.1 | 0.0 | 4.4 | 0.0 | 44.7 | 0.5 | 0.0 | 45.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - |
| Lights | 64 | 997 | 0 | 0 | 1061 | 4 | 0 | 75 | 0 | 79 | 0 | 963 | 12 | 0 | 975 | 0 | 0 | 0 | 0 | 0 | 2115 |
| \% Lights | 62.1 | 74.8 | - | - | 73.9 | 50.0 |  | 64.7 | - | 63.7 | - | 75.8 | 92.3 | - | 76.0 | - |  | - | - | - | 74.4 |
| Mediums | 34 | 56 | 0 | 0 | 90 | 2 | 0 | 35 | 0 | 37 | 0 | 58 | 0 | 0 | 58 | 0 | 0 | 0 | 0 | 0 | 185 |
| \% Mediums | 33.0 | 4.2 | - | - | 6.3 | 25.0 | - | 30.2 | - | 29.8 | - | 4.6 | 0.0 | - | 4.5 | - | - | - | - | - | 6.5 |
| Articulated Trucks | 5 | 279 | 0 | 0 | 284 | 2 | 0 | 6 | 0 | 8 | 0 | 249 | 1 | 0 | 250 | 0 | 0 | 0 | 0 | 0 | 542 |
| \% Articulated Trucks | 4.9 | 20.9 | - | - | 19.8 | 25.0 |  | 5.2 | - | 6.5 | - | 19.6 | 7.7 | - | 19.5 | - | - | - | - | - | 19.1 |



Turning Movement Data Plot

Turning Movement Peak Hour Data (7:00 AM)



Turning Movement Peak Hour Data Plot (7:00 AM)

Turning Movement Peak Hour Data (5:00 PM)

| Start Time | FM 3400 Southbound |  |  |  |  | LOCKWOOD LN <br> Westbound |  |  |  |  | FM 3400 <br> Northbound |  |  |  |  | Eastbound St. Eastbound |  |  |  |  | Int. Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total |  |
| 5:00 PM | 3 | 34 | 0 | 0 | 37 | 0 | 0 | 1 | 0 | 1 | 0 | 30 | 1 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 69 |
| 5:15 PM | 3 | 31 | 0 | 0 | 34 | 0 | 0 | 2 | 0 | 2 | 0 | 25 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 61 |
| 5:30 PM | 2 | 29 | 0 | 0 | 31 | 0 | 0 | 5 | 0 | 5 | 0 | 15 | 2 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 53 |
| 5:45 PM | 1 | 32 | 0 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 59 |
| Total | 9 | 126 | 0 | 0 | 135 | 0 | 0 | 8 | 0 | 8 | 0 | 96 | 3 | 0 | 99 | 0 | 0 | 0 | 0 | 0 | 242 |
| Approach \% | 6.7 | 93.3 | 0.0 | 0.0 | - | 0.0 | 0.0 | 100.0 | 0.0 | - | 0.0 | 97.0 | 3.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| Total \% | 3.7 | 52.1 | 0.0 | 0.0 | 55.8 | 0.0 | 0.0 | 3.3 | 0.0 | 3.3 | 0.0 | 39.7 | 1.2 | 0.0 | 40.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - |
| PHF | 0.750 | 0.926 | 0.000 | 0.000 | 0.912 | 0.000 | 0.000 | 0.400 | 0.000 | 0.400 | 0.000 | 0.800 | 0.375 | 0.000 | 0.798 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.877 |
| Lights | 8 | 118 | 0 | 0 | 126 | 0 | 0 | 8 | 0 | 8 | 0 | 85 | 3 | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 222 |
| \% Lights | 88.9 | 93.7 | - | - | 93.3 | - | - | 100.0 | - | 100.0 | - | 88.5 | 100.0 | - | 88.9 | - | - | - | - | - | 91.7 |
| Mediums | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 8 |
| \% Mediums | 0.0 | 3.2 | - | - | 3.0 | - | - | 0.0 | - | 0.0 | - | 4.2 | 0.0 | - | 4.0 | - | - | - | - | - | 3.3 |
| Articulated Trucks | 1 | 4 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 12 |
| \% Articulated Trucks | 11.1 | 3.2 | - | - | 3.7 | - | - | 0.0 | - | 0.0 | - | 7.3 | 0.0 | - | 7.1 | - | - | - | - | - | 5.0 |



Turning Movement Peak Hour Data Plot (5:00 PM)

Turning Movement Data

| Start Time | FM 3400 <br> Southbound |  |  |  |  | Left |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Left | Thru | Right | U-Turn | App. Total |  |
| 12:00 AM | 0 | 2 | 0 | 0 | 2 | 0 |
| 12:15 AM | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 AM | 0 | 1 | 0 | 0 | 1 | 0 |
| 12:45 AM | 0 | 0 | 0 | 0 | 0 | 0 |
| Hourly Total | 0 |  | 0 | 0 | 3 | 0 |
| 1:00 AM | 0 | 2 | 0 | 0 | 2 | 0 |
| 1:15 AM | 0 | 1 | 0 | 0 | 1 | 0 |
| 1:30 AM | 0 | 1 | 0 | 0 | 1 | 0 |
| 1:45 AM | 1 | 0 | 0 | 0 | 1 | 0 |
| Hourly Total | 1 | 4 | 0 | 0 | 5 | 0 |
| 2:00 AM | 0 | 0 | 0 | 0 | 0 | 0 |
| 2:15 AM | 0 | 2 | 0 | 0 | 2 | 0 |
| 2:30 AM | 0 | 2 | 0 | 0 | 2 | 0 |
| 2:45 AM | 0 | 1 | 0 | 0 | 1 | 0 |
| Hourly Total | 0 | 5 | 0 | 0 | 5 | 0 |
| 3:00 AM | 0 | 2 | 0 | 0 | 2 | 0 |
| 3:15 AM | 0 | 1 | 0 | 0 | 1 | 0 |
| 3:30 AM | 0 | 0 | 0 | 0 | 0 | 0 |
| 3:45 AM | 0 | 2 | 0 | 0 | 2 | 0 |
| Hourly Total | 0 | 5 | 0 | 0 | 5 | 0 |
| 4:00 AM | 0 | 2 | 0 | 0 | 2 | 0 |
| 4:15 AM | 0 | 3 | 0 | 0 | 3 | 0 |
| 4:30 AM | 0 | 5 | 0 | 0 | 5 | 0 |
| 4:45 AM | 0 | 3 | 0 | 0 | 3 | 0 |
| Hourly Total | 0 | 13 | 0 | 0 | 13 | 0 |
| 5:00 AM | 0 | 8 | 0 | 0 | 8 | 0 |
| 5:15 AM | 0 | 9 | 0 | 0 | 9 | 0 |
| 5:30 AM | 0 | 6 | 0 | 0 | 6 | 0 |
| 5:45 AM | 1 | 7 | 0 | 0 | 8 | 0 |
| Hourly Total | 1 | 30 | 0 | 0 | 31 | 0 |
| 6:00 AM | 0 | 12 | 0 | 0 | 12 | 0 |
| 6:15 AM | 0 | 9 | 0 | 0 | 9 | 0 |
| 6:30 AM | 0 | 18 | 0 | 0 | 18 | 0 |
| 6:45 AM | 1 | 13 | 0 | 0 | 14 | 0 |
| Hourly Total | 1 | 52 | 0 | 0 | 53 | 0 |
| 7:00 AM | 0 | 24 | 0 | 0 | 24 | 0 |
| 7:15 AM | 0 | 16 | 0 | 0 | 16 | 0 |
| 7:30 AM | 0 | 21 | 0 | 0 | 21 | 0 |
| 7:45 AM | 1 | 18 | 0 | 0 | 19 | 0 |

RADLE RD
Westbound

FM 3400
Northbound

Eastbound
$\qquad$ Thru

U-Turn App. Total Left $\qquad$
Thru Right U-T
 Right

| Right | U-Turn | App. Total | Int. Total |
| :---: | :---: | :---: | :---: |
| 0 | 0 | 0 | 2 |
| 0 | 0 | 0 | 2 |
| 0 | 0 | 0 | 2 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 6 |
| 0 | 0 | 0 | 2 |
| 0 | 0 | 0 | 4 |
| 0 | 0 | 0 | 3 |
| 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 10 |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 0 | 2 |
| 0 | 0 | 0 | 3 |
| 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 6 |
| 0 | 0 | 0 | 2 |
| 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 1 |
| 0 | 0 | 0 | 4 |
| 0 | 0 | 0 | 8 |
| 0 | 0 | 0 | 4 |
| 0 | 0 | 0 | 6 |
| 0 | 0 | 0 | 10 |
| 0 | 0 | 0 | 6 |
| 0 | 0 | 0 | 26 |
| 0 | 0 | 0 | 17 |
| 0 | 0 | 0 | 13 |
| 0 | 0 | 0 | 14 |
| 0 | 0 | 0 | 23 |
| 0 | 0 | 0 | 67 |
| 0 | 0 | 0 | 28 |
| 0 | 0 | 0 | 29 |
| 0 | 0 | 0 | 46 |
| 0 | 0 | 0 | 52 |
| 0 | 0 | 0 | 155 |
| 0 | 0 | 0 | 50 |
| 0 | 0 | 0 | 49 |
| 0 | 0 | 0 | 59 |
| 0 | 0 | 0 | 51 |

Appendix B - Page 33 of 40

| Hourly Total | 1 | 79 | 0 | 0 | 80 | 0 | 0 | 8 | 0 | 8 | 0 | 121 | 0 | 0 | 121 | 0 | 0 | 0 | 0 | 0 | 209 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 8:00 AM | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 57 |
| 8:15 AM | 3 | 19 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 49 |
| 8:30 AM | 1 | 13 | 0 | 0 | 14 | 1 | 0 | 0 | 0 | 1 | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 31 |
| 8:45 AM | 2 | 16 | 0 | 0 | 18 | 0 | 0 | 2 | 0 | 2 | 0 | 31 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 51 |
| Hourly Total | 6 | 68 | 0 | 0 | 74 | 1 | 0 | 2 | 0 | 3 | 0 | 111 | 0 | 0 | 111 | 0 | 0 | 0 | 0 | 0 | 188 |
| 9:00 AM | 1 | 13 | 0 | 0 | 14 | 0 | 0 | 1 | 1 | 2 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 31 |
| 9:15 AM | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 35 |
| 9:30 AM | 1 | 12 | 0 | 0 | 13 | 0 | 0 | 1 | 0 | 1 | 0 | 17 | 2 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 33 |
| 9:45 AM | 1 | 20 | 0 | 0 | 21 | 1 | 0 | 1 | 0 | 2 | 0 | 19 | 1 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 43 |
| Hourly Total | 3 | 61 | 0 | 0 | 64 | 1 | 0 | 3 | 1 | 5 | 0 | 70 | 3 | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 142 |
| 10:00 AM | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 2 | 0 | 2 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 28 |
| 10:15 AM | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 28 |
| 10:30 AM | 0 | 16 | 0 | 0 | 16 | 1 | 0 | 0 | 0 | 1 | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 34 |
| 10:45 AM | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 35 |
| Hourly Total | 0 | 55 | 0 | 0 | 55 | 1 | 0 | 2 | 0 | 3 | 0 | 67 | 0 | 0 | 67 | 0 | 0 | 0 | 0 | 0 | 125 |
| 11:00 AM | 1 | 16 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 35 |
| 11:15 AM | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 1 | 20 | 0 | 0 | 0 | 0 | 0 | 38 |
| 11:30 AM | 1 | 12 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 29 |
| 11:45 AM | 1 | 12 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 27 |
| Hourly Total | 3 | 58 | 0 | 0 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 67 | 0 | 1 | 68 | 0 | 0 | 0 | 0 | 0 | 129 |
| 12:00 PM | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 1 | 0 | 1 | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 33 |
| 12:15 PM | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 1 | 0 | 1 | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 34 |
| 12:30 PM | 3 | 20 | 0 | 0 | 23 | 0 | 0 | 1 | 0 | 1 | 0 | 27 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 51 |
| 12:45 PM | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 2 | 0 | 2 | 0 | 9 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 25 |
| Hourly Total | 3 | 64 | 0 | 0 | 67 | 0 | 0 | 5 | 0 | 5 | 0 | 71 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 143 |
| 1:00 PM | 0 | 13 | 0 | 0 | 13 | 1 | 0 | 1 | 0 | 2 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 28 |
| 1:15 PM | 0 | 14 | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 30 |
| 1:30 PM | 2 | 17 | 0 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 40 |
| 1:45 PM | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 33 |
| Hourly Total | 2 | 61 | 0 | 0 | 63 | 1 | 0 | 1 | 0 | 2 | 0 | 66 | 0 | 0 | 66 | 0 | 0 | 0 | 0 | 0 | 131 |
| 2:00 PM | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 1 | 1 | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 33 |
| 2:15 PM | 2 | 23 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 37 |
| 2:30 PM | 1 | 23 | 0 | 0 | 24 | 1 | 0 | 0 | 0 | 1 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 40 |
| 2:45 PM | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 23 | 0 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 41 |
| Hourly Total | 3 | 75 | 0 | 0 | 78 | 1 | 0 | 0 | 1 | 2 | 0 | 71 | 0 | 0 | 71 | 0 | 0 | 0 | 0 | 0 | 151 |
| 3:00 PM | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 39 |
| 3:15 PM | 0 | 26 | 0 | 0 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 43 |
| 3:30 PM | 2 | 19 | 0 | 0 | 21 | 0 | 0 | 1 | 0 | 1 | 0 | 22 | 1 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 45 |
| 3:45 PM | 0 | 22 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 40 |
| Hourly Total | 2 | 88 | 0 | 0 | 90 | 0 | 0 | 1 | 0 | 1 | 0 | 75 | 1 | 0 | 76 | 0 | 0 | 0 | 0 | 0 | 167 |
| 4:00 PM | 2 | 23 | 0 | 0 | 25 | 0 | 0 | 1 | 0 | 1 | 0 | 10 | 0 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 36 |
| 4:15 PM | 0 | 32 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 47 |
| 4:30 PM | 1 | 26 | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 49 |
| 4:45 PM | 1 | 23 | 0 | 0 | 24 | 1 | 0 | 0 | 0 | 1 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 37 |
| Hourly Total | 4 | 104 | 0 | 0 | 108 | 1 | 0 | 1 | 0 | 2 | 0 | 59 | 0 | 0 | 59 | 0 | 0 | 0 | 0 | 0 | 169 |
| 5:00 PM | 0 | 29 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 44 |
| 5:15 PM | 1 | 40 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 63 |
| 5:30 PM | 1 | 25 | 0 | 0 | 26 | 0 | 0 | 1 | 0 | 1 | 0 | 22 | 1 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 50 |
| 5:45 PM | 1 | 21 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 35 |
| Hourly Total | 3 | 115 | 0 | 0 | 118 | 0 | 0 | 1 | 0 | 1 | 0 | 72 | 1 | 0 | 73 | 0 | 0 | 0 | 0 | 0 | 192 |
| 6:00 PM | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 23 |

Appendix B - Page 34 of 40

| 6:15 PM | 1 | 24 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 42 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6:30 PM | 1 | 17 | 0 | 0 | 18 | 0 | 0 | 1 | 0 | 1 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 34 |
| 6:45 PM | 2 | 20 | 0 | 0 | 22 | 0 | 0 | 0 | 1 | 1 | 0 | 15 | 1 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 39 |
| Hourly Total | 4 | 72 | 0 | 0 | 76 | 0 | 0 | 1 | 1 | 2 | 0 | 59 | 1 | 0 | 60 | 0 | 0 | 0 | 0 | 0 | 138 |
| 7:00 PM | 0 | 17 | 0 | 0 | 17 | 1 | 0 | 0 | 0 | 1 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 30 |
| 7:15 PM | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 22 |
| 7:30 PM | 1 | 10 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 15 |
| 7:45 PM | 0 | 19 | 0 | 0 | 19 | 0 | 0 | 1 | 0 | 1 | 0 | 11 | 0 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 31 |
| Hourly Total | 1 | 58 | 0 | 0 | 59 | 1 | 0 | 1 | 0 | 2 | 0 | 36 | 1 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 98 |
| 8:00 PM | 0 | 15 | 0 | 0 | 15 | 1 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 25 |
| 8:15 PM | 2 | 9 | 0 | 0 | 11 | 1 | 0 | 1 | 0 | 2 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 26 |
| 8:30 PM | 2 | 17 | 0 | 0 | 19 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 25 |
| 8:45 PM | 1 | 10 | 0 | 0 | 11 | 0 | 0 | 1 | 0 | 1 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 24 |
| Hourly Total | 5 | 51 | 0 | 0 | 56 | 2 | 0 | 3 | 0 | 5 | 0 | 39 | 0 | 0 | 39 | 0 | 0 | 0 | 0 | 0 | 100 |
| 9:00 PM | 0 | 7 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 19 |
| 9:15 PM | 0 | 8 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 10 |
| 9:30 PM | 0 | 8 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 14 |
| 9:45 PM | 1 | 8 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 14 |
| Hourly Total | 1 | 31 | 0 | 0 | 32 | 0 | 0 | 1 | 0 | 1 | 0 | 23 | 1 | 0 | 24 | 0 | 0 | 0 | 0 | 0 | 57 |
| 10:00 PM | 1 | 3 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 8 |
| 10:15 PM | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 12 |
| 10:30 PM | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| 10:45 PM | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 7 |
| Hourly Total | 1 | 14 | 0 | 0 | 15 | 0 | 0 | 2 | 0 | 2 | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 30 |
| 11:00 PM | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 7 |
| 11:15 PM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 11:30 PM | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 11:45 PM | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Hourly Total | 1 | 12 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 16 |
| Grand Total | 46 | 1178 | 0 | 0 | 1224 | 9 | 0 | 36 | 3 | 48 | 0 | 1182 | 8 | 1 | 1191 | 0 | 0 | 0 | 0 | 0 | 2463 |
| Approach \% | 3.8 | 96.2 | 0.0 | 0.0 | - | 18.8 | 0.0 | 75.0 | 6.3 | - | 0.0 | 99.2 | 0.7 | 0.1 | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| Total \% | 1.9 | 47.8 | 0.0 | 0.0 | 49.7 | 0.4 | 0.0 | 1.5 | 0.1 | 1.9 | 0.0 | 48.0 | 0.3 | 0.0 | 48.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - |
| Lights | 44 | 830 | 0 | 0 | 874 | 5 | 0 | 32 | 2 | 39 | 0 | 848 | 7 | 0 | 855 | 0 | 0 | 0 | 0 | 0 | 1768 |
| \% Lights | 95.7 | 70.5 | - | - | 71.4 | 55.6 | - | 88.9 | 66.7 | 81.3 | - | 71.7 | 87.5 | 0.0 | 71.8 | - | - | - | - | - | 71.8 |
| Mediums | 2 | 60 | 0 | 0 | 62 | 3 | 0 | 2 | 0 | 5 | 0 | 55 | 1 | 0 | 56 | 0 | 0 | 0 | 0 | 0 | 123 |
| \% Mediums | 4.3 | 5.1 | - | - | 5.1 | 33.3 | - | 5.6 | 0.0 | 10.4 | - | 4.7 | 12.5 | 0.0 | 4.7 | - | - | - | - | - | 5.0 |
| Articulated Trucks | 0 | 288 | 0 | 0 | 288 | 1 | 0 | 2 | 1 | 4 | 0 | 279 | 0 | 1 | 280 | 0 | 0 | 0 | 0 | 0 | 572 |
| \% Articulated Trucks | 0.0 | 24.4 | - | - | 23.5 | 11.1 | - | 5.6 | 33.3 | 8.3 | - | 23.6 | 0.0 | 100.0 | 23.5 | - | - | - | - | - | 23.2 |



Turning Movement Data Plot

Turning Movement Peak Hour Data (7:15 AM)

| Start Time | Turning Movement Peak Hour Data (7:15 AM) |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Eastbound St. Eastbound |  |  |  |  | Int. Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | FM 3400 Southbound |  |  |  |  | RADLE RDWestbound |  |  |  |  | FM 3400 <br> Northbound |  |  |  |  |  |  |  |  |  |  |
|  | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Westbound Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total |  |
| 7:15 AM | 0 | 16 | 0 | 0 | 16 | 0 | 0 | 1 | 0 | 1 | 0 | 32 | 0 | 0 | 32 | 0 | 0 | 0 | 0 | 0 | 49 |
| 7:30 AM | 0 | 21 | 0 | 0 | 21 | 0 | 0 | 2 | 0 | 2 | 0 | 36 | 0 | 0 | 36 | 0 | 0 | 0 | 0 | 0 | 59 |
| 7:45 AM | 1 | 18 | 0 | 0 | 19 | 0 | 0 | 4 | 0 | 4 | 0 | 28 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 51 |
| 8:00 AM | 0 | 20 | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 0 | 0 | 37 | 0 | 0 | 0 | 0 | 0 | 57 |
| Total | 1 | 75 | 0 | 0 | 76 | 0 | 0 | 7 | 0 | 7 | 0 | 133 | 0 | 0 | 133 | 0 | 0 | 0 | 0 | 0 | 216 |
| Approach \% | 1.3 | 98.7 | 0.0 | 0.0 | - | 0.0 | 0.0 | 100.0 | 0.0 | - | 0.0 | 100.0 | 0.0 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| Total \% | 0.5 | 34.7 | 0.0 | 0.0 | 35.2 | 0.0 | 0.0 | 3.2 | 0.0 | 3.2 | 0.0 | 61.6 | 0.0 | 0.0 | 61.6 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - |
| PHF | 0.250 | 0.893 | 0.000 | 0.000 | 0.905 | 0.000 | 0.000 | 0.438 | 0.000 | 0.438 | 0.000 | 0.899 | 0.000 | 0.000 | 0.899 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.915 |
| Lights | 1 | 34 | 0 | 0 | 35 | 0 | 0 | 7 | 0 | 7 | 0 | 98 | 0 | 0 | 98 | 0 | 0 | 0 | 0 | 0 | 140 |
| \% Lights | 100.0 | 45.3 | - | - | 46.1 | - | - | 100.0 | - | 100.0 | - | 73.7 | - | - | 73.7 | - | - | - | - | - | 64.8 |
| Mediums | 0 | 13 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 17 |
| \% Mediums | 0.0 | 17.3 | - | - | 17.1 | - | - | 0.0 | - | 0.0 | - | 3.0 | - | - | 3.0 | - | - | - | - | - | 7.9 |
| Articulated Trucks | 0 | 28 | 0 | 0 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 31 | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 0 | 59 |
| \% Articulated Trucks | 0.0 | 37.3 | - | - | 36.8 | - | - | 0.0 | - | 0.0 | - | 23.3 | - | - | 23.3 | - | - | - | - | - | 27.3 |



Turning Movement Peak Hour Data Plot (7:15 AM)

Turning Movement Peak Hour Data (4:45 PM)

| Start Time | FM 3400 <br> Southbound |  |  |  |  | RadLe RD <br> Westbound |  |  |  |  | FM 3400 <br> Northbound |  |  |  |  | Eastbound St. <br> Eastbound |  |  |  |  | Int. Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Start Time | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total | Left | Thru | Right | U-Turn | App. Total |  |
| 4:45 PM | 1 | 23 | 0 | 0 | 24 | 1 | 0 | 0 | 0 | 1 | 0 | 12 | 0 | 0 | 12 | 0 | 0 | 0 | 0 | 0 | 37 |
| 5:00 PM | 0 | 29 | 0 | 0 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 44 |
| 5:15 PM | 1 | 40 | 0 | 0 | 41 | 0 | 0 | 0 | 0 | 0 | 0 | 22 | 0 | 0 | 22 | 0 | 0 | 0 | 0 | 0 | 63 |
| 5:30 PM | 1 | 25 | 0 | 0 | 26 | 0 | 0 | 1 | 0 | 1 | 0 | 22 | 1 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 50 |
| Total | 3 | 117 | 0 | 0 | 120 | 1 | 0 | 1 | 0 | 2 | 0 | 71 | 1 | 0 | 72 | 0 | 0 | 0 | 0 | 0 | 194 |
| Approach \% | 2.5 | 97.5 | 0.0 | 0.0 | - | 50.0 | 0.0 | 50.0 | 0.0 | - | 0.0 | 98.6 | 1.4 | 0.0 | - | 0.0 | 0.0 | 0.0 | 0.0 | - | - |
| Total \% | 1.5 | 60.3 | 0.0 | 0.0 | 61.9 | 0.5 | 0.0 | 0.5 | 0.0 | 1.0 | 0.0 | 36.6 | 0.5 | 0.0 | 37.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | - |
| PHF | 0.750 | 0.731 | 0.000 | 0.000 | 0.732 | 0.250 | 0.000 | 0.250 | 0.000 | 0.500 | 0.000 | 0.807 | 0.250 | 0.000 | 0.783 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.770 |
| Lights | 3 | 115 | 0 | 0 | 118 | 0 | 0 | 1 | 0 | 1 | 0 | 65 | 1 | 0 | 66 | 0 | 0 | 0 | 0 | 0 | 185 |
| \% Lights | 100.0 | 98.3 | - | - | 98.3 | 0.0 | - | 100.0 | - | 50.0 | - | 91.5 | 100.0 | - | 91.7 | - | - | - | - | - | 95.4 |
| Mediums | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 5 |
| \% Mediums | 0.0 | 0.9 | - | - | 0.8 | 100.0 | - | 0.0 | - | 50.0 | - | 4.2 | 0.0 | - | 4.2 | - | - | - | - | - | 2.6 |
| Articulated Trucks | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 4 |
| \% Articulated Trucks | 0.0 | 0.9 | - | - | 0.8 | 0.0 | - | 0.0 | - | 0.0 | - | 4.2 | 0.0 | - | 4.2 | - | - | - | - | - | 2.1 |



Turning Movement Peak Hour Data Plot (4:45 PM)

## Appendix C: TxDOT 20-Year Growth Projections




| Route Name | FM3400-KG |
| :--- | :--- |
| 2021 AADT | 4,228 |
| 2041 Estimated AADT | 5,919 |
| 24 Hour Truck Percentage | 16.6 |

## FM 3400 North of SH 6

1.7\% Growth

Note: Future AADT and Truck Percentage statistics are programmatically derived system-wide. Project-specific forecasts provided by TPP on the Traffic Analysis for Highway Design forms are generated on a project-by-project basis and will likely differ from the values presented here.

Zoom to


Hake


Note: Future AADT and Truck Percentage statistics are programmatically derived system-wide. Project-specific forecasts provided by TPP on the Traffic Analysis for Highway Design forms are generated on a project-by-project basis and will likely differ from the values presented here.
Zoom to


| Future Traffic: (1 of 2) |
| :--- |
| Route Name FM3400-KG <br> 2021 AADT 2,188 <br> 2041 Estimated AADT 3,457 <br> 24 Hour Truck Percentage 18.6 |

Note: Future AADT and Truck Percentage statistics are programmatically derived system-wide. Project-specific forecasts provided by TPP on the Traffic Analysis for Highway Design forms are generated on a project-by-project basis and will likely differ from the values presented here.

Zoom to



## Appendix D: Existing Landfill Data

INBOUND VEHICLE TRAFFIC AT CITY OF WACO LANDFILL, TCEQ PERMIT NO. 948A

## PEAK HOURLY ANALYSIS

TIME PERIOD: 9/1/21 THROUGH 8/31/22

| Peak Hourly - Weekdays |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Hour | Total Vehicles/yr/hr | Average <br> Vehicles/day/hr | Peak Vehicles/hr | Peak \% |
| 5 | 0 | 0 | 0 | 0.0\% |
| 6 | 378 | 1 | 4 | 0.5\% |
| 7 | 7552 | 29 | 51 | 6.5\% |
| 8 | 11236 | 44 | 80 | 10.3\% |
| 9 | 12592 | 49 | 75 | 9.6\% |
| 10 | 13180 | 51 | 97 | 12.4\% |
| 11 | 13020 | 51 | 80 | 10.3\% |
| 12 | 13185 | 51 | 81 | 10.4\% |
| 13 | 13159 | 51 | 90 | 11.5\% |
| 14 | 12844 | 50 | 78 | 10.0\% |
| 15 | 11594 | 45 | 74 | 9.5\% |
| 16 | 5941 | 23 | 63 | 8.1\% |
| 17 | 10 | 0 | 7 | 0.9\% |
| 18 | 0 | 0 | 0 | 0.0\% |
| 19 | 0 | 0 | 0 | 0.0\% |
| Total: | 114691 |  | 780 | 100.0\% |


| Peak Hourly - Weekend |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Hour | Total <br> Vehicles/yr/hr | Average <br> Vehicles/day/hr | Peak Vehicles/hr | Peak \% |
| 5 | 0 | 0 | 0 | $0.0 \%$ |
| 6 | 0 | 0 | 0 | $0.0 \%$ |
| 7 | 145 | 3 | 15 | $4.3 \%$ |
| 8 | 3010 | 60 | 82 | $23.3 \%$ |
| 9 | 2351 | 47 | 77 | $21.9 \%$ |
| 10 | 2520 | 50 | 69 | $19.6 \%$ |
| 11 | 1781 | 36 | 68 | $19.3 \%$ |
| 12 | 234 | 5 | 35 | $9.9 \%$ |
| 13 | 5 | 0 | 5 | $1.4 \%$ |
| 14 | 1 | 0 | 1 | $0.3 \%$ |
| 15 | 0 | 0 | 0 | $0.0 \%$ |
| Total: | 10047 |  | $\mathbf{3 5 2}$ | $\mathbf{1 0 0 . 0 \%}$ |


| TxDOT AM Hourly - Weekdays |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Hour | Total <br> Vehicles/yr/hr | Average <br> Vehicles/day/hr | Peak Vehicles/hr | Peak \% |
| 7 | 7552 | 29 | 51 | $38.93 \%$ |
| 8 | 11236 | 44 | 80 | $61.07 \%$ |
| Total: | 18788 |  | 131 | $100.00 \%$ |


| TxDOT AM Hourly - Weekend |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Hour | Total <br> Vehicles/yr/hr | Average <br> Vehicles/day/hr | Peak Vehicles/hr | Peak \% |  |
| 7 | 145 | 3 | 15 | $15.46 \%$ |  |
| 8 | 3010 | 60 | 82 | $84.54 \%$ |  |
| Total: | 3155 |  | 97 | $\mathbf{1 0 0 . 0 0 \%}$ |  |
|  |  |  |  |  |  |
| Hour | Total <br> Vehicles/yr/hr | Average <br> Vehicles/day/hr | Peak Vehicles/hr | Peak \% |  |
| 15 | 0 | 0 | 0 | $0.00 \%$ |  |
| 16 | 0 | 0 | 0 | $0.00 \%$ |  |
| 17 | 0 | 0 | 0 | $0.00 \%$ |  |
| Total: | $\mathbf{0}$ |  | $\mathbf{0}$ | $\mathbf{0 . 0 0 \%}$ |  |


| Customer Peaks | Weight |  | Count |  |
| :--- | ---: | ---: | ---: | ---: |
|  | Total Annual |  | Daily | Total Annual |
| Franchise Haulers | $95,090.63$ | 527.98 | 19,515 | 104 |
| City of Waco Collections | $147,013.09$ | 872.79 | 27,315 | 148 |
| Self Haulers | $90,465.88$ | 819.19 | 66,713 | 373 |
| Non-Franchise Haulers | $36,480.56$ | 380.86 | 11,195 | 70 |
| Overall | $369,050.16$ | $2,038.55$ | 124,738 | 602 |


| Brush Peaks | Weight |  | Count |  |
| :--- | ---: | ---: | ---: | ---: |
|  | Total Annual |  | Daily | Total Annual |
| Brush | $14,599.94$ | 127.97 | 14,604 | 102 |
| City of Waco Collections * | $4,738.07$ | 71.42 | 2,593 | 24 |
| Non-City of Waco | $9,861.87$ | 107.66 | 12,011 | 96 |
| Origin-City of Waco | $13,792.46$ | 127.45 | 13,096 | 81 |
| Origin-Non-City of Waco | 807.48 | 68.71 | 1,508 | 45 |


| Customer Peaks less City of <br> Waco Brush(1) | Weight |  | Count |  |
| :--- | ---: | ---: | ---: | ---: |
|  | Total Annual |  | Daily | Total Annual |

(1) Customer peaks do not include the City of Waco Collection of Brush (*).

| Origin Peaks | Weight |  | Count |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Total Annual | Daily | Total Annual | Daily |
| CITY OF WACO | 295,525.97 | 1,745.13 | 100,131 | 501 |
| BELL COUNTY | 226.61 | 26.30 | 51 | 3 |
| BELLMEAD, CITY OF | 5,258.06 | 60.84 | 850 | 9 |
| BEVERLY HILLS, CITY OF | 205.83 | 11.82 | 189 | 5 |
| BOSQUE COUNTY | 4,791.62 | 65.47 | 870 | 11 |
| BOSQUE/HILL CO. | 13.13 | 0.47 | 96 | 2 |
| BRUCEVILLE/EDDY, CITY OF | 499.18 | 22.55 | 408 | 7 |
| CHALK BLUFF, CITY OF | 36.83 | 11.91 | 17 | 2 |
| CHINA SPRING, CITY OF | 1,074.06 | 35.20 | 589 | 10 |
| CLIFTON, CITY OF | 1,063.99 | 33.04 | 256 | 4 |
| CORYELL COUNTY | 2,648.83 | 37.35 | 1,207 | 10 |
| CHALK BLUFF, CITY OF | 36.83 | 11.91 | 17 | 2 |
| CRAWFORD, CITY OF | 757.43 | 41.46 | 416 | 10 |
| ELM MOTT, CITY OF | 177.15 | 12.64 | 138 | 4 |
| FALLS COUNTY | 529.78 | 29.68 | 230 | 7 |
| FALLS/LIMESTONE CO. | 8.06 | 0.59 | 71 | 2 |
| FREESTONE COUNTY | 5.24 | 2.07 | 4 | 1 |
| GATESVILLE, CITY OF | 349.14 | 9.49 | 487 | 8 |
| GHOLSON, CITY OF | 43.65 | 8.34 | 43 | 3 |
| GOLINDA, CITY OF | 3.44 | 2.16 | 3 | 1 |
| HALLSBURG, CITY OF | 33.88 | 6.35 | 24 | 2 |
| HAMILTON, CITY OF | 2,047.11 | 36.33 | 300 | 5 |
| HEWITT, CITY OF | 10,822.10 | 124.14 | 2,793 | 21 |
| HILL COUNTY | 733.72 | 16.49 | 224 | 5 |
| HILLSBORO, CITY OF | 0.02 | 0.02 | 1 | 1 |
| HWY 84 | 41.34 | 1.44 | 466 | 5 |
| LACEY-LAKEVIEW, CITY OF | 43.11 | 9.24 | 44 | 3 |
| LAMPASAS COUNTY | 514.08 | 21.92 | 70 | 2 |
| LIMESTONE COUNTY | 30.92 | 7.32 | 44 | 2 |
| LORENA, CITY OF | 3,245.17 | 42.65 | 1,889 | 23 |
| LOTT, CITY OF | 30.23 | 5.43 | 11 | 2 |
| MARLIN, CITY OF | 633.05 | 26.34 | 131 | 5 |
| MART, CITY OF | 326.29 | 23.01 | 123 | 5 |
| MCGREGOR, CITY OF | 4,866.63 | 55.59 | 2,404 | 22 |
| MCLENNAN COUNTY | 13,803.24 | 154.90 | 3,528 | 27 |
| MILAM COUNTY | 56.85 | 10.45 | 12 | 1 |
| MOODY, CITY OF | 371.81 | 12.75 | 445 | 7 |
| OGLESBY, CITY OF | 44.12 | 7.84 | 81 | 4 |
| RIESEL, CITY OF | 1,367.30 | 29.26 | 284 | 5 |
| ROBERTSON COUNTY | 0.62 | 0.53 | 2 | 1 |
| ROBINSON, CITY OF | 1,005.22 | 19.37 | 1,075 | 12 |
| SPEEGLEVILLE, CITY OF | 106.06 | 5.64 | 159 | 5 |
| TEMPLE, CITY OF | 2.72 | 2.72 | 1 | 1 |
| VALLEY MILLS, CITY OF | 93.24 | 12.32 | 82 | 4 |
| WEST, CITY OF | 164.63 | 13.83 | 169 | 4 |
| WOODWAY, CITY OF | 13,879.83 | 255.51 | 4,110 | 55 |

INBOUND VEHICLE TRAFFIC AT CITY OF WACO LANDFILL, TCEQ PERMIT NO. 948A
AVERAGE DAILY ANALYSIS
TIME PERIOD: 9/1/21 THROUGH 8/31/22

| Day of Week | Total Vehicles ${ }^{1}$ | Total Days Operated ${ }^{2}$ | Average Daily Vehicles |
| :---: | :---: | :---: | :---: |
| Weekday |  |  |  |
| Monday | 22771 | 49 | 465 |
| Tuesday | 24655 | 52 | 474 |
| Wednesday | 22948 | 53 | 433 |
| Thursday | 21725 | 51 | 426 |
| Friday | 22591 | 52 | 434 |
| Total Weekday | 114690 | 257 | 446 |
| Weekend |  |  |  |
| Saturday | 10048 | 50 | 201 |
| Sunday | 0 | 0 | 0 |
| Total Weekend | 10048 | 50 | 201 |
|  | 2022 Weighted Average ${ }^{3}$ : |  | 424 |
|  | 2022 Weekday Average ${ }^{4}$ : |  | 446 |
|  | Growth Rate ${ }^{5}$ : |  | 1.25\% |

## Notes:

1. Total number of vehicles entering the site on each day of operation excluding holidays observed during the time period.
2. Represents the total operating days during the time period for each respective day.
3. Represents the weighted average between average vehicles per day on weekdays and weekends.
4. Represents the average vehicles per days on weekdays. This average was conservatively used for future vehicle projections, due to reduced the site operations and traffic on weekends.
5. Average growth rate for McLennan County between 2010 and 2016, as reported in City of Waco Landfill, TCEQ Permit No. 2400, Parts I/II, Appendix I/IIC.

INBOUND VEHICLE TRAFFIC AT CITY OF WACO LANDFILL, TCEQ PERMIT NO. 2400
AVERAGE DAILY PROJECTIONS
TIME PERIOD: 2019 THROUGH 2059

| Vehicle Projections ${ }^{1}$ |  |  |
| :---: | :---: | :---: |
| Year | Vehicles per day | Assumptions |
| 2019 | 446 |  |
| 2020 | 446 |  |
| 2021 | 446 |  |
| 2022 | 446 |  |
| 2023 | 446 |  |
| 2024 | 446 | Assumed Site Opening |
| 2025 | 446 |  |
| 2026 | 446 |  |
| 2027 | 446 |  |
| 2028 | 446 |  |
| 2029 | 446 |  |
| 2030 | 446 |  |
| 2031 | 446 |  |
| 2032 | 446 |  |
| 2033 | 446 |  |
| 2034 | 446 |  |
| 2035 | 446 |  |
| 2036 | 446 |  |
| 2037 | 446 |  |
| 2038 | 446 |  |
| 2039 | 446 |  |
| 2040 | 446 |  |
| 2041 | 446 |  |
| 2042 | 446 |  |
| 2043 | 446 |  |
| 2044 | 446 |  |
| 2045 | 446 |  |
| 2046 | 446 |  |
| 2047 | 446 |  |
| 2048 | 446 |  |
| 2049 | 446 |  |
| 2050 | 446 |  |
| 2051 | 446 |  |
| 2052 | 446 |  |
| 2053 | 446 |  |
| 2054 | 446 |  |
| 2055 | 446 |  |
| 2056 | 446 |  |
| 2057 | 446 |  |
| 2058 | 446 |  |
| 2059 | 446 | Assumed Site Closure |

Notes:

1. Based on average annual growth rate for McLennan County of 1.25 percent.

## Appendix E: HCS Output Sheets

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2022 |
| Jurisdiction | Waco, TX | Time Analyzed | 2022 Existing AM Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | Access Point Density, pts/mi | 0.2 |  |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 163 | Opposing Demand Flow Rate, veh/h | 101 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.89 | Total Trucks, \% | 38.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.10 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 78.5 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient $(\mathrm{m})$ | 4.51681 | Speed Power Coefficient $(\mathrm{p})$ | 0.57373 |
| PF Slope Coefficient $(\mathrm{m})$ | -1.06241 | PF Power Coefficient $(\mathrm{p})$ | 0.87825 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 0.4 |
| \%lmprovement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| $\#$ | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | Tangent | 5280 | - | - | 77.6 |

## Vehicle Results

| Average Speed, mi/h | 77.6 | Percent Followers, \% | 19.4 |
| :--- | :--- | :--- | :--- |
| Segment Travel Time, minutes | 0.77 | Follower Density (FD), followers $/ \mathrm{mi} / \mathrm{ln}$ | 0.4 |
| Vehicle LOS | A |  |  |

Facility Results

| T | VMT veh-mi/AP | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ | Follower Density, followers/ $\mathbf{m i} / \mathbf{l n}$ | LOS |
| :---: | :---: | :---: | :---: | :---: |
| 1 | 36 | 0.01 | 0.4 | A |

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2022 |
| Jurisdiction | Waco, TX | Time Analyzed | 2022 Existing PM Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | Access Point Density, pts/mi | 0.2 |  |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 147 | Opposing Demand Flow Rate, veh/h | 81 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.86 | Total Trucks, \% | 17.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.09 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 79.2 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient (m) | 4.54399 | Speed Power Coefficient $(\mathrm{p})$ | 0.58310 |
| PF Slope Coefficient (m) | -1.05262 | PF Power Coefficient $(\mathrm{p})$ | 0.87997 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 0.3 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| $\#$ | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | Tangent | 5280 | - | - | 78.4 |

## Vehicle Results

| Average Speed, mi/h | 78.4 | Percent Followers, \% | 17.7 |
| :--- | :--- | :--- | :--- |
| Segment Travel Time, minutes | 0.77 | Follower Density (FD), followers/mi/ln | 0.3 |
| Vehicle LOS | A |  |  |

Facility Results

| T | VMT veh-mi/AP | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ | Follower Density, followers/ $\mathrm{mi} / \mathbf{n}$ | LOS |
| :---: | :---: | :---: | :---: | :---: |
| 1 | 32 | 0.00 | 0.3 | A |

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2022 |
| Jurisdiction | Waco, TX | Time Analyzed | 2022 Existing Site Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | Access Point Density, pts/mi | 0.2 |  |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 88 | Opposing Demand Flow Rate, veh/h | 70 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.89 | Total Trucks, \% | 54.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.05 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 78.0 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient (m) | 4.47021 | Speed Power Coefficient (p) | 0.58936 |
| PF Slope Coefficient (m) | -1.05383 | PF Power Coefficient (p) | 0.88427 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 0.1 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| $\#$ | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | Tangent | 5280 | - | - | 78.0 |

## Vehicle Results

| Average Speed, mi/h | 78.0 | Percent Followers, \% | 11.5 |
| :--- | :--- | :--- | :--- |
| Segment Travel Time, minutes | 0.77 | Follower Density (FD), followers $/ \mathrm{mi} / \mathrm{ln}$ | 0.1 |
| Vehicle LOS | A |  |  |

Facility Results

| T | VMT veh-mi/AP | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ | Follower Density, followers/ $\mathbf{m i} / \mathbf{l n}$ | LOS |
| :---: | :---: | :---: | :---: | :---: |
| 1 | 20 | 0.00 | 0.1 | A |

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2022 BG |
| Jurisdiction | Waco, TX | Time Analyzed | 2025 Background AM Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | Access Point Density, pts/mi | 0.2 |  |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 173 | Opposing Demand Flow Rate, veh/h | 108 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.89 | Total Trucks, \% | 38.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.10 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 78.5 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient $(\mathrm{m})$ | 4.52022 | Speed Power Coefficient $(\mathrm{p})$ | 0.57080 |
| PF Slope Coefficient $(\mathrm{m})$ | -1.06443 | PF Power Coefficient $(\mathrm{p})$ | 0.87731 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh $/ \mathrm{mi} / \mathrm{ln}$ | 0.5 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| $\#$ | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | Tangent | 5280 | - | - | 77.5 |

## Vehicle Results

| Average Speed, mi/h | 77.5 | Percent Followers, \% | 20.4 |
| :--- | :--- | :--- | :--- |
| Segment Travel Time, minutes | 0.77 | Follower Density (FD), followers/mi/ln | 0.5 |
| Vehicle LOS | A |  |  |

Facility Results

| T | VMT veh-mi/AP | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ | Follower Density, followers/ $\mathbf{m i} / \mathbf{l n}$ | LOS |
| :---: | :---: | :---: | :---: | :---: |
| 1 | 39 | 0.01 | 0.5 | A |

[^5]
## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2022 BG |
| Jurisdiction | Waco, TX | Time Analyzed | 2025 Background PM Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | Access Point Density, pts/mi | 0.2 |  |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 156 | Opposing Demand Flow Rate, veh/h | 86 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.86 | Total Trucks, \% | 17.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.09 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 79.2 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient (m) | 4.54662 | Speed Power Coefficient $(\mathrm{p})$ | 0.58077 |
| PF Slope Coefficient $(\mathrm{m})$ | -1.05425 | PF Power Coefficient $(\mathrm{p})$ | 0.87922 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 0.4 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| \# | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Tangent | 5280 | - | - | 78.3 |
| Vehicle Results |  |  |  |  |  |
| Average Speed, mi/h |  | 78.3 | Percent Followers, \% |  | 18.6 |
| Segm | ment Travel Time, minutes | 0.77 | Follower Density (FD), followers/mi/ln |  | 0.4 |
| Vehicl | le LOS | A |  |  |  |
| Facil | lity Results |  |  |  |  |
| T | $\begin{gathered} \text { VMT } \\ \text { veh-mi/AP } \end{gathered}$ | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ |  | Follower Density, followers/ $\mathrm{mi} / \mathrm{ln}$ | LOS |
| 1 | 34 | 0.00 |  | 0.4 | A |

[^6]
## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2022 BG |
| Jurisdiction | Waco, TX | Time Analyzed | 2025 Background Site <br> Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |  |
| :--- | :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |  |
| Speed Limit, mi/h | 70 | Access Point Density, pts/mi | 0.2 |  |
| Demand and Capacity |  |  |  |  |
| Directional Demand Flow Rate, veh/h | 92 | Opposing Demand Flow Rate, veh/h | 73 |  |
| Peak Hour Factor | 0.89 | Total Trucks, \% | 54.00 |  |
| Segment Capacity, veh/h | Demand/Capacity (D/C) | 0.05 |  |  |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 78.0 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient (m) | 4.47227 | Speed Power Coefficient $(\mathrm{p})$ | 0.58750 |
| PF Slope Coefficient (m) | -1.05516 | PF Power Coefficient (p) | 0.88367 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 0.1 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| \# | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Tangent | 5280 | - | - | 78.0 |
| Vehicle Results |  |  |  |  |  |
| Average Speed, mi/h |  | 78.0 |  | ent Followers, \% | 12.0 |
| Segment Travel Time, minutes |  | 0.77 |  | wer Density (FD), followers/mi/ln | 0.1 |
| Vehicle LOS |  | A |  |  |  |
| Facility Results |  |  |  |  |  |
| T | VMT veh-mi/AP | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ |  | Follower Density, followers/ $\mathrm{mi} / \mathrm{ln}$ | LOS |
| 1 | 21 | 0.00 |  | 0.1 | A |

[^7]HCS TiN Highways Version 2023
Generated: 04/11/2023 14:03:41
6. 2025 BG Site.xuf

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2059 BG |
| Jurisdiction | Waco, TX | Time Analyzed | 2059 Background AM Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | 70 | Access Point Density, pts/mi | 0.2 |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 338 | Opposing Demand Flow Rate, veh/h | 210 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.89 | Total Trucks, \% | 38.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.20 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 78.5 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient (m) | 4.56282 | Speed Power Coefficient $(\mathrm{p})$ | 0.53645 |
| PF Slope Coefficient (m) | -1.08700 | PF Power Coefficient $(\mathrm{p})$ | 0.86616 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh $/ \mathrm{mi} / \mathrm{ln}$ | 1.5 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| $\#$ | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | Tangent | 5280 | - | - | 76.4 |

## Vehicle Results

| Average Speed, mi/h | 76.4 | Percent Followers, \% | 34.6 |
| :--- | :--- | :--- | :--- |
| Segment Travel Time, minutes | 0.79 | Follower Density (FD), followers $/ \mathrm{mi} / \mathrm{ln}$ | 1.5 |
| Vehicle LOS | A |  |  |

Facility Results

| T | VMT veh-mi/AP | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ | Follower Density, followers/ $\mathrm{mi} / \mathrm{ln}$ | LOS |
| :---: | :---: | :---: | :---: | :---: |
| 1 | 75 | 0.03 | 1.5 | A |

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2059 BG |
| Jurisdiction | Waco, TX | Time Analyzed | 2059 Background PM Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | 70 | Access Point Density, pts $/ \mathrm{mi}$ | 0.2 |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 305 | Opposing Demand Flow Rate, veh/h | 169 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.86 | Total Trucks, \% | 17.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.18 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 79.2 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient $(\mathrm{m})$ | 4.58507 | Speed Power Coefficient $(\mathrm{p})$ | 0.54860 |
| PF Slope Coefficient $(\mathrm{m})$ | -1.07583 | PF Power Coefficient $(\mathrm{p})$ | 0.86880 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 1.3 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| \# | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Tangent | 5280 | - | - | 77.3 |
| Vehicle Results |  |  |  |  |  |
| Average Speed, mi/h |  | 77.3 | Percent Followers, \% |  | 31.8 |
| Segm | ment Travel Time, minutes | 0.78 | Follower Density (FD), followers/mi/ln |  | 1.3 |
| Vehicl | le LOS | A |  |  |  |
| Facil | lity Results |  |  |  |  |
| T | $\begin{gathered} \text { VMT } \\ \text { veh-mi/AP } \end{gathered}$ | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ |  | Follower Density, followers/ $\mathrm{mi} / \mathrm{ln}$ | LOS |
| 1 | 66 | 0.02 |  | 1.3 | A |

[^8]
## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2059 BG |
| Jurisdiction | Waco, TX | Time Analyzed | 2059 Background Site <br> Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | 70 | Access Point Density, pts/mi | 0.2 |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 182 | Opposing Demand Flow Rate, veh/h | 144 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.89 | Total Trucks, \% | 54.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.11 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 78.0 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient (m) | 4.50800 | Speed Power Coefficient $(\mathrm{p})$ | 0.55689 |
| PF Slope Coefficient (m) | -1.07639 | PF Power Coefficient $(\mathrm{p})$ | 0.87383 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 0.5 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| \# | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Tangent | 5280 | - | - | 76.8 |
| Vehicle Results |  |  |  |  |  |
| Average Speed, mi/h |  | 76.8 |  | nt Followers, \% | 21.6 |
| Segment Travel Time, minutes |  | 0.78 |  | wer Density (FD), followers/mi/ln | 0.5 |
| Vehicle LOS |  | A |  |  |  |
| Facility Results |  |  |  |  |  |
| T | VMT veh-mi/AP | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ |  | Follower Density, followers/ $\mathrm{mi} / \mathrm{ln}$ | LOS |
| 1 | 41 | 0.01 |  | 0.5 | A |

[^9]HCS
Generated: 04/11/2023 14:07:00

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2025 Tot |
| Jurisdiction | Waco, TX | Time Analyzed | 2025 Total AM Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | 70 | Access Point Density, pts/mi | 0.2 |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 263 | Opposing Demand Flow Rate, veh/h | 210 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.89 | Total Trucks, \% | 61.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.15 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 77.7 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient (m) | 4.52131 | Speed Power Coefficient $(\mathrm{p})$ | 0.53645 |
| PF Slope Coefficient (m) | -1.09080 | PF Power Coefficient $(\mathrm{p})$ | 0.86764 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 1.0 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| $\#$ | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | Tangent | 5280 | - | - | 76.0 |

## Vehicle Results

| Average Speed, mi/h | 76.0 | Percent Followers, \% | 29.0 |
| :--- | :--- | :--- | :--- |
| Segment Travel Time, minutes | 0.79 | Follower Density (FD), followers/mi/ln | 1.0 |
| Vehicle LOS | A |  |  |

Facility Results

| T TVMT <br> veh-mi/AP |
| :--- |
| 1 |

10. 2025 Tot AM.xuf

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2025 Tot |
| Jurisdiction | Waco, TX | Time Analyzed | 2025 Total PM Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | 70 | Access Point Density, pts/mi | 0.2 |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 231 | Opposing Demand Flow Rate, veh/h | 176 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.86 | Total Trucks, \% | 47.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.14 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 78.2 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient $(\mathrm{m})$ | 4.53368 | Speed Power Coefficient $(\mathrm{p})$ | 0.54643 |
| PF Slope Coefficient $(\mathrm{m})$ | -1.08216 | PF Power Coefficient $(\mathrm{p})$ | 0.87000 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 0.8 |
| \%lmprovement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| $\#$ | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | Tangent | 5280 | - | - | 76.7 |

## Vehicle Results

| Average Speed, mi/h | 76.7 | Percent Followers, \% | 26.1 |
| :--- | :--- | :--- | :--- |
| Segment Travel Time, minutes | 0.78 | Follower Density (FD), followers/mi/ln | 0.8 |
| Vehicle LOS | A |  |  |

Facility Results

| T TVMT <br> veh-mi/AP |
| :--- |
| 1 |

11. 2025 Tot PM.xuf

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2025 Tot |
| Jurisdiction | Waco, TX | Time Analyzed | 2025 Total Site Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | 70 | Access Point Density, pts/mi | 0.2 |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 201 | Opposing Demand Flow Rate, veh/h | 194 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.89 | Total Trucks, \% | 78.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.12 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 77.2 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient $(\mathrm{m})$ | 4.48489 | Speed Power Coefficient $(\mathrm{p})$ | 0.54084 |
| PF Slope Coefficient $(\mathrm{m})$ | -1.09075 | PF Power Coefficient $(\mathrm{p})$ | 0.87016 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 0.6 |
| \%lmprovement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| $\#$ | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | Tangent | 5280 | - | - | 75.9 |

## Vehicle Results

| Average Speed, mi/h | 75.9 | Percent Followers, \% | 23.7 |
| :--- | :--- | :--- | :--- |
| Segment Travel Time, minutes | 0.79 | Follower Density (FD), followers/mi/ln | 0.6 |
| Vehicle LOS | A |  |  |

Facility Results

| T | VMT veh-mi/AP | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ | Follower Density, followers/ $\mathbf{m i} / \mathbf{l n}$ | LOS |
| :---: | :---: | :---: | :---: | :---: |
| 1 | 45 | 0.01 | 0.6 | A |

12. 2025 Tot Site.xuf

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2059 Tot |
| Jurisdiction | Waco, TX | Time Analyzed | 2059 Total AM Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | Access Point Density, pts/mi | 0.2 |  |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 428 | Opposing Demand Flow Rate, veh/h | 312 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.89 | Total Trucks, \% | 61.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.25 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 77.7 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient $(\mathrm{m})$ | 4.55426 | Speed Power Coefficient $(\mathrm{p})$ | 0.51268 |
| PF Slope Coefficient $(\mathrm{m})$ | -1.10498 | PF Power Coefficient $(\mathrm{p})$ | 0.85972 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh/mi/ln | 2.4 |
| \%lmprovement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| \# | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Tangent | 5280 | - | - | 75.1 |
| Vehicle Results |  |  |  |  |  |
| Average Speed, mi/h |  | 75.1 | Percent Followers, \% |  | 41.3 |
| Segm | ment Travel Time, minutes | 0.80 | Follower Density (FD), followers/mi/ln |  | 2.4 |
| Vehicl | le LOS | B |  |  |  |
| Facility Results |  |  |  |  |  |
| T | $\begin{gathered} \text { VMT } \\ \text { veh-mi/AP } \end{gathered}$ | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ |  | Follower Density, followers/ $\mathbf{m i} / \mathbf{l}$ | LOS |
| 1 | 95 | 0.04 |  | 2.4 | B |

[^10]HCS
Generated: 04/11/2023 14:12:20
13. 2059 Tot AM.xuf

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2059 Tot |
| Jurisdiction | Waco, TX | Time Analyzed | 2059 Total PM Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | 70 | Access Point Density, pts/mi | 0.2 |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 380 | Opposing Demand Flow Rate, veh/h | 258 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.86 | Total Trucks, \% | 47.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.22 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 78.2 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient (m) | 4.56287 | Speed Power Coefficient $(\mathrm{p})$ | 0.52440 |
| PF Slope Coefficient (m) | -1.09583 | PF Power Coefficient $(\mathrm{p})$ | 0.86275 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh $/ \mathrm{mi} / \mathrm{ln}$ | 1.9 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| $\#$ | Segment Type | Length, ft | Radius, ft | Superelevation, \% | Average Speed, mi/h |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | Tangent | 5280 | - | - | 75.8 |

## Vehicle Results

| Average Speed, mi/h | 75.8 | Percent Followers, \% | 37.9 |
| :--- | :--- | :--- | :--- |
| Segment Travel Time, minutes | 0.79 | Follower Density (FD), followers/mi/ln | 1.9 |
| Vehicle LOS | A |  |  |

Facility Results

| T | VMT veh-mi/AP | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ | Follower Density, followers/ $\mathbf{m i} / \mathbf{l n}$ | LOS |
| :---: | :---: | :---: | :---: | :---: |
| 1 | 82 | 0.03 | 1.9 | A |

## HCS Two-Lane Highway Report

## Project Information

| Analyst | KWN | Date | $4 / 11 / 23$ |
| :--- | :--- | :--- | :--- |
| Agency | Lee Engineering | Analysis Year | 2059 Tot |
| Jurisdiction | Waco, TX | Time Analyzed | 2059 Total Site Peak |
| Project Description | TIA for Waco MSW <br> Transfer Station | Units | U.S. Customary |

## Segment 1

## Vehicle Inputs

| Segment Type | Passing Zone | Length, ft | 5280 |
| :--- | :--- | :--- | :--- |
| Lane Width, ft | 12 | Shoulder Width, ft | 6 |
| Speed Limit, mi/h | 70 | Access Point Density, pts/mi | 0.2 |

## Demand and Capacity

| Directional Demand Flow Rate, veh/h | 290 | Opposing Demand Flow Rate, veh/h | 265 |
| :--- | :--- | :--- | :--- |
| Peak Hour Factor | 0.89 | Total Trucks, \% | 78.00 |
| Segment Capacity, veh/h | 1700 | Demand/Capacity (D/C) | 0.17 |

## Intermediate Results

| Segment Vertical Class | 1 | Free-Flow Speed, mi/h | 77.2 |
| :--- | :--- | :--- | :--- |
| Speed Slope Coefficient (m) | 4.50917 | Speed Power Coefficient $(\mathrm{p})$ | 0.52278 |
| PF Slope Coefficient (m) | -1.10202 | PF Power Coefficient $(\mathrm{p})$ | 0.86421 |
| In Passing Lane Effective Length? | No | Total Segment Density, veh $/ \mathrm{mi} / \mathrm{ln}$ | 1.2 |
| \%Improvement to Percent Followers | 0.0 | \%lmprovement to Speed | 0.0 |

## Subsegment Data

| \# | Segment Type | Length, ft | Radius, | Superelevation, \% | Average Speed, mi/h |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Tangent | 5280 | - | - | 75.3 |
| Vehicle Results |  |  |  |  |  |
| Average Speed, mi/h |  | 75.3 |  | nt Followers, \% | 31.5 |
| Segment Travel Time, minutes |  | 0.80 |  | wer Density (FD), followers/mi/ln | 1.2 |
| Vehicle LOS |  | A |  |  |  |
| Facility Results |  |  |  |  |  |
| T | VMT veh-mi/AP | $\begin{aligned} & \text { VHD } \\ & \text { veh-h/p } \end{aligned}$ |  | Follower Density, followers/ $\mathrm{mi} / \mathrm{ln}$ | LOS |
| 1 | 65 | 0.02 |  | 1.2 | A |

[^11]HCS
Generated: 04/11/2023 14:14:45
15. 2059 Tot Site.xuf

## Appendix F: Synchro Output Sheets

1. Existing (2022) AM Peak Hour

1: University Parks Dr (FM 3400) \& SH 6 WBFR

| Intersection |  |
| :--- | ---: |
| Intersection Delay, s/veh | 12.3 |
| Intersection LOS | B |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | ¢4 | 「 | ${ }^{1}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 38 | 14 | 12 | 127 | 279 | 0 | 0 | 83 | 134 |
| Future Vol, veh/h | 0 | 0 | 0 | 38 | 14 | 12 | 127 | 279 | 0 | 0 | 83 | 134 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 58 | 7 | 8 | 15 | 13 | 2 | 2 | 41 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 48 | 18 | 15 | 159 | 349 | 0 | 0 | 104 | 168 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 10.8 |  |  | 13.7 |  |  |  | 10.2 |  |
| HCM LOS |  |  |  | B |  |  | B |  |  |  | B |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $89 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, $\%$ | $0 \%$ | $100 \%$ | $11 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 127 | 279 | 43 | 9 | 12 | 83 | 134 |
| LT Vol | 127 | 0 | 38 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 279 | 5 | 9 | 0 | 83 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 12 | 0 | 134 |
| Lane Flow Rate | 159 | 349 | 53 | 12 | 15 | 104 | 168 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.27 | 0.542 | 0.117 | 0.021 | 0.025 | 0.192 | 0.242 |
| Departure Headway (Hd) | 6.128 | 5.592 | 7.91 | 6.583 | 5.892 | 6.673 | 5.2 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 581 | 638 | 455 | 547 | 611 | 541 | 682 |
| Service Time | 3.926 | 3.389 | 5.614 | 4.286 | 3.595 | 4.373 | 3 |
| HCM Lane V/C Ratio | 0.274 | 0.547 | 0.116 | 0.022 | 0.025 | 0.192 | 0.246 |
| HCM Control Delay | 11.2 | 14.9 | 11.7 | 9.4 | 8.7 | 11 | 9.7 |
| HCM Lane LOS | B | B | B | A | A | B | A |
| HCM 95th-tile Q | 1.1 | 3.3 | 0.4 | 0.1 | 0.1 | 0.7 | 0.9 |

1. Existing (2022) AM Peak Hour

2: University Parks Dr (FM 3400) \& SH 6 EBFR

## Intersection

Intersection Delay, s/veh12.7
Intersection LOS

## B



| Lane | NBLn1 NBLn2 EBLn1 EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $0 \%$ | $0 \%$ | $94 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $6 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, \% | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 231 | 29 | 191 | 21 | 30 | 36 | 85 |
| LT Vol | 0 | 0 | 180 | 0 | 0 | 36 | 0 |
| Through Vol | 231 | 0 | 11 | 21 | 0 | 0 | 85 |
| RT Vol | 0 | 29 | 0 | 0 | 30 | 0 | 0 |
| Lane Flow Rate | 269 | 34 | 222 | 25 | 35 | 42 | 99 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.463 | 0.051 | 0.399 | 0.044 | 0.056 | 0.089 | 0.193 |
| Departure Headway (Hd) | 6.203 | 5.48 | 6.475 | 6.342 | 5.791 | 7.612 | 7.038 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 583 | 654 | 556 | 566 | 620 | 471 | 511 |
| Service Time | 3.931 | 3.208 | 4.2 | 4.067 | 3.516 | 5.347 | 4.772 |
| HCM Lane V/C Ratio | 0.461 | 0.052 | 0.399 | 0.044 | 0.056 | 0.089 | 0.194 |
| HCM Control Delay | 14.2 | 8.5 | 13.4 | 9.4 | 8.9 | 11.1 | 11.5 |
| HCM Lane LOS | B | A | B | A | A | B | B |
| HCM 95th-tile Q | 2.4 | 0.2 | 1.9 | 0.1 | 0.2 | 0.3 | 0.7 |




1. Existing (2022) AM Peak Hour

4: University Parks Dr (FM 3400) \& Lockwood Ln

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.7 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | -1 |
| Traffic Vol, veh/h | 0 | 15 | 141 | 0 | 2 | 74 |
| Future Vol, veh/h | 0 | 15 | 141 | 0 | 2 | 74 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, \% | 2 | 27 | 18 | 2 | 50 | 35 |
| Mvmt Flow | 0 | 17 | 160 | 0 | 2 | 84 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 248 | 160 | 0 | 0 | 160 | 0 |
| Stage 1 | 160 | - | - | - | - | - |
| Stage 2 | 88 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.47 | - | - | 4.6 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.543 | - | - | 2.65 | - |
| Pot Cap-1 Maneuver | 740 | 824 | - | - | 1174 | - |
| Stage 1 | 869 | - | - | - | - | - |
| Stage 2 | 935 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 739 | 824 | - | - | 1174 | - |
| Mov Cap-2 Maneuver | 739 | - | - | - | - | - |
| Stage 1 | 869 | - | - | - | - | - |
| Stage 2 | 933 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.5 |  | 0 |  | 0.2 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 824 | 1174 | - |
| HCM Lane V/C Ratio |  | - | - | 0.021 | 0.002 | - |
| HCM Control Delay (s) |  | - | - | 9.5 | 8.1 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.1 | 0 | - |

1. Existing (2022) AM Peak Hour

5: University Parks Dr (FM 3400) \& Radle Rd

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.4 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | r |  | $\uparrow$ |  |  | t |
| Traffic Vol, veh/h | 0 | 8 | 121 | 0 | 1 | 79 |
| Future Vol, veh/h | 0 | 8 | 121 | 0 | 1 | 79 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 2 | 2 | 26 | 2 | 2 | 62 |
| Mvmt Flow | 0 | 9 | 136 | 0 | 1 | 89 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 227 | 136 | 0 | 0 | 136 | 0 |
| Stage 1 | 136 | - | - | - | - | - |
| Stage 2 | 91 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 761 | 913 | - | - | 1448 | - |
| Stage 1 | 890 | - | - | - | - | - |
| Stage 2 | 933 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 760 | 913 | - | - | 1448 | - |
| Mov Cap-2 Maneuver | 760 | - | - | - | - | - |
| Stage 1 | 890 | - | - | - | - | - |
| Stage 2 | 932 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9 |  | 0 |  | 0.1 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 913 | 1448 | - |
| HCM Lane V/C Ratio |  | - | - | 0.01 | 0.001 | - |
| HCM Control Delay (s) |  | - | - | 9 | 7.5 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |


| Intersection |  |
| :--- | ---: |
| Intersection Delay, s/veh | 11.1 |
| Intersection LOS | B |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | $\uparrow \uparrow$ | 「 | ${ }^{7}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 27 | 13 | 17 | 71 | 279 | 0 | 0 | 100 | 189 |
| Future Vol, veh/h | 0 | 0 | 0 | 27 | 13 | 17 | 71 | 279 | 0 | 0 | 100 | 189 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 30 | 23 | 18 | 11 | 9 | 2 | 2 | 10 | 3 |
| Mvmt Flow | 0 | 0 | 0 | 30 | 14 | 19 | 79 | 310 | 0 | 0 | 111 | 210 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 9.8 |  |  | 12.5 |  |  |  | 9.6 |  |
| HCM LOS |  |  |  | A |  |  | B |  |  |  | A |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $86 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, $\%$ | $0 \%$ | $100 \%$ | $14 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 71 | 279 | 31 | 9 | 17 | 100 | 189 |
| LT Vol | 71 | 0 | 27 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 279 | 4 | 9 | 0 | 100 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 17 | 0 | 189 |
| Lane Flow Rate | 79 | 310 | 35 | 10 | 19 | 111 | 210 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.132 | 0.473 | 0.069 | 0.018 | 0.03 | 0.177 | 0.286 |
| Departure Headway (Hd) | 6.027 | 5.491 | 7.104 | 6.549 | 5.756 | 5.725 | 4.902 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 591 | 651 | 500 | 542 | 615 | 623 | 729 |
| Service Time | 3.802 | 3.266 | 4.902 | 4.347 | 3.554 | 3.492 | 2.668 |
| HCM Lane V/C Ratio | 0.134 | 0.476 | 0.07 | 0.018 | 0.031 | 0.178 | 0.288 |
| HCM Control Delay | 9.7 | 13.2 | 10.4 | 9.5 | 8.7 | 9.7 | 9.6 |
| HCM Lane LOS | A | B | B | A | A | A | A |
| HCM 95th-tile Q | 0.5 | 2.5 | 0.2 | 0.1 | 0.1 | 0.6 | 1.2 |



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  | ¢4 | F |  |  |  |  | 4 | 「 | ${ }^{*}$ | 4 |  |
| Traffic Vol, veh/h | 216 | 58 | 57 | 0 | 0 | 0 | 0 | 134 | 22 | 37 | 90 | 0 |
| Future Vol, veh/h | 216 | 58 | 57 | 0 | 0 | 0 | 0 | 134 | 22 | 37 | 90 | 0 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles, \% | 6 | 14 | 12 | 2 | 2 | 2 | 2 | 19 | 32 | 19 | 16 | 2 |
| Mvmt Flow | 230 | 62 | 61 | 0 | 0 | 0 | 0 | 143 | 23 | 39 | 96 | 0 |
| Number of Lanes | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Approach | EB |  |  |  |  |  |  | NB |  | SB |  |  |
| Opposing Approach |  |  |  |  |  |  |  | SB |  | NB |  |  |
| Opposing Lanes | 0 |  |  |  |  |  |  | 2 |  | 2 |  |  |
| Conflicting Approach Le | ft SB |  |  |  |  |  |  | EB |  |  |  |  |
| Conflicting Lanes Left | 2 |  |  |  |  |  |  | 3 |  | 0 |  |  |
| Conflicting Approach Rig | ghNB |  |  |  |  |  |  |  |  | EB |  |  |
| Conflicting Lanes Right | 2 |  |  |  |  |  |  | 0 |  | 3 |  |  |
| HCM Control Delay | 11.5 |  |  |  |  |  |  | 10.7 |  | 10.2 |  |  |
| HCM LOS | B |  |  |  |  |  |  | B |  | B |  |  |


| Lane | NBLn1 NBLn2 EBLn1 EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $0 \%$ | $0 \%$ | $92 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $8 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, \% | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 134 | 22 | 235 | 39 | 57 | 37 | 90 |
| LT Vol | 0 | 0 | 216 | 0 | 0 | 37 | 0 |
| Through Vol | 134 | 0 | 19 | 39 | 0 | 0 | 90 |
| RT Vol | 0 | 22 | 0 | 0 | 57 | 0 | 0 |
| Lane Flow Rate | 143 | 23 | 250 | 41 | 61 | 39 | 96 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.245 | 0.037 | 0.411 | 0.064 | 0.082 | 0.075 | 0.167 |
| Departure Headway (Hd) | 6.182 | 5.7 | 5.916 | 5.592 | 4.855 | 6.85 | 6.296 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 576 | 621 | 603 | 635 | 730 | 526 | 574 |
| Service Time | 3.982 | 3.499 | 3.698 | 3.374 | 2.637 | 4.552 | 3.996 |
| HCM Lane V/C Ratio | 0.248 | 0.037 | 0.415 | 0.065 | 0.084 | 0.074 | 0.167 |
| HCM Control Delay | 11 | 8.7 | 12.8 | 8.8 | 8.1 | 10.1 | 10.3 |
| HCM Lane LOS | B | A | B | A | A | B | B |
| HCM 95th-tile Q | 1 | 0.1 | 2 | 0.2 | 0.3 | 0.2 | 0.6 |

## 2. Existing (2022) PM Peak Hour

3: University Parks Dr (FM 3400) \& Tinsley Rd



| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.5 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 1 | 2 | 77 | 0 | 10 | 114 |
| Future Vol, veh/h | 1 | 2 | 77 | 0 | 10 | 114 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, \% | 100 | 50 | 35 | 2 | 40 | 18 |
| Mvmt Flow | 1 | 2 | 85 | 0 | 11 | 125 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 232 | 85 | 0 | 0 | 85 | 0 |
| Stage 1 | 85 | - | - | - | - | - |
| Stage 2 | 147 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.7 | - | - | 4.5 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.75 | - | - | 2.56 | - |
| Pot Cap-1 Maneuver | 583 | 856 | - | - | 1303 | - |
| Stage 1 | 741 | - | - | - | - | - |
| Stage 2 | 688 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 578 | 856 | - | - | 1303 | - |
| Mov Cap-2 Maneuver | 578 | - | - | - | - | - |
| Stage 1 | 741 | - | - | - | - | - |
| Stage 2 | 682 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.9 |  | 0 |  | 0.6 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 738 | 1303 | - |
| HCM Lane V/C Ratio |  | - | - | 0.004 | 0.008 | - |
| HCM Control Delay (s) |  | - | - | 9.9 | 7.8 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |


| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.3 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\neq$ |
| Traffic Vol, veh/h | 1 | 1 | 59 | 0 | 4 | 104 |
| Future Vol, veh/h | 1 | 1 | 59 | 0 | 4 | 104 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, \% | 100 | 2 | 25 | 2 | 2 | 13 |
| Mvmt Flow | 1 | 1 | 69 | 0 | 5 | 121 |


| Major/Minor M | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 200 | 69 | 0 | 0 | 69 | 0 |
| Stage 1 | 69 | - | - | - | - | - |
| Stage 2 | 131 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 611 | 994 | - |  | 1532 | - |
| Stage 1 | 755 | - | - | - | - | - |
| Stage 2 | 701 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 609 | 994 | - | - | 1532 | - |
| Mov Cap-2 Maneuver | 609 | - | - | - | - | - |
| Stage 1 | 755 | - | - | - | - | - |
| Stage 2 | 699 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.8 |  | 0 |  | 0.3 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 755 | 1532 | - |
| HCM Lane V/C Ratio |  | - | - | 0.003 | 0.003 | - |
| HCM Control Delay (s) |  | - | - | 9.8 | 7.4 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |


| Intersection |  |
| :--- | ---: |
| Intersection Delay, s/veh | 9.3 |
| Intersection LOS | A |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | $\uparrow \uparrow$ | 「 | ${ }^{*}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 26 | 12 | 11 | 57 | 156 | 0 | 0 | 66 | 103 |
| Future Vol, veh/h | 0 | 0 | 0 | 26 | 12 | 11 | 57 | 156 | 0 | 0 | 66 | 103 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 62 | 17 | 27 | 35 | 21 | 2 | 2 | 27 | 8 |
| Mvmt Flow | 0 | 0 | 0 | 28 | 13 | 12 | 61 | 166 | 0 | 0 | 70 | 110 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 9.5 |  |  | 9.8 |  |  |  | 8.5 |  |
| HCM LOS |  |  |  | A |  |  | A |  |  |  | A |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $87 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, \% | $0 \%$ | $100 \%$ | $13 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 57 | 156 | 30 | 8 | 11 | 66 | 103 |
| LT Vol | 57 | 0 | 26 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 156 | 4 | 8 | 0 | 66 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 11 | 0 | 103 |
| Lane Flow Rate | 61 | 166 | 32 | 9 | 12 | 70 | 110 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.103 | 0.249 | 0.062 | 0.014 | 0.017 | 0.11 | 0.141 |
| Departure Headway (Hd) | 6.131 | 5.391 | 7.003 | 5.798 | 5.266 | 5.644 | 4.618 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 585 | 667 | 511 | 616 | 678 | 635 | 777 |
| Service Time | 3.863 | 3.123 | 4.748 | 3.543 | 3.01 | 3.373 | 2.346 |
| HCM Lane V/C Ratio | 0.104 | 0.249 | 0.063 | 0.015 | 0.018 | 0.11 | 0.142 |
| HCM Control Delay | 9.6 | 9.9 | 10.2 | 8.6 | 8.1 | 9.1 | 8.1 |
| HCM Lane LOS | A | A | B | A | A | A | A |
| HCM 95th-tile Q | 0.3 | 1 | 0.2 | 0 | 0.1 | 0.4 | 0.5 |

## Intersection

Intersection Delay, s/veh 9.7
Intersection LOS A

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  | ¢4 | 「' |  |  |  |  | 4 | 「' | \% | 4 |  |
| Traffic Vol, veh/h | 112 | 16 | 31 | 0 | 0 | 0 | 0 | 102 | 20 | 32 | 60 | 0 |
| Future Vol, veh/h | 112 | 16 | 31 | 0 | 0 | 0 | 0 | 102 | 20 | 32 | 60 | 0 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Heavy Vehicles, \% | 19 | 38 | 61 | 2 | 2 | 2 | 2 | 32 | 45 | 29 | 42 | 2 |
| Mvmt Flow | 123 | 18 | 34 | 0 | 0 | 0 | 0 | 112 | 22 | 35 | 66 | 0 |
| Number of Lanes | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Approach | EB |  |  |  |  |  |  | NB |  | SB |  |  |
| Opposing Approach |  |  |  |  |  |  |  | SB |  | NB |  |  |
| Opposing Lanes | 0 |  |  |  |  |  |  | 2 |  | 2 |  |  |
| Conflicting Approach Le | ft SB |  |  |  |  |  |  | EB |  |  |  |  |
| Conflicting Lanes Left | 2 |  |  |  |  |  |  | 3 |  | 0 |  |  |
| Conflicting Approach Rig | ghNB |  |  |  |  |  |  |  |  | EB |  |  |
| Conflicting Lanes Right | 2 |  |  |  |  |  |  | 0 |  | 3 |  |  |
| HCM Control Delay | 9.8 |  |  |  |  |  |  | 9.6 |  | 9.6 |  |  |
| HCM LOS | A |  |  |  |  |  |  | A |  | A |  |  |





| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 1 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | M |  | $\uparrow$ |  |  | - |
| Traffic Vol, veh/h | 0 | 9 | 53 | 3 | 7 | 71 |
| Future Vol, veh/h | 0 | 9 | 53 | 3 | 7 | 71 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, \% | 2 | 56 | 49 | 2 | 71 | 30 |
| Mvmt Flow | 0 | 12 | 70 | 4 | 9 | 93 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 183 | 72 | 0 | 0 | 74 | 0 |
| Stage 1 | 72 | - | - | - | - | - |
| Stage 2 | 111 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.76 | - | - | 4.81 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.804 | - | - | 2.839 | - |
| Pot Cap-1 Maneuver | 806 | 859 | - |  | 1183 | - |
| Stage 1 | 951 | - | - | - | - | - |
| Stage 2 | 914 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 800 | 859 | - | - | 1183 | - |
| Mov Cap-2 Maneuver | 800 | - | - | - | - | - |
| Stage 1 | 951 | - | - | - | - | - |
| Stage 2 | 907 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.2 |  | 0 |  | 0.7 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 859 | 1183 | - |
| HCM Lane V/C Ratio |  | - | - | 0.014 | 0.008 | - |
| HCM Control Delay (s) |  | - | - | 9.2 | 8.1 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |


| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.2 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | -1 |
| Traffic Vol, veh/h | 1 | 2 | 67 | 0 | 0 | 55 |
| Future Vol, veh/h | 1 | 2 | 67 | 0 | 0 | 55 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 100 | 2 | 49 | 2 | 2 | 62 |
| Mvmt Flow | 1 | 2 | 75 | 0 | 0 | 62 |



| Intersection |  |
| :--- | ---: | :--- |
| Intersection Delay, s/veh | 13.2 |
| Intersection LOS | B |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | ¢4 | 「 | ${ }^{7}$ | 4 |  |  | 4 | 7 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 40 | 15 | 13 | 135 | 296 | 0 | 0 | 88 | 142 |
| Future Vol, veh/h | 0 | 0 | 0 | 40 | 15 | 13 | 135 | 296 | 0 | 0 | 88 | 142 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 58 | 7 | 8 | 15 | 13 | 2 | 2 | 41 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 50 | 19 | 16 | 169 | 370 | 0 | 0 | 110 | 178 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 11 |  |  | 15 |  |  |  | 10.6 |  |
| HCM LOS |  |  |  | B |  |  | B |  |  |  | B |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $89 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, $\%$ | $0 \%$ | $100 \%$ | $11 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 135 | 296 | 45 | 10 | 13 | 88 | 142 |
| LT Vol | 135 | 0 | 40 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 296 | 5 | 10 | 0 | 88 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 13 | 0 | 142 |
| Lane Flow Rate | 169 | 370 | 56 | 12 | 16 | 110 | 178 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.295 | 0.591 | 0.125 | 0.023 | 0.027 | 0.207 | 0.266 |
| Departure Headway (Hd) | 6.287 | 5.75 | 8.024 | 6.696 | 6.005 | 6.766 | 5.393 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 574 | 629 | 448 | 535 | 597 | 531 | 667 |
| Service Time | 4.004 | 3.467 | 5.755 | 4.427 | 3.735 | 4.491 | 3.117 |
| HCM Lane V/C Ratio | 0.294 | 0.588 | 0.125 | 0.022 | 0.027 | 0.207 | 0.267 |
| HCM Control Delay | 11.6 | 16.5 | 11.9 | 9.6 | 8.9 | 11.3 | 10.1 |
| HCM Lane LOS | B | C | B | A | A | B | B |
| HCM 95th-tile Q | 1.2 | 3.9 | 0.4 | 0.1 | 0.1 | 0.8 | 1.1 |







| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.7 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | - |
| Traffic Vol, veh/h | 0 | 16 | 150 | 0 | 2 | 79 |
| Future Vol, veh/h | 0 | 16 | 150 | 0 | 2 | 79 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, \% | 2 | 27 | 18 | 2 | 50 | 35 |
| Mvmt Flow | 0 | 18 | 170 | 0 | 2 | 90 |


4. Site Opening (2025) Background AM Peak Hour

5: University Parks Dr (FM 3400) \& Radle Rd

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.4 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 8 | 128 | 0 | 1 | 84 |
| Future Vol, veh/h | 0 | 8 | 128 | 0 | 1 | 84 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 2 | 2 | 26 | 2 | 2 | 62 |
| Mvmt Flow | 0 | 9 | 144 | 0 | 1 | 94 |


5. Site Opening (2025) Background PM Peak Hour

1: University Parks Dr (FM 3400) \& SH 6 WBFR

| Intersection |  |
| :--- | ---: | :--- |
| Intersection Delay, s/veh | 11.6 |
| Intersection LOS | B |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | * $\uparrow$ | 「 | ${ }^{7}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 29 | 14 | 18 | 75 | 296 | 0 | 0 | 106 | 201 |
| Future Vol, veh/h | 0 | 0 | 0 | 29 | 14 | 18 | 75 | 296 | 0 | 0 | 106 | 201 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 30 | 23 | 18 | 11 | 9 | 2 | 2 | 10 | 3 |
| Mvmt Flow | 0 | 0 | 0 | 32 | 16 | 20 | 83 | 329 | 0 | 0 | 118 | 223 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 9.9 |  |  | 13.2 |  |  |  | 10 |  |
| HCM LOS |  |  |  | A |  |  | B |  |  |  | A |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $86 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, \% | $0 \%$ | $100 \%$ | $14 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 75 | 296 | 34 | 9 | 18 | 106 | 201 |
| LT Vol | 75 | 0 | 29 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 296 | 5 | 9 | 0 | 106 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 18 | 0 | 201 |
| Lane Flow Rate | 83 | 329 | 37 | 10 | 20 | 118 | 223 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.141 | 0.507 | 0.076 | 0.019 | 0.033 | 0.19 | 0.309 |
| Departure Headway (Hd) | 6.087 | 5.551 | 7.311 | 6.755 | 5.961 | 5.796 | 4.973 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 584 | 645 | 493 | 533 | 604 | 615 | 717 |
| Service Time | 3.874 | 3.338 | 5.011 | 4.455 | 3.661 | 3.574 | 2.75 |
| HCM Lane V/C Ratio | 0.142 | 0.51 | 0.075 | 0.019 | 0.033 | 0.192 | 0.311 |
| HCM Control Delay | 9.9 | 14 | 10.6 | 9.6 | 8.9 | 9.9 | 10 |
| HCM Lane LOS | A | B | B | A | A | A | A |
| HCM 95th-tile Q | 0.5 | 2.9 | 0.2 | 0.1 | 0.1 | 0.7 | 1.3 |

5. Site Opening (2025) Background PM Peak Hour

2: University Parks Dr (FM 3400) \& SH 6 EBFR

## Intersection

Intersection Delay, s/veh11.5
Intersection LOS

## B

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  | ¢4 | 「 |  |  |  |  | 4 | 7 | ${ }^{7}$ | 4 |  |
| Traffic Vol, veh/h | 229 | 62 | 60 | 0 | 0 | 0 | 0 | 142 | 23 | 39 | 96 | 0 |
| Future Vol, veh/h | 229 | 62 | 60 | 0 | 0 | 0 | 0 | 142 | 23 | 39 | 96 | 0 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles, \% | 6 | 14 | 12 | 2 | 2 | 2 | 2 | 19 | 32 | 19 | 16 | 2 |
| Mumt Flow | 244 | 66 | 64 | 0 | 0 | 0 | 0 | 151 | 24 | 41 | 102 | 0 |
| Number of Lanes | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Approach | EB |  |  |  |  |  |  | NB |  | SB |  |  |
| Opposing Approach |  |  |  |  |  |  |  | SB |  | NB |  |  |
| Opposing Lanes | 0 |  |  |  |  |  |  | 2 |  | 2 |  |  |
| Conflicting Approach Le | ft SB |  |  |  |  |  |  | EB |  |  |  |  |
| Conflicting Lanes Left | 2 |  |  |  |  |  |  | 3 |  | 0 |  |  |
| Conflicting Approach Rig | ghNB |  |  |  |  |  |  |  |  | EB |  |  |
| Conflicting Lanes Right | 2 |  |  |  |  |  |  | 0 |  | 3 |  |  |
| HCM Control Delay | 12.1 |  |  |  |  |  |  | 11.1 |  | 10.4 |  |  |
| HCM LOS | B |  |  |  |  |  |  | B |  | B |  |  |


| Lane | NBLn1 NBLn2 EBLn1 EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $0 \%$ | $0 \%$ | $92 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $8 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, \% | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 142 | 23 | 250 | 41 | 60 | 39 | 96 |
| LT Vol | 0 | 0 | 229 | 0 | 0 | 39 | 0 |
| Through Vol | 142 | 0 | 21 | 41 | 0 | 0 | 96 |
| RT Vol | 0 | 23 | 0 | 0 | 60 | 0 | 0 |
| Lane Flow Rate | 151 | 24 | 266 | 44 | 64 | 41 | 102 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.267 | 0.04 | 0.448 | 0.07 | 0.089 | 0.08 | 0.181 |
| Departure Headway (Hd) | 6.374 | 5.891 | 6.071 | 5.747 | 5.009 | 6.95 | 6.397 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 565 | 609 | 598 | 627 | 719 | 516 | 562 |
| Service Time | 4.1 | 3.617 | 3.771 | 3.447 | 2.709 | 4.681 | 4.124 |
| HCM Lane V/C Ratio | 0.267 | 0.039 | 0.445 | 0.07 | 0.089 | 0.079 | 0.181 |
| HCM Control Delay | 11.4 | 8.9 | 13.6 | 8.9 | 8.2 | 10.3 | 10.5 |
| HCM Lane LOS | B | A | B | A | A | B | B |
| HCM 95th-tile Q | 1.1 | 0.1 | 2.3 | 0.2 | 0.3 | 0.3 | 0.7 |




| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.6 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | F |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 1 | 2 | 82 | 0 | 11 | 121 |
| Future Vol, veh/h | 1 | 2 | 82 | 0 | 11 | 121 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, \% | 100 | 50 | 35 | 2 | 40 | 18 |
| Mvmt Flow | 1 | 2 | 90 | 0 | 12 | 133 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 247 | 90 | 0 | 0 | 90 | 0 |
| Stage 1 | 90 | - | - | - | - | - |
| Stage 2 | 157 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.7 | - | - | 4.5 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.75 | - | - | 2.56 | - |
| Pot Cap-1 Maneuver | 570 | 851 | - | - | 1297 | - |
| Stage 1 | 736 | - | - | - | - | - |
| Stage 2 | 680 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 564 | 851 | - | - | 1297 | - |
| Mov Cap-2 Maneuver | 564 | - | - | - | - | - |
| Stage 1 | 736 | - | - | - | - | - |
| Stage 2 | 673 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 10 |  | 0 |  | 0.7 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 728 | 1297 | - |
| HCM Lane V/C Ratio |  | - | - | 0.005 | 0.009 | - |
| HCM Control Delay (s) |  | - | - | 10 | 7.8 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |

5. Site Opening (2025) Background PM Peak Hour

5: University Parks Dr (FM 3400) \& Radle Rd

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.3 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\neq$ |
| Traffic Vol, veh/h | 1 | 1 | 63 | 0 | 4 | 110 |
| Future Vol, veh/h | 1 | 1 | 63 | 0 | 4 | 110 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, \% | 100 | 2 | 25 | 2 | 2 | 13 |
| Mvmt Flow | 1 | 1 | 73 | 0 | 5 | 128 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 211 | 73 | 0 | 0 | 73 | 0 |
| Stage 1 | 73 | - | - | - | - | - |
| Stage 2 | 138 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 602 | 989 | - | - | 1527 | - |
| Stage 1 | 751 | - | - | - | - | - |
| Stage 2 | 696 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 600 | 989 | - | - | 1527 | - |
| Mov Cap-2 Maneuver | 600 | - | - | - | - | - |
| Stage 1 | 751 | - | - | - | - | - |
| Stage 2 | 693 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.8 |  | 0 |  | 0.3 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 747 | 1527 | - |
| HCM Lane V/C Ratio |  | - | - | 0.003 | 0.003 | - |
| HCM Control Delay (s) |  | - | - | 9.8 | 7.4 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |

6. Site Opening (2025) Background Site Peak Hour

1: University Parks Dr (FM 3400) \& SH 6 WBFR

| Intersection |  |
| :--- | ---: | :--- |
| Intersection Delay, s/veh | 9.4 |
| Intersection LOS | A |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | ¢4 | 「 | ${ }^{1}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 28 | 13 | 12 | 60 | 166 | 0 | 0 | 70 | 109 |
| Future Vol, veh/h | 0 | 0 | 0 | 28 | 13 | 12 | 60 | 166 | 0 | 0 | 70 | 109 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 62 | 17 | 27 | 35 | 21 | 2 | 2 | 27 | 8 |
| Mvmt Flow | 0 | 0 | 0 | 30 | 14 | 13 | 64 | 177 | 0 | 0 | 74 | 116 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 9.6 |  |  | 10 |  |  |  | 8.6 |  |
| HCM LOS |  |  |  | A |  |  | A |  |  |  | A |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $87 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, \% | $0 \%$ | $100 \%$ | $13 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 60 | 166 | 32 | 9 | 12 | 70 | 109 |
| LT Vol | 60 | 0 | 28 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 166 | 4 | 9 | 0 | 70 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 12 | 0 | 109 |
| Lane Flow Rate | 64 | 177 | 34 | 9 | 13 | 74 | 116 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.109 | 0.266 | 0.067 | 0.015 | 0.019 | 0.118 | 0.15 |
| Departure Headway (Hd) | 6.17 | 5.43 | 7.063 | 5.859 | 5.326 | 5.693 | 4.667 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 581 | 662 | 507 | 610 | 670 | 630 | 769 |
| Service Time | 3.904 | 3.164 | 4.811 | 3.606 | 3.073 | 3.422 | 2.395 |
| HCM Lane V/C Ratio | 0.11 | 0.267 | 0.067 | 0.015 | 0.019 | 0.117 | 0.151 |
| HCM Control Delay | 9.7 | 10.1 | 10.3 | 8.7 | 8.2 | 9.2 | 8.2 |
| HCM Lane LOS | A | B | B | A | A | A | A |
| HCM 95th-tile Q | 0.4 | 1.1 | 0.2 | 0 | 0.1 | 0.4 | 0.5 |

## 6. Site Opening (2025) Background Site Peak Hour

2: University Parks Dr (FM 3400) \& SH 6 EBFR


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  | ^个 | F |  |  |  |  | $\uparrow$ | 「 | \% | $\uparrow$ |  |
| Traffic Vol, veh/h | 119 | 17 | 33 | 0 | 0 | 0 | 0 | 108 | 21 | 34 | 64 | 0 |
| Future Vol, veh/h | 119 | 17 | 33 | 0 | 0 | 0 | 0 | 108 | 21 | 34 | 64 | 0 |
| Peak Hour Factor | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 | 0.91 |
| Heavy Vehicles, \% | 19 | 38 | 61 | 2 | 2 | 2 | 2 | 32 | 45 | 29 | 42 | 2 |
| Mvmt Flow | 131 | 19 | 36 | 0 | 0 | 0 | 0 | 119 | 23 | 37 | 70 | 0 |
| Number of Lanes | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |


| Approach | EB | NB | SB |
| :--- | ---: | ---: | ---: |
| Opposing Approach |  | SB | NB |
| Opposing Lanes | 0 | 2 | 2 |
| Conflicting Approach Left SB | EB |  |  |
| Conflicting Lanes Left | 2 | 3 | 0 |
| Conflicting Approach RighNB |  | EB |  |
| Conflicting Lanes Right | 2 | 0 | 3 |
| HCM Control Delay | 10 | 9.8 | 9.7 |
| HCM LOS | A | A | A |


| Lane | NBLn1 NBLn2 EBLn1 EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $0 \%$ | $0 \%$ | $55 \%$ | $0 \%$ | $0 \%$ | $00 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $5 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, \% | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 108 | 21 | 125 | 11 | 33 | 34 | 64 |
| LT Vol | 0 | 0 | 119 | 0 | 0 | 34 | 0 |
| Through Vol | 108 | 0 | 6 | 11 | 0 | 0 | 64 |
| RT Vol | 0 | 21 | 0 | 0 | 33 | 0 | 0 |
| Lane Flow Rate | 119 | 23 | 137 | 12 | 36 | 37 | 70 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.194 | 0.035 | 0.229 | 0.02 | 0.056 | 0.067 | 0.12 |
| Departure Headway (Hd) | 5.899 | 5.418 | 6.008 | 5.853 | 5.543 | 6.411 | 6.131 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 606 | 659 | 597 | 610 | 645 | 557 | 583 |
| Service Time | 3.648 | 3.167 | 3.754 | 3.6 | 3.289 | 4.166 | 3.885 |
| HCM Lane V/C Ratio | 0.196 | 0.035 | 0.229 | 0.02 | 0.056 | 0.066 | 0.12 |
| HCM Control Delay | 10.1 | 8.4 | 10.5 | 8.7 | 8.6 | 9.6 | 9.7 |
| HCM Lane LOS | B | A | B | A | A | A | A |
| HCM 95th-tile Q | 0.7 | 0.1 | 0.9 | 0.1 | 0.2 | 0.2 | 0.4 |



6. Site Opening (2025) Background Site Peak Hour

4: University Parks Dr (FM 3400) \& Lockwood Ln


| Major/Minor M | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 193 | 76 | 0 | 0 | 78 | 0 |
| Stage 1 | 76 | - | - | - | - | - |
| Stage 2 | 117 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.76 | - | - | 4.81 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.804 | - | - | 2.839 | - |
| Pot Cap-1 Maneuver | 796 | 854 | - |  | 1178 | - |
| Stage 1 | 947 | - | - | - | - | - |
| Stage 2 | 908 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 790 | 854 | - | - | 1178 | - |
| Mov Cap-2 Maneuver | 790 | - | - | - | - | - |
| Stage 1 | 947 | - | - | - | - | - |
| Stage 2 | 901 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.3 |  | 0 |  | 0.7 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 854 | 1178 | - |
| HCM Lane V/C Ratio |  | - | - | 0.015 | 0.008 | - |
| HCM Control Delay (s) |  | - | - | 9.3 | 8.1 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |

6. Site Opening (2025) Background Site Peak Hour

5: University Parks Dr (FM 3400) \& Radle Rd

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.2 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | -1 |
| Traffic Vol, veh/h | 1 | 2 | 71 | 0 | 0 | 58 |
| Future Vol, veh/h | 1 | 2 | 71 | 0 | 0 | 58 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 100 | 2 | 49 | 2 | 2 | 62 |
| Mvmt Flow | 1 | 2 | 80 | 0 | 0 | 65 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 145 | 80 | 0 | 0 | 80 | 0 |
| Stage 1 | 80 | - | - | - | - | - |
| Stage 2 | 65 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 663 | 980 | - | - | 1518 | - |
| Stage 1 | 745 | - | - | - | - | - |
| Stage 2 | 758 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 663 | 980 | - | - | 1518 | - |
| Mov Cap-2 Maneuver | 663 | - | - | - | - | - |
| Stage 1 | 745 | - | - | - | - | - |
| Stage 2 | 758 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.3 |  | 0 |  | 0 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 845 | 1518 | - |
| HCM Lane V/C Ratio |  | - | - | 0.004 | - | - |
| HCM Control Delay (s) |  | - | - | 9.3 | 0 | - |
| HCM Lane LOS |  | - | - | A | A | - |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |


| Intersection |  |
| :--- | ---: |
| Intersection Delay, s/veh | 99.3 |
| Intersection LOS | F |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | ¢4 | 「 | ${ }^{1}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 79 | 29 | 25 | 264 | 581 | 0 | 0 | 173 | 279 |
| Future Vol, veh/h | 0 | 0 | 0 | 79 | 29 | 25 | 264 | 581 | 0 | 0 | 173 | 279 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 58 | 7 | 8 | 15 | 13 | 2 | 2 | 41 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 99 | 36 | 31 | 330 | 726 | 0 | 0 | 216 | 349 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 14.6 |  |  | 154.8 |  |  |  | 20.4 |  |
| HCM LOS |  |  |  | B |  |  | F |  |  |  | C |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $89 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, \% | $0 \%$ | $100 \%$ | $11 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 264 | 581 | 89 | 19 | 25 | 173 | 279 |
| LT Vol | 264 | 0 | 79 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 581 | 10 | 19 | 0 | 173 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 25 | 0 | 279 |
| Lane Flow Rate | 330 | 726 | 111 | 24 | 31 | 216 | 349 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.688 | 1.405 | 0.285 | 0.053 | 0.063 | 0.477 | 0.638 |
| Departure Headway (Hd) | 7.508 | 6.967 | 9.772 | 8.422 | 7.72 | 8.476 | 7.088 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 482 | 523 | 370 | 428 | 467 | 428 | 513 |
| Service Time | 5.25 | 4.709 | 7.472 | 6.122 | 5.42 | 6.176 | 4.788 |
| HCM Lane V/C Ratio | 0.685 | 1.388 | 0.3 | 0.056 | 0.066 | 0.505 | 0.68 |
| HCM Control Delay | 25.3 | 213.7 | 16.3 | 11.6 | 10.9 | 18.7 | 21.4 |
| HCM Lane LOS | D | F | C | B | B | C | C |
| HCM 95th-tile Q | 5.2 | 34 | 1.2 | 0.2 | 0.2 | 2.5 | 4.4 |

## 7. Site Closing (2059) Background AM Peak Hour

2: University Parks Dr (FM 3400) \& SH 6 EBFR

## Intersection

Intersection Delay, s/veh88.9
Intersection LOS

| Movement EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations | *4 | 「' |  |  |  |  | + | 「' | \% | 4 |  |
| Traffic Vol, veh/h 375 | 67 | 62 | 0 | 0 | 0 | 0 | 481 | 60 | 75 | 177 | 0 |
| Future Vol, veh/h 375 | 67 | 62 | 0 | 0 | 0 | 0 | 481 | 60 | 75 | 177 | 0 |
| Peak Hour Factor 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 | 0.86 |
| Heavy Vehicles, \% 8 | 28 | 37 | 2 | 2 | 2 | 2 | 18 | 17 | 50 | 46 | 2 |
| Mvmt Flow 436 | 78 | 72 | 0 | 0 | 0 | 0 | 559 | 70 | 87 | 206 | 0 |
| Number of Lanes 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Approach EB |  |  |  |  |  |  | NB |  | SB |  |  |
| Opposing Approach |  |  |  |  |  |  | SB |  | NB |  |  |
| Opposing Lanes 0 |  |  |  |  |  |  | 2 |  | 2 |  |  |
| Conflicting Approach Left SB |  |  |  |  |  |  | EB |  |  |  |  |
| Conflicting Lanes Left 2 |  |  |  |  |  |  | 3 |  | 0 |  |  |
| Conflicting Approach RighNB |  |  |  |  |  |  |  |  | EB |  |  |
| Conflicting Lanes Right 2 |  |  |  |  |  |  | 0 |  | 3 |  |  |
| HCM Control Delay 61.1 |  |  |  |  |  |  | 146.5 |  | 20.7 |  |  |
| HCMLOS F |  |  |  |  |  |  | F |  | C |  |  |


| Lane | NBLn1 $N B L n 2 ~ E B L n 1 ~ E B L n 2 ~ E B L n 3 ~ S B L n 1 ~ S B L n 2 ~$ |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $0 \%$ | $0 \%$ | $94 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $6 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, \% | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 481 | 60 | 397 | 45 | 62 | 75 | 177 |
| LT Vol | 0 | 0 | 375 | 0 | 0 | 75 | 0 |
| Through Vol | 481 | 0 | 22 | 45 | 0 | 0 | 177 |
| RT Vol | 0 | 60 | 0 | 0 | 62 | 0 | 0 |
| Lane Flow Rate | 559 | 70 | 462 | 52 | 72 | 87 | 206 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 1.27 | 0.144 | 1.008 | 0.111 | 0.144 | 0.234 | 0.521 |
| Departure Headway (Hd) | 8.175 | 7.44 | 8.333 | 8.198 | 7.637 | 10.328 | 9.737 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 447 | 481 | 439 | 440 | 472 | 350 | 373 |
| Service Time | 5.925 | 5.19 | 6.033 | 5.898 | 5.337 | 8.028 | 7.437 |
| HCM Lane V/C Ratio | 1.251 | 0.146 | 1.052 | 0.118 | 0.153 | 0.249 | 0.552 |
| HCM Control Delay | 163.3 | 11.4 | 74.3 | 11.9 | 11.6 | 16.2 | 22.6 |
| HCM Lane LOS | F | B | F | B | B | C | C |
| HCM 95th-tile Q | 23.6 | 0.5 | 13 | 0.4 | 0.5 | 0.9 | 2.9 |

## 7. Site Closing (2059) Background AM Peak Hour

3: University Parks Dr (FM 3400) \& Tinsley Rd

| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 3.7 |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  | * |  |  | * |  |  | * |  |  | $\uparrow$ |  |
| Traffic Vol, veh/h | 29 | 10 | 8 | 4 | 25 | 94 | 17 | 312 | 0 | 2 | 212 | 12 |
| Future Vol, veh/h | 29 | 10 | 8 | 4 | 25 | 94 | 17 | 312 | 0 | 2 | 212 | 12 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, \% | 7 | 2 | 25 | 50 | 2 | 9 | 38 | 24 | 2 | 2 | 47 | 17 |
| Mvmt Flow | 33 | 11 | 9 | 5 | 28 | 107 | 19 | 355 | 0 | 2 | 241 | 14 |


7. Site Closing (2059) Background AM Peak Hour

4: University Parks Dr (FM 3400) \& Lockwood Ln

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.8 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\neq$ |
| Traffic Vol, veh/h | 0 | 31 | 293 | 0 | 4 | 154 |
| Future Vol, veh/h | 0 | 31 | 293 | 0 | 4 | 154 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, \% | 2 | 27 | 18 | 2 | 50 | 35 |
| Mvmt Flow | 0 | 35 | 333 | 0 | 5 | 175 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 518 | 333 | 0 | 0 | 333 | 0 |
| Stage 1 | 333 | - | - | - | - | - |
| Stage 2 | 185 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.47 | - | - | 4.6 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.543 | - | - | 2.65 | - |
| Pot Cap-1 Maneuver | 518 | 655 | - | - | 1001 | - |
| Stage 1 | 726 | - | - | - | - | - |
| Stage 2 | 847 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 515 | 655 | - | - | 1001 | - |
| Mov Cap-2 Maneuver | 515 | - | - | - | - | - |
| Stage 1 | 726 | - | - | - | - | - |
| Stage 2 | 842 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 10.8 |  | 0 |  | 0.2 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 655 | 1001 | - |
| HCM Lane V/C Ratio |  | - | - | 0.054 | 0.005 | - |
| HCM Control Delay (s) |  | - | - | 10.8 | 8.6 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.2 | 0 | - |

7. Site Closing (2059) Background AM Peak Hour

5: University Parks Dr (FM 3400) \& Radle Rd

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.4 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | r |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 17 | 252 | 0 | 2 | 164 |
| Future Vol, veh/h | 0 | 17 | 252 | 0 | 2 | 164 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 2 | 2 | 26 | 2 | 2 | 62 |
| Mvmt Flow | 0 | 19 | 283 | 0 | 2 | 184 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 471 | 283 | 0 | 0 | 283 | 0 |
| Stage 1 | 283 | - | - | - | - | - |
| Stage 2 | 188 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 551 | 756 | - | - | 1279 | - |
| Stage 1 | 765 | - | - | - | - | - |
| Stage 2 | 844 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 550 | 756 | - | - | 1279 | - |
| Mov Cap-2 Maneuver | 550 | - | - | - | - | - |
| Stage 1 | 765 | - | - | - | - | - |
| Stage 2 | 842 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.9 |  | 0 |  | 0.1 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 756 | 1279 | - |
| HCM Lane V/C Ratio |  | - | - | 0.025 | 0.002 | - |
| HCM Control Delay (s) |  | - | - | 9.9 | 7.8 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.1 | 0 | - |


| Intersection |  |
| :--- | ---: | :--- |
| Intersection Delay, s/veh | 67.1 |
| Intersection LOS | F |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | ** | 「 | ${ }^{7}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 56 | 27 | 35 | 148 | 581 | 0 | 0 | 208 | 393 |
| Future Vol, veh/h | 0 | 0 | 0 | 56 | 27 | 35 | 148 | 581 | 0 | 0 | 208 | 393 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 30 | 23 | 18 | 11 | 9 | 2 | 2 | 10 | 3 |
| Mvmt Flow | 0 | 0 | 0 | 62 | 30 | 39 | 164 | 646 | 0 | 0 | 231 | 437 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 12.5 |  |  | 112.6 |  |  |  | 22.6 |  |
| HCM LOS |  |  |  | B |  |  | F |  |  |  | C |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $86 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, $\%$ | $0 \%$ | $100 \%$ | $14 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 148 | 581 | 65 | 18 | 35 | 208 | 393 |
| LT Vol | 148 | 0 | 56 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 581 | 9 | 18 | 0 | 208 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 35 | 0 | 393 |
| Lane Flow Rate | 164 | 646 | 72 | 20 | 39 | 231 | 437 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.335 | 1.22 | 0.173 | 0.045 | 0.079 | 0.449 | 0.749 |
| Departure Headway (Hd) | 7.342 | 6.801 | 9.017 | 8.451 | 7.642 | 7.348 | 6.516 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 490 | 536 | 400 | 426 | 472 | 492 | 559 |
| Service Time | 5.075 | 4.535 | 6.717 | 6.151 | 5.342 | 5.048 | 4.216 |
| HCM Lane V/C Ratio | 0.335 | 1.205 | 0.18 | 0.047 | 0.083 | 0.47 | 0.782 |
| HCM Control Delay | 13.7 | 137.8 | 13.6 | 11.5 | 11 | 15.9 | 26.1 |
| HCM Lane LOS | B | F | B | B | B | C | D |
| HCM 95th-tile Q | 1.5 | 24.4 | 0.6 | 0.1 | 0.3 | 2.3 | 6.5 |

8. Site Closing (2059) Background PM Peak Hour

2: University Parks Dr (FM 3400) \& SH 6 EBFR
Intersection
Intersection Delay, s/veh41.8
Intersection LOS $\quad$ E

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  | ¢4 | F |  |  |  |  | 4 | 「 | ${ }^{*}$ | 4 |  |
| Traffic Vol, veh/h | 449 | 121 | 119 | 0 | 0 | 0 | 0 | 279 | 46 | 77 | 187 | 0 |
| Future Vol, veh/h | 449 | 121 | 119 | 0 | 0 | 0 | 0 | 279 | 46 | 77 | 187 | 0 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles, \% | 6 | 14 | 12 | 2 | 2 | 2 | 2 | 19 | 32 | 19 | 16 | 2 |
| Mvmt Flow | 478 | 129 | 127 | 0 | 0 | 0 | 0 | 297 | 49 | 82 | 199 | 0 |
| Number of Lanes | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Approach | EB |  |  |  |  |  |  | NB |  | SB |  |  |
| Opposing Approach |  |  |  |  |  |  |  | SB |  | NB |  |  |
| Opposing Lanes | 0 |  |  |  |  |  |  | 2 |  | 2 |  |  |
| Conflicting Approach Le | ft SB |  |  |  |  |  |  | EB |  |  |  |  |
| Conflicting Lanes Left | 2 |  |  |  |  |  |  | 3 |  | 0 |  |  |
| Conflicting Approach Rig | ghNB |  |  |  |  |  |  |  |  | EB |  |  |
| Conflicting Lanes Right | 2 |  |  |  |  |  |  | 0 |  | 3 |  |  |
| HCM Control Delay | 60.1 |  |  |  |  |  |  | 23.5 |  | 16.7 |  |  |
| HCM LOS | F |  |  |  |  |  |  | C |  | C |  |  |


| Lane | NBLn1 NBLn2 EBLn1 EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $0 \%$ | $0 \%$ | $92 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $8 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, $\%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 279 | 46 | 489 | 81 | 119 | 77 | 187 |
| LT Vol | 0 | 0 | 449 | 0 | 0 | 77 | 0 |
| Through Vol | 279 | 0 | 40 | 81 | 0 | 0 | 187 |
| RT Vol | 0 | 46 | 0 | 0 | 119 | 0 | 0 |
| Lane Flow Rate | 297 | 49 | 521 | 86 | 127 | 82 | 199 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.659 | 0.102 | 1.047 | 0.165 | 0.217 | 0.197 | 0.449 |
| Departure Headway (Hd) | 8.249 | 7.758 | 7.239 | 6.912 | 6.167 | 8.968 | 8.402 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 442 | 465 | 500 | 517 | 580 | 403 | 432 |
| Service Time | 5.949 | 5.458 | 5.001 | 4.674 | 3.929 | 6.668 | 6.102 |
| HCM Lane V/C Ratio | 0.672 | 0.105 | 1.042 | 0.166 | 0.219 | 0.203 | 0.461 |
| HCM Control Delay | 25.5 | 11.3 | 80.2 | 11 | 10.6 | 13.9 | 17.8 |
| HCM Lane LOS | D | B | F | B | B | B | C |
| HCM 95th-tile Q | 4.6 | 0.3 | 15.4 | 0.6 | 0.8 | 0.7 | 2.3 |


| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 2.9 |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  | * |  |  | \& |  |  | \$ |  |  | \$ |  |
| Traffic Vol, veh/h | 17 | 19 | 27 | 0 | 15 | 60 | 6 | 154 | 0 | 6 | 254 | 37 |
| Future Vol, veh/h | 17 | 19 | 27 | 0 | 15 | 60 | 6 | 154 | 0 | 6 | 254 | 37 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, \% | 2 | 2 | 15 | 2 | 2 | 7 | 33 | 20 | 2 | 2 | 16 | 17 |
| Mvmt Flow | 20 | 22 | 31 | 0 | 17 | 70 | 7 | 179 | 0 | 7 | 295 | 43 |


8. Site Closing (2059) Background PM Peak Hour

4: University Parks Dr (FM 3400) \& Lockwood Ln

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.6 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 2 | 4 | 160 | 0 | 21 | 237 |
| Future Vol, veh/h | 2 | 4 | 160 | 0 | 21 | 237 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, \% | 100 | 50 | 35 | 2 | 40 | 18 |
| Mvmt Flow | 2 | 4 | 176 | 0 | 23 | 260 |


8. Site Closing (2059) Background PM Peak Hour

5: University Parks Dr (FM 3400) \& Radle Rd

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.3 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | T |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 2 | 2 | 126 | 0 | 8 | 216 |
| Future Vol, veh/h | 2 | 2 | 126 | 0 | 8 | 216 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, \% | 100 | 2 | 25 | 2 | 2 | 13 |
| Mvmt Flow | 2 | 2 | 147 | 0 | 9 | 251 |


| Major/Minor M | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 416 | 147 | 0 | 0 | 147 | 0 |
| Stage 1 | 147 | - | - | - | - | - |
| Stage 2 | 269 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.318 |  | - | 2.218 | - |
| Pot Cap-1 Maneuver | 444 | 900 | - | - | 1435 | - |
| Stage 1 | 688 | - | - | - | - | - |
| Stage 2 | 595 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 441 | 900 | - | - | 1435 | - |
| Mov Cap-2 Maneuver | 441 | - | - | - | - | - |
| Stage 1 | 688 | - | - | - | - | - |
| Stage 2 | 591 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 11.1 |  | 0 |  | 0.3 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 592 | 1435 | - |
| HCM Lane V/C Ratio |  | - | - | 0.008 | 0.006 | - |
| HCM Control Delay (s) |  | - | - | 11.1 | 7.5 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |

9. Site Closing (2059) Background Site Peak Hour 1: University Parks Dr (FM 3400) \& SH 6 WBFR

| Intersection |  |
| :--- | ---: |
| Intersection Delay, s/veh | 13.7 |
| Intersection LOS | B |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | +4 | 「 | ${ }^{*}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 54 | 25 | 23 | 119 | 325 | 0 | 0 | 137 | 214 |
| Future Vol, veh/h | 0 | 0 | 0 | 54 | 25 | 23 | 119 | 325 | 0 | 0 | 137 | 214 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 62 | 17 | 27 | 35 | 21 | 2 | 2 | 27 | 8 |
| Mvmt Flow | 0 | 0 | 0 | 57 | 27 | 24 | 127 | 346 | 0 | 0 | 146 | 228 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 11.4 |  |  | 16 |  |  |  | 11.4 |  |
| HCM LOS |  |  |  | B |  |  | C |  |  |  | B |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $87 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, $\%$ | $0 \%$ | $100 \%$ | $13 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 119 | 325 | 62 | 17 | 23 | 137 | 214 |
| LT Vol | 119 | 0 | 54 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 325 | 8 | 17 | 0 | 137 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 23 | 0 | 214 |
| Lane Flow Rate | 127 | 346 | 66 | 18 | 24 | 146 | 228 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.243 | 0.593 | 0.151 | 0.034 | 0.044 | 0.266 | 0.35 |
| Departure Headway (Hd) | 6.92 | 6.177 | 8.196 | 6.981 | 6.443 | 6.574 | 5.542 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 520 | 584 | 438 | 513 | 556 | 547 | 649 |
| Service Time | 4.645 | 3.902 | 5.934 | 4.718 | 4.181 | 4.305 | 3.273 |
| HCM Lane V/C Ratio | 0.244 | 0.592 | 0.151 | 0.035 | 0.043 | 0.267 | 0.351 |
| HCM Control Delay | 11.9 | 17.5 | 12.4 | 10 | 9.5 | 11.7 | 11.2 |
| HCM Lane LOS | B | C | B | A | A | B | B |
| HCM 95th-tile Q | 0.9 | 3.9 | 0.5 | 0.1 | 0.1 | 1.1 | 1.6 |

9. Site Closing (2059) Background Site Peak Hour

2: University Parks Dr (FM 3400) \& SH 6 EBFR

## Intersection

Intersection Delay, s/veh14.2
Intersection LOS
B


| Lane | NBLn1 NBLn2 EBLn1 EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $0 \%$ | $0 \%$ | $55 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $5 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, \% | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 212 | 42 | 244 | 22 | 65 | 67 | 125 |
| LT Vol | 0 | 0 | 233 | 0 | 0 | 67 | 0 |
| Through Vol | 212 | 0 | 11 | 22 | 0 | 0 | 125 |
| RT Vol | 0 | 42 | 0 | 0 | 65 | 0 | 0 |
| Lane Flow Rate | 233 | 46 | 268 | 24 | 71 | 74 | 137 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.451 | 0.083 | 0.513 | 0.045 | 0.127 | 0.155 | 0.279 |
| Departure Headway (Hd) | 6.971 | 6.486 | 6.893 | 6.737 | 6.425 | 7.586 | 7.304 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 517 | 552 | 523 | 532 | 558 | 473 | 492 |
| Service Time | 4.716 | 4.231 | 4.631 | 4.475 | 4.163 | 5.336 | 5.053 |
| HCM Lane V/C Ratio | 0.451 | 0.083 | 0.512 | 0.045 | 0.127 | 0.156 | 0.278 |
| HCM Control Delay | 15.4 | 9.8 | 16.7 | 9.8 | 10.1 | 11.7 | 12.9 |
| HCM Lane LOS | C | A | C | A | B | B | B |
| HCM 95th-tile Q | 2.3 | 0.3 | 2.9 | 0.1 | 0.4 | 0.5 | 1.1 |

9. Site Closing (2059) Background Site Peak Hour 3: University Parks Dr (FM 3400) \& Tinsley Rd


10. Site Closing (2059) Background Site Peak Hour

4: University Parks Dr (FM 3400) \& Lockwood Ln

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 1.1 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 19 | 110 | 6 | 15 | 148 |
| Future Vol, veh/h | 0 | 19 | 110 | 6 | 15 | 148 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, \% | 2 | 56 | 49 | 2 | 71 | 30 |
| Mvmt Flow | 0 | 25 | 145 | 8 | 20 | 195 |


9. Site Closing (2059) Background Site Peak Hour 5: University Parks Dr (FM 3400) \& Radle Rd

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.2 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | -1 |
| Traffic Vol, veh/h | 2 | 4 | 139 | 0 | 0 | 114 |
| Future Vol, veh/h | 2 | 4 | 139 | 0 | 0 | 114 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 100 | 2 | 49 | 2 | 2 | 62 |
| Mvmt Flow | 2 | 4 | 156 | 0 | 0 | 128 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 284 | 156 | 0 | 0 | 156 | 0 |
| Stage 1 | 156 | - | - | - | - | - |
| Stage 2 | 128 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.318 |  | - | 2.218 | - |
| Pot Cap-1 Maneuver | 540 | 890 | - | - | 1424 | - |
| Stage 1 | 681 | - | - | - | - | - |
| Stage 2 | 704 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 540 | 890 | - | - | 1424 | - |
| Mov Cap-2 Maneuver | 540 | - | - | - | - | - |
| Stage 1 | 681 | - | - | - | - | - |
| Stage 2 | 704 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 10 |  | 0 |  | 0 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 732 | 1424 | - |
| HCM Lane V/C Ratio |  | - | - | 0.009 | - | - |
| HCM Control Delay (s) |  | - | - | 10 | 0 | - |
| HCM Lane LOS |  | - | - | B | A | - |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |


| Intersection |  |
| :--- | ---: | :--- |
| Intersection Delay, s/veh | 14.8 |
| Intersection LOS | B |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | ¢4 | 「' | ${ }^{7}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 65 | 15 | 13 | 177 | 303 | 0 | 0 | 96 | 142 |
| Future Vol, veh/h | 0 | 0 | 0 | 65 | 15 | 13 | 177 | 303 | 0 | 0 | 96 | 142 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 69 | 7 | 8 | 35 | 15 | 2 | 2 | 45 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 81 | 19 | 16 | 221 | 379 | 0 | 0 | 120 | 178 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 12.4 |  |  | 17 |  |  |  | 11.3 |  |
| HCM LOS |  |  |  | B |  |  | C |  |  |  | B |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $93 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, $\%$ | $0 \%$ | $100 \%$ | $7 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 177 | 303 | 70 | 10 | 13 | 96 | 142 |
| LT Vol | 177 | 0 | 65 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 303 | 5 | 10 | 0 | 96 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 13 | 0 | 142 |
| Lane Flow Rate | 221 | 379 | 88 | 12 | 16 | 120 | 178 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.421 | 0.632 | 0.206 | 0.024 | 0.028 | 0.239 | 0.283 |
| Departure Headway (Hd) | 6.853 | 6.008 | 8.461 | 6.921 | 6.228 | 7.18 | 5.734 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 527 | 602 | 425 | 517 | 575 | 500 | 627 |
| Service Time | 4.585 | 3.739 | 6.2 | 4.66 | 3.967 | 4.919 | 3.473 |
| HCM Lane V/C Ratio | 0.419 | 0.63 | 0.207 | 0.023 | 0.028 | 0.24 | 0.284 |
| HCM Control Delay | 14.5 | 18.5 | 13.4 | 9.8 | 9.1 | 12.2 | 10.7 |
| HCM Lane LOS | B | C | B | A | A | B | B |
| HCM 95th-tile Q | 2.1 | 4.4 | 0.8 | 0.1 | 0.1 | 0.9 | 1.2 |




| Lane | NBLn1 NBLn2 EBLn1 EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $0 \%$ | $0 \%$ | $94 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $6 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, \% | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 295 | 52 | 202 | 23 | 80 | 38 | 123 |
| LT Vol | 0 | 0 | 191 | 0 | 0 | 38 | 0 |
| Through Vol | 295 | 0 | 11 | 23 | 0 | 0 | 123 |
| RT Vol | 0 | 52 | 0 | 0 | 80 | 0 | 0 |
| Lane Flow Rate | 343 | 60 | 235 | 26 | 93 | 44 | 143 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.659 | 0.11 | 0.459 | 0.05 | 0.177 | 0.101 | 0.312 |
| Departure Headway (Hd) | 6.917 | 6.536 | 7.021 | 6.887 | 6.867 | 8.252 | 7.865 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 521 | 547 | 513 | 519 | 522 | 433 | 456 |
| Service Time | 4.669 | 4.287 | 4.771 | 4.638 | 4.618 | 6.018 | 5.631 |
| HCM Lane V/C Ratio | 0.658 | 0.11 | 0.458 | 0.05 | 0.178 | 0.102 | 0.314 |
| HCM Control Delay | 22.1 | 10.1 | 15.6 | 10 | 11.1 | 12 | 14.2 |
| HCM Lane LOS | C | B | C | A | B | B | B |
| HCM 95th-tile Q | 4.8 | 0.4 | 2.4 | 0.2 | 0.6 | 0.3 | 1.3 |




| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.4 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 16 | 221 | 0 | 2 | 160 |
| Future Vol, veh/h | 0 | 16 | 221 | 0 | 2 | 160 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, \% | 2 | 27 | 44 | 2 | 50 | 62 |
| Mvmt Flow | 0 | 18 | 251 | 0 | 2 | 182 |



| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.4 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | -1 |
| Traffic Vol, veh/h | 0 | 8 | 128 | 0 | 1 | 84 |
| Future Vol, veh/h | 0 | 8 | 128 | 0 | 1 | 84 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 2 | 2 | 26 | 2 | 2 | 62 |
| Mvmt Flow | 0 | 9 | 144 | 0 | 1 | 94 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 240 | 144 | 0 | 0 | 144 | 0 |
| Stage 1 | 144 | - | - | - | - | - |
| Stage 2 | 96 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 748 | 903 | - | - | 1438 | - |
| Stage 1 | 883 | - | - | - | - | - |
| Stage 2 | 928 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 747 | 903 | - | - | 1438 | - |
| Mov Cap-2 Maneuver | 747 | - | - | - | - | - |
| Stage 1 | 883 | - | - | - | - | - |
| Stage 2 | 927 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9 |  | 0 |  | 0.1 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 903 | 1438 | - |
| HCM Lane V/C Ratio |  | - | - | 0.01 | 0.001 | - |
| HCM Control Delay (s) |  | - | - | 9 | 7.5 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |



| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 432 | 154 | 0 | 0 | 154 | 0 |
| Stage 1 | 154 | - | - | - | - | - |
| Stage 2 | 278 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 7.2 | - | - | 4.98 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 4.2 | - | - | 2.992 | - |
| Pot Cap-1 Maneuver | 433 | 688 | - | - | 1036 | - |
| Stage 1 | 683 | - | - | - | - | - |
| Stage 2 | 589 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 393 | 688 | - | - | 1036 | - |
| Mov Cap-2 Maneuver | 393 | - | - | - | - | - |
| Stage 1 | 683 | - | - | - | - | - |
| Stage 2 | 534 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 10.9 |  | 0 |  | 4.3 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 688 | 1036 | - |
| HCM Lane V/C Ratio |  | - | - | 0.116 | 0.088 | - |
| HCM Control Delay (s) |  | - | - | 10.9 | 8.8 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.4 | 0.3 | - |


| Intersection |  |
| :--- | ---: |
| Intersection Delay, s/veh | 12.5 |
| Intersection LOS | B |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | $\uparrow \uparrow$ | 「 | ${ }^{7}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 45 | 14 | 18 | 115 | 303 | 0 | 0 | 112 | 201 |
| Future Vol, veh/h | 0 | 0 | 0 | 45 | 14 | 18 | 115 | 303 | 0 | 0 | 112 | 201 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 56 | 23 | 18 | 36 | 11 | 2 | 2 | 15 | 3 |
| Mvmt Flow | 0 | 0 | 0 | 50 | 16 | 20 | 128 | 337 | 0 | 0 | 124 | 223 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 10.9 |  |  | 14.2 |  |  |  | 10.6 |  |
| HCM LOS |  |  |  | B |  |  | B |  |  |  | B |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $91 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, \% | $0 \%$ | $100 \%$ | $9 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 115 | 303 | 50 | 9 | 18 | 112 | 201 |
| LT Vol | 115 | 0 | 45 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 303 | 5 | 9 | 0 | 112 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 18 | 0 | 201 |
| Lane Flow Rate | 128 | 337 | 55 | 10 | 20 | 124 | 223 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.239 | 0.543 | 0.122 | 0.02 | 0.034 | 0.215 | 0.329 |
| Departure Headway (Hd) | 6.741 | 5.811 | 7.963 | 6.936 | 6.141 | 6.221 | 5.31 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 534 | 623 | 451 | 517 | 584 | 581 | 681 |
| Service Time | 4.462 | 3.531 | 5.695 | 4.667 | 3.872 | 3.921 | 3.01 |
| HCM Lane V/C Ratio | 0.24 | 0.541 | 0.122 | 0.019 | 0.034 | 0.213 | 0.327 |
| HCM Control Delay | 11.6 | 15.2 | 11.8 | 9.8 | 9.1 | 10.6 | 10.6 |
| HCM Lane LOS | B | C | B | A | A | B | B |
| HCM 95th-tile Q | 0.9 | 3.3 | 0.4 | 0.1 | 0.1 | 0.8 | 1.4 |





| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 1.9 |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  | * |  |  | \& |  |  | \& |  |  | $\uparrow$ |  |
| Traffic Vol, veh/h | 8 | 10 | 14 | 0 | 7 | 31 | 3 | 145 | 0 | 3 | 185 | 19 |
| Future Vol, veh/h | 8 | 10 | 14 | 0 | 7 | 31 | 3 | 145 | 0 | 3 | 185 | 19 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, \% | 2 | 2 | 15 | 2 | 2 | 7 | 33 | 50 | 2 | 2 | 41 | 17 |
| Mvmt Flow | 9 | 12 | 16 | 0 | 8 | 36 | 3 | 169 | 0 | 3 | 215 | 22 |



| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.4 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\neq 1$ |
| Traffic Vol, veh/h | 1 | 2 | 148 | 0 | 11 | 177 |
| Future Vol, veh/h | 1 | 2 | 148 | 0 | 11 | 177 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, \% | 100 | 50 | 57 | 2 | 40 | 44 |
| Mvmt Flow | 1 | 2 | 163 | 0 | 12 | 195 |



| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.3 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\neq$ |
| Traffic Vol, veh/h | 1 | 1 | 63 | 0 | 4 | 110 |
| Future Vol, veh/h | 1 | 1 | 63 | 0 | 4 | 110 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, \% | 100 | 2 | 25 | 2 | 2 | 13 |
| Mvmt Flow | 1 | 1 | 73 | 0 | 5 | 128 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 211 | 73 | 0 | 0 | 73 | 0 |
| Stage 1 | 73 | - | - | - | - | - |
| Stage 2 | 138 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 602 | 989 | - |  | 1527 | - |
| Stage 1 | 751 | - | - | - | - | - |
| Stage 2 | 696 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 600 | 989 | - | - | 1527 | - |
| Mov Cap-2 Maneuver | 600 | - | - | - | - | - |
| Stage 1 | 751 | - | - | - | - | - |
| Stage 2 | 693 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.8 |  | 0 |  | 0.3 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 747 | 1527 | - |
| HCM Lane V/C Ratio |  | - | - | 0.003 | 0.003 | - |
| HCM Control Delay (s) |  | - | - | 9.8 | 7.4 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |


| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 3.8 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | M |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 66 | 64 | 0 | 56 | 115 |
| Future Vol, veh/h | 0 | 66 | 64 | 0 | 56 | 115 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, $\%$ | 2 | 85 | 25 | 2 | 100 | 12 |
| Mvmt Flow | 0 | 77 | 74 | 0 | 65 | 134 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 338 | 74 | 0 | 0 | 74 | 0 |
| Stage 1 | 74 | - | - | - | - | - |
| Stage 2 | 264 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 7.05 | - | - | 5.1 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.065 | - | - | 3.1 | - |
| Pot Cap-1 Maneuver | 658 | 799 | - | - | 1079 | - |
| Stage 1 | 949 | - | - | - | - | - |
| Stage 2 | 780 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 615 | 799 | - | - | 1079 | - |
| Mov Cap-2 Maneuver | 615 | - | - | - | - | - |
| Stage 1 | 949 | - | - | - | - | - |
| Stage 2 | 729 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 10 |  | 0 |  | 2.8 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 799 | 1079 | - |
| HCM Lane V/C Ratio |  | - | - | 0.096 | 0.06 | - |
| HCM Control Delay (s) |  | - | - | 10 | 8.6 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.3 | 0.2 | - |


| Intersection |  |
| :--- | ---: |
| Intersection Delay, s/veh | 10.4 |
| Intersection LOS | B |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | ¢4 | 「' | ${ }^{*}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 56 | 13 | 12 | 112 | 174 | 0 | 0 | 80 | 109 |
| Future Vol, veh/h | 0 | 0 | 0 | 56 | 13 | 12 | 112 | 174 | 0 | 0 | 80 | 109 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 76 | 17 | 27 | 65 | 25 | 2 | 2 | 35 | 8 |
| Mvmt Flow | 0 | 0 | 0 | 60 | 14 | 13 | 119 | 185 | 0 | 0 | 85 | 116 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 10.8 |  |  | 11.1 |  |  |  | 9.2 |  |
| HCM LOS |  |  |  | B |  |  | B |  |  |  | A |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Vol Left, \% | 100\% | 0\% | 93\% | 0\% | 0\% | 0\% | 0\% |
| Vol Thru, \% | 0\% | 100\% | 7\% | 100\% | 0\% | 100\% | 0\% |
| Vol Right, \% | 0\% | 0\% | 0\% | 0\% | 100\% | 0\% | 100\% |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 112 | 174 | 60 | 9 | 12 | 80 | 109 |
| LT Vol | 112 | 0 | 56 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 174 | 4 | 9 | 0 | 80 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 12 | 0 | 109 |
| Lane Flow Rate | 119 | 185 | 64 | 9 | 13 | 85 | 116 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.227 | 0.291 | 0.135 | 0.016 | 0.02 | 0.145 | 0.16 |
| Departure Headway (Hd) | 6.852 | 5.668 | 7.57 | 6.093 | 5.559 | 6.134 | 4.969 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 522 | 631 | 472 | 584 | 639 | 582 | 717 |
| Service Time | 4.616 | 3.431 | 5.349 | 3.871 | 3.337 | 3.898 | 2.732 |
| HCM Lane V/C Ratio | 0.228 | 0.293 | 0.136 | 0.015 | 0.02 | 0.146 | 0.162 |
| HCM Control Delay | 11.6 | 10.8 | 11.5 | 9 | 8.5 | 9.9 | 8.7 |
| HCM Lane LOS | B | B | B | A | A | A | A |
| HCM 95th-tile Q | 0.9 | 1.2 | 0.5 | 0 | 0.1 | 0.5 | 0.6 |




| Lane | NBLn1 NBLn2 | EBLn1 EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, $\%$ | $0 \%$ | $0 \%$ | $95 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $5 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, \% | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 168 | 47 | 125 | 11 | 90 | 34 | 102 |
| LT Vol | 0 | 0 | 119 | 0 | 0 | 34 | 0 |
| Through Vol | 168 | 0 | 6 | 11 | 0 | 0 | 102 |
| RT Vol | 0 | 47 | 0 | 0 | 90 | 0 | 0 |
| Lane Flow Rate | 185 | 52 | 137 | 12 | 99 | 37 | 112 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.346 | 0.091 | 0.25 | 0.022 | 0.176 | 0.073 | 0.219 |
| Departure Headway (Hd) | 6.751 | 6.372 | 6.569 | 6.413 | 6.41 | 7.008 | 7.035 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 534 | 564 | 551 | 562 | 563 | 513 | 512 |
| Service Time | 4.473 | 4.093 | 4.269 | 4.113 | 4.11 | 4.73 | 4.757 |
| HCM Lane V/C Ratio | 0.346 | 0.092 | 0.249 | 0.021 | 0.176 | 0.072 | 0.219 |
| HCM Control Delay | 13 | 9.7 | 11.4 | 9.3 | 10.5 | 10.3 | 11.7 |
| HCM Lane LOS | B | A | B | A | B | B | B |
| HCM 95th-tile Q | 1.5 | 0.3 | 1 | 0.1 | 0.6 | 0.2 | 0.8 |



12. Site Opening (2025) Total Site Peak Hour 4: University Parks Dr (FM 3400) \& Lockwood Ln

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.5 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\neq 1$ |
| Traffic Vol, veh/h | 0 | 10 | 142 | 3 | 7 | 171 |
| Future Vol, veh/h | 0 | 10 | 142 | 3 | 7 | 171 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, \% | 2 | 56 | 80 | 2 | 71 | 64 |
| Mvmt Flow | 0 | 13 | 187 | 4 | 9 | 225 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 432 | 189 | 0 | 0 | 191 | 0 |
| Stage 1 | 189 | - | - | - | - | - |
| Stage 2 | 243 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.76 | - | - | 4.81 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.804 | - | - | 2.839 | - |
| Pot Cap-1 Maneuver | 581 | 732 | - | - | 1058 | - |
| Stage 1 | 843 | - | - | - | - | - |
| Stage 2 | 797 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 575 | 732 | - | - | 1058 | - |
| Mov Cap-2 Maneuver | 575 | - | - | - | - | - |
| Stage 1 | 843 | - | - | - | - | - |
| Stage 2 | 789 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 10 |  | 0 |  | 0.3 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 732 | 1058 | - |
| HCM Lane V/C Ratio |  | - | - | 0.018 | 0.009 | - |
| HCM Control Delay (s) |  | - | - | 10 | 8.4 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - |  | 0.1 | 0 | - |


| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.2 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | -1 |
| Traffic Vol, veh/h | 1 | 2 | 71 | 0 | 0 | 58 |
| Future Vol, veh/h | 1 | 2 | 71 | 0 | 0 | 58 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 100 | 2 | 49 | 2 | 2 | 62 |
| Mvmt Flow | 1 | 2 | 80 | 0 | 0 | 65 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 145 | 80 | 0 | 0 | 80 | 0 |
| Stage 1 | 80 | - | - | - | - | - |
| Stage 2 | 65 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 663 | 980 | - | - | 1518 | - |
| Stage 1 | 745 | - | - | - | - | - |
| Stage 2 | 758 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 663 | 980 | - | - | 1518 | - |
| Mov Cap-2 Maneuver | 663 | - | - | - | - | - |
| Stage 1 | 745 | - | - | - | - | - |
| Stage 2 | 758 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.3 |  | 0 |  | 0 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 845 | 1518 | - |
| HCM Lane V/C Ratio |  | - | - | 0.004 | - | - |
| HCM Control Delay (s) |  | - | - | 9.3 | 0 | - |
| HCM Lane LOS |  | - | - | A | A | - |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |

12. Site Opening (2025) Total Site Peak Hour

6: University Parks Dr (FM 3400) \& Site Driveway

| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 5.5 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\mathbf{T}$ |  |  | $-\uparrow$ |
| Traffic Vol, veh/h | 0 | 86 | 73 | 0 | 96 | 58 |
| Future Vol, veh/h | 0 | 86 | 73 | 0 | 96 | 58 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 2 | 100 | 48 | 2 | 90 | 62 |
| Mvmt Flow | 0 | 97 | 82 | 0 | 108 | 65 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 363 | 82 | 0 | 0 | 82 | 0 |
| Stage 1 | 82 | - | - | - | - | - |
| Stage 2 | 281 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 7.2 | - | - | 5 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.2 | - | - | 3.01 | - |
| Pot Cap-1 Maneuver | 636 | 763 | - | - | 1104 | - |
| Stage 1 | 941 | - | - | - | - | - |
| Stage 2 | 767 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 571 | 763 | - | - | 1104 | - |
| Mov Cap-2 Maneuver | 571 | - | - | - | - | - |
| Stage 1 | 941 | - | - | - | - | - |
| Stage 2 | 689 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 10.4 |  | 0 |  | 5.4 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 763 | 1104 | - |
| HCM Lane V/C Ratio |  | - | - | 0.127 | 0.098 | - |
| HCM Control Delay (s) |  | - | - | 10.4 | 8.6 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.4 | 0.3 | - |


| Intersection |  |
| :--- | ---: |
| Intersection Delay, s/veh | 111.9 |
| Intersection LOS | F |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | ** | 「 | \% | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 103 | 29 | 25 | 307 | 588 | 0 | 0 | 181 | 279 |
| Future Vol, veh/h | 0 | 0 | 0 | 103 | 29 | 25 | 307 | 588 | 0 | 0 | 181 | 279 |
| Peak Hour Factor | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 | 0.80 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 65 | 7 | 8 | 27 | 14 | 2 | 2 | 43 | 2 |
| Mvmt Flow | 0 | 0 | 0 | 129 | 36 | 31 | 384 | 735 | 0 | 0 | 226 | 349 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 16.6 |  |  | 174.7 |  |  |  | 22.4 |  |
| HCM LOS |  |  |  | C |  |  | F |  |  |  | C |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $91 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, \% | $0 \%$ | $100 \%$ | $9 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 307 | 588 | 113 | 19 | 25 | 181 | 279 |
| LT Vol | 307 | 0 | 103 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 588 | 10 | 19 | 0 | 181 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 25 | 0 | 279 |
| Lane Flow Rate | 384 | 735 | 141 | 24 | 31 | 226 | 349 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.848 | 1.475 | 0.372 | 0.054 | 0.064 | 0.518 | 0.664 |
| Departure Headway (Hd) | 7.955 | 7.223 | 10.084 | 8.6 | 7.898 | 8.804 | 7.379 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 457 | 507 | 359 | 419 | 456 | 412 | 492 |
| Service Time | 5.707 | 4.974 | 7.784 | 6.3 | 5.598 | 6.504 | 5.079 |
| HCM Lane V/C Ratio | 0.84 | 1.45 | 0.393 | 0.057 | 0.068 | 0.549 | 0.709 |
| HCM Control Delay | 41.5 | 244.3 | 18.6 | 11.8 | 11.1 | 20.6 | 23.5 |
| HCM Lane LOS | E | F | C | B | B | C | C |
| HCM 95th-tile Q | 8.4 | 36.8 | 1.7 | 0.2 | 0.2 | 2.9 | 4.8 |




| Lane | NBLn1 NBLn2 | EBLn1 | EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, $\%$ | $0 \%$ | $0 \%$ | $94 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $6 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, \% | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Sttop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 530 | 82 | 397 | 45 | 111 | 75 | 209 |
| LT Vol | 0 | 0 | 375 | 0 | 0 | 75 | 0 |
| Through Vol | 530 | 0 | 22 | 45 | 0 | 0 | 209 |
| RT Vol | 0 | 82 | 0 | 0 | 111 | 0 | 0 |
| Lane Flow Rate | 616 | 95 | 462 | 52 | 129 | 87 | 243 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 1.439 | 0.21 | 1.022 | 0.113 | 0.275 | 0.238 | 0.632 |
| Departure Headway (Hd) | 8.643 | 8.15 | 8.661 | 8.525 | 8.347 | 10.727 | 10.258 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 425 | 443 | 420 | 423 | 434 | 337 | 355 |
| Service Time | 6.343 | 5.85 | 6.361 | 6.225 | 6.047 | 8.427 | 7.958 |
| HCM Lane V/C Ratio | 1.449 | 0.214 | 1.1 | 0.123 | 0.297 | 0.258 | 0.685 |
| HCM Control Delay | 234 | 13 | 79.6 | 12.3 | 14.2 | 16.7 | 29 |
| HCM Lane LOS | F | B | F | B | B | C | D |
| HCM 95th-tile Q | 30.3 | 0.8 | 13.2 | 0.4 | 1.1 | 0.9 | 4.1 |


| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 3.7 |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  | * |  |  | \& |  |  | ¢ |  |  | \& |  |
| Traffic Vol, veh/h | 29 | 10 | 8 | 4 | 25 | 94 | 17 | 383 | 0 | 2 | 293 | 12 |
| Future Vol, veh/h | 29 | 10 | 8 | 4 | 25 | 94 | 17 | 383 | 0 | 2 | 293 | 12 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, \% | 7 | 2 | 25 | 50 | 2 | 9 | 38 | 38 | 2 | 2 | 58 | 17 |
| Mvmt Flow | 33 | 11 | 9 | 5 | 28 | 107 | 19 | 435 | 0 | 2 | 333 | 14 |



| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.6 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 31 | 364 | 0 | 4 | 235 |
| Future Vol, veh/h | 0 | 31 | 364 | 0 | 4 | 235 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 88 | 88 | 88 | 88 | 88 | 88 |
| Heavy Vehicles, \% | 2 | 27 | 34 | 2 | 50 | 53 |
| Mvmt Flow | 0 | 35 | 414 | 0 | 5 | 267 |



| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.4 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 17 | 252 | 0 | 2 | 164 |
| Future Vol, veh/h | 0 | 17 | 252 | 0 | 2 | 164 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 2 | 2 | 26 | 2 | 2 | 62 |
| Mvmt Flow | 0 | 19 | 283 | 0 | 2 | 184 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 471 | 283 | 0 | 0 | 283 | 0 |
| Stage 1 | 283 | - | - | - | - | - |
| Stage 2 | 188 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 551 | 756 | - | - | 1279 | - |
| Stage 1 | 765 | - | - | - | - | - |
| Stage 2 | 844 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 550 | 756 | - | - | 1279 | - |
| Mov Cap-2 Maneuver | 550 | - | - | - | - | - |
| Stage 1 | 765 | - | - | - | - | - |
| Stage 2 | 842 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 9.9 |  | 0 |  | 0.1 |  |
| HCM LOS | A |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 756 | 1279 | - |
| HCM Lane V/C Ratio |  | - | - | 0.025 | 0.002 | - |
| HCM Control Delay (s) |  | - | - | 9.9 | 7.8 | 0 |
| HCM Lane LOS |  | - | - | A | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.1 | 0 | - |



| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 670 | 301 | 0 | 0 | 301 | 0 |
| Stage 1 | 301 | - | - | - | - | - |
| Stage 2 | 369 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 7.2 | - | - | 4.98 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.2 | - | - | 2.992 | - |
| Pot Cap-1 Maneuver | 422 | 557 | - | - | 897 | - |
| Stage 1 | 751 | - | - | - | - | - |
| Stage 2 | 699 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 374 | 557 | - | - | 897 | - |
| Mov Cap-2 Maneuver | 374 | - | - | - | - | - |
| Stage 1 | 751 | - | - | - | - | - |
| Stage 2 | 620 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 12.5 |  | 0 |  | 3.1 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 557 | 897 | - |
| HCM Lane V/C Ratio |  | - | - | 0.143 | 0.101 | - |
| HCM Control Delay (s) |  | - | - | 12.5 | 9.5 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.5 | 0.3 | - |


| Intersection |  |
| :--- | ---: | :--- |
| Intersection Delay, s/veh | 73.2 |
| Intersection LOS | F |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | * $\uparrow$ | 「 | ${ }^{7}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 73 | 27 | 35 | 187 | 587 | 0 | 0 | 214 | 393 |
| Future Vol, veh/h | 0 | 0 | 0 | 73 | 27 | 35 | 187 | 587 | 0 | 0 | 214 | 393 |
| Peak Hour Factor | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 46 | 23 | 18 | 27 | 10 | 2 | 2 | 12 | 3 |
| Mvmt Flow | 0 | 0 | 0 | 81 | 30 | 39 | 208 | 652 | 0 | 0 | 238 | 437 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 13.5 |  |  | 121.9 |  |  |  | 24.4 |  |
| HCM LOS |  |  |  | B |  |  | F |  |  |  | C |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $89 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, $\%$ | $0 \%$ | $100 \%$ | $11 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 187 | 587 | 82 | 18 | 35 | 214 | 393 |
| LT Vol | 187 | 0 | 73 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 587 | 9 | 18 | 0 | 214 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 35 | 0 | 393 |
| Lane Flow Rate | 208 | 652 | 91 | 20 | 39 | 238 | 437 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.449 | 1.263 | 0.228 | 0.045 | 0.08 | 0.475 | 0.769 |
| Departure Headway (Hd) | 7.771 | 6.972 | 9.444 | 8.582 | 7.773 | 7.61 | 6.743 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 463 | 522 | 383 | 420 | 464 | 476 | 541 |
| Service Time | 5.511 | 4.711 | 7.144 | 6.282 | 5.473 | 5.31 | 4.443 |
| HCM Lane V/C Ratio | 0.449 | 1.249 | 0.238 | 0.048 | 0.084 | 0.5 | 0.808 |
| HCM Control Delay | 16.7 | 155.4 | 14.9 | 11.7 | 11.1 | 17 | 28.4 |
| HCM Lane LOS | C | F | B | B | B | C | D |
| HCM 95th-tile Q | 2.3 | 26.2 | 0.9 | 0.1 | 0.3 | 2.5 | 6.9 |




| Lane | NBLn1 NBLn2 EBLn1 | EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $0 \%$ | $0 \%$ | $92 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thư, | $100 \%$ | $0 \%$ | $8 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, \% | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 325 | 66 | 489 | 81 | 152 | 77 | 210 |
| LT Vol | 0 | 0 | 449 | 0 | 0 | 77 | 0 |
| Through Vol | 325 | 0 | 40 | 81 | 0 | 0 | 210 |
| RT Vol | 0 | 66 | 0 | 0 | 152 | 0 | 0 |
| Lane Flow Rate | 346 | 70 | 521 | 86 | 162 | 82 | 223 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.8 | 0.155 | 1.097 | 0.173 | 0.307 | 0.204 | 0.533 |
| Departure Headway (Hd) | 8.679 | 8.309 | 7.585 | 7.257 | 6.838 | 9.381 | 8.97 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 418 | 435 | 479 | 493 | 524 | 385 | 404 |
| Service Time | 6.379 | 6.009 | 5.349 | 5.02 | 4.602 | 7.081 | 6.67 |
| HCM Lane V/C Ratio | 0.828 | 0.161 | 1.088 | 0.174 | 0.309 | 0.213 | 0.552 |
| HCM Control Delay | 38.1 | 12.5 | 97.4 | 11.5 | 12.6 | 14.5 | 21.5 |
| HCM Lane LOS | E | B | F | B | B | B | C |
| HCM 95th-tile Q | 7.1 | 0.5 | 17.1 | 0.6 | 1.3 | 0.8 | 3 |


| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 2.7 |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |  |
| Lane Configurations |  | ¢ |  |  | $\uparrow$ |  |  | $\uparrow$ |  |  | ¢ |  |  |
| Traffic Vol, veh/h | 17 | 19 | 27 | 0 | 15 | 60 | 6 | 220 | 0 |  | 310 | 37 |  |
| Future Vol, veh/h | 17 | 19 | 27 | 0 | 15 | 60 | 6 | 220 | 0 | 6 | 310 | 37 |  |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |  |
| RT Channelized | - | - | None | - | - | None | - |  | None | - | - | None |  |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |  |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |  |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |  |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 86 |  |
| Heavy Vehicles, \% | 2 | 2 | 15 | 2 | 2 | 7 | 33 | 40 | 2 | 2 | 31 | 17 |  |
| Mvmt Flow | 20 | 22 | 31 | 0 | 17 | 70 | 7 | 256 | 0 | 7 | 360 | 43 |  |



| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.5 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 2 | 4 | 226 | 0 | 21 | 293 |
| Future Vol, veh/h | 2 | 4 | 226 | 0 | 21 | 293 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, \% | 100 | 50 | 50 | 2 | 40 | 34 |
| Mvmt Flow | 2 | 4 | 248 | 0 | 23 | 322 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 616 | 248 | 0 | 0 | 248 | 0 |
| Stage 1 | 248 | - | - | - | - | - |
| Stage 2 | 368 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.7 | - | - | 4.5 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.75 | - | - | 2.56 | - |
| Pot Cap-1 Maneuver | 328 | 687 | - | - | 1125 | - |
| Stage 1 | 610 | - | - | - | - | - |
| Stage 2 | 528 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 320 | 687 | - | - | 1125 | - |
| Mov Cap-2 Maneuver | 320 | - | - | - | - | - |
| Stage 1 | 610 | - | - | - | - | - |
| Stage 2 | 515 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 12.3 |  | 0 |  | 0.6 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 497 | 1125 | - |
| HCM Lane V/C Ratio |  | - | - | 0.013 | 0.021 | - |
| HCM Control Delay (s) |  | - | - | 12.3 | 8.3 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0.1 | - |


| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.3 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | T |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 2 | 2 | 126 | 0 | 8 | 216 |
| Future Vol, veh/h | 2 | 2 | 126 | 0 | 8 | 216 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, \% | 100 | 2 | 25 | 2 | 2 | 13 |
| Mvmt Flow | 2 | 2 | 147 | 0 | 9 | 251 |



| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 2.6 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | MF |  | $\mathbf{F}$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 66 | 125 | 0 | 56 | 225 |
| Future Vol, veh/h | 0 | 66 | 125 | 0 | 56 | 225 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 86 | 86 | 86 | 86 | 86 | 86 |
| Heavy Vehicles, \% | 2 | 85 | 25 | 2 | 100 | 12 |
| Mvmt Flow | 0 | 77 | 145 | 0 | 65 | 262 |


| Major/Minor M | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 537 | 145 | 0 | 0 | 145 | 0 |
| Stage 1 | 145 | - | - | - | - | - |
| Stage 2 | 392 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 7.05 | - | - | 5.1 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.065 | - | - | 3.1 | - |
| Pot Cap-1 Maneuver | 505 | 723 | - | - | 1006 | - |
| Stage 1 | 882 | - | - | - | - | - |
| Stage 2 | 683 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 467 | 723 | - | - | 1006 | - |
| Mov Cap-2 Maneuver | 467 | - | - | - | - | - |
| Stage 1 | 882 | - | - | - | - | - |
| Stage 2 | 631 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 10.6 |  | 0 |  | 1.8 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 723 | 1006 | - |
| HCM Lane V/C Ratio |  | - | - | 0.106 | 0.065 | - |
| HCM Control Delay (s) |  | - | - | 10.6 | 8.8 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.4 | 0.2 | - |


| Intersection |  |
| :--- | ---: | :--- |
| Intersection Delay, s/veh | 15.3 |
| Intersection LOS | C |


| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Configurations |  |  |  |  | ¢4 | 「' | ${ }^{7}$ | 4 |  |  | 4 | 「 |
| Traffic Vol, veh/h | 0 | 0 | 0 | 83 | 25 | 23 | 170 | 333 | 0 | 0 | 147 | 214 |
| Future Vol, veh/h | 0 | 0 | 0 | 83 | 25 | 23 | 170 | 333 | 0 | 0 | 147 | 214 |
| Peak Hour Factor | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 | 0.94 |
| Heavy Vehicles, \% | 2 | 2 | 2 | 72 | 17 | 27 | 55 | 23 | 2 | 2 | 31 | 8 |
| Mvmt Flow | 0 | 0 | 0 | 88 | 27 | 24 | 181 | 354 | 0 | 0 | 156 | 228 |
| Number of Lanes | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| Approach |  |  |  | WB |  |  | NB |  |  |  | SB |  |
| Opposing Approach |  |  |  |  |  |  | SB |  |  |  | NB |  |
| Opposing Lanes |  |  |  | 0 |  |  | 2 |  |  |  | 2 |  |
| Conflicting Approach Left |  |  |  | NB |  |  |  |  |  |  | WB |  |
| Conflicting Lanes Left |  |  |  | 2 |  |  | 0 |  |  |  | 3 |  |
| Conflicting Approach Right |  |  |  | SB |  |  | WB |  |  |  |  |  |
| Conflicting Lanes Right |  |  |  | 2 |  |  | 3 |  |  |  | 0 |  |
| HCM Control Delay |  |  |  | 12.8 |  |  | 18 |  |  |  | 12.4 |  |
| HCM LOS |  |  |  | B |  |  | C |  |  |  | B |  |


| Lane | NBLn1 | NBLn2 | WBLn1 | WBLn2 | WBLn3 | SBLn1 | SBLn2 |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $100 \%$ | $0 \%$ | $91 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ |
| Vol Thru, \% | $0 \%$ | $100 \%$ | $9 \%$ | $100 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Right, \% | $0 \%$ | $0 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $100 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 170 | 333 | 91 | 17 | 23 | 147 | 214 |
| LT Vol | 170 | 0 | 83 | 0 | 0 | 0 | 0 |
| Through Vol | 0 | 333 | 8 | 17 | 0 | 147 | 0 |
| RT Vol | 0 | 0 | 0 | 0 | 23 | 0 | 214 |
| Lane Flow Rate | 181 | 354 | 97 | 18 | 24 | 156 | 228 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.377 | 0.634 | 0.233 | 0.036 | 0.045 | 0.304 | 0.373 |
| Departure Headway (Hd) | 7.5 | 6.446 | 8.624 | 7.212 | 6.673 | 6.996 | 5.892 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 479 | 560 | 417 | 496 | 536 | 513 | 610 |
| Service Time | 5.242 | 4.188 | 6.376 | 4.963 | 4.424 | 4.744 | 3.64 |
| HCM Lane V/C Ratio | 0.378 | 0.632 | 0.233 | 0.036 | 0.045 | 0.304 | 0.374 |
| HCM Control Delay | 14.7 | 19.7 | 14 | 10.2 | 9.7 | 12.8 | 12.1 |
| HCM Lane LOS | B | C | $B$ | $B$ | A | B | B |
| HCM 95th-tile Q | 1.7 | 4.4 | 0.9 | 0.1 | 0.1 | 1.3 | 1.7 |

## Intersection

Intersection Delay, s/veh17.6
Intersection LOS


| Lane | NBLn1 NBLn2 EBLn1 EBLn2 EBLn3 SBLn1 SBLn2 |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: | ---: |
| Vol Left, \% | $0 \%$ | $0 \%$ | $95 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ |
| Vol Thru, \% | $100 \%$ | $0 \%$ | $5 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ |
| Vol Right, $\%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ | $100 \%$ | $0 \%$ | $0 \%$ |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Stop |
| Traffic Vol by Lane | 272 | 67 | 244 | 22 | 122 | 67 | 163 |
| LT Vol | 0 | 0 | 233 | 0 | 0 | 67 | 0 |
| Through Vol | 272 | 0 | 11 | 22 | 0 | 0 | 163 |
| RT Vol | 0 | 67 | 0 | 0 | 122 | 0 | 0 |
| Lane Flow Rate | 299 | 74 | 268 | 24 | 134 | 74 | 179 |
| Geometry Grp | 8 | 8 | 7 | 7 | 7 | 8 | 8 |
| Degree of Util (X) | 0.636 | 0.149 | 0.551 | 0.049 | 0.267 | 0.167 | 0.402 |
| Departure Headway (Hd) | 7.655 | 7.272 | 7.396 | 7.24 | 7.168 | 8.164 | 8.071 |
| Convergence, Y/N | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Cap | 469 | 491 | 485 | 493 | 500 | 437 | 444 |
| Service Time | 5.431 | 5.048 | 5.163 | 5.006 | 4.934 | 5.951 | 5.857 |
| HCM Lane V/C Ratio | 0.638 | 0.151 | 0.553 | 0.049 | 0.268 | 0.169 | 0.403 |
| HCM Control Delay | 23 | 11.3 | 18.9 | 10.4 | 12.5 | 12.6 | 16.2 |
| HCM Lane LOS | C | B | C | B | B | B | C |
| HCM 95th-tile Q | 4.3 | 0.5 | 3.3 | 0.2 | 1.1 | 0.6 | 1.9 |


| Intersection |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Int Delay, s/veh | 2.3 |  |  |  |  |  |  |  |  |  |  |  |
| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Lane Configurations |  | * |  |  | $\leftrightarrow$ |  |  | ¢ ${ }^{\text {d }}$ |  |  | \& |  |
| Traffic Vol, veh/h | 15 | 10 | 15 | 0 | 17 | 52 | 6 | 250 | 2 | 4 | 260 | 15 |
| Future Vol, veh/h | 15 | 10 | 15 | 0 | 17 | 52 | 6 | 250 | 2 | 4 | 260 | 15 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Stop | Stop | Stop | Stop | Free | Free | Free | Free | Free | Free |
| RT Channelized | - | - | None | - | - | None | - | - | None | - | - | None |
| Storage Length | - | - | - | - | - | - | - | - | - | - | - | - |
| Veh in Median Storage, \# | \# | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Grade, \% | - | 0 | - | - | 0 | - | - | 0 | - | - | 0 | - |
| Peak Hour Factor | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 | 91 |
| Heavy Vehicles, \% | 2 | 2 | 29 | 2 | 2 | 32 | 2 | 65 | 2 | 2 | 72 | 14 |
| Mvmt Flow | 16 | 11 | 16 | 0 | 19 | 57 | 7 | 275 | 2 | 4 | 286 | 16 |



| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.7 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | Mr |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 19 | 196 | 6 | 15 | 244 |
| Future Vol, veh/h | 0 | 19 | 196 | 6 | 15 | 244 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 76 | 76 | 76 | 76 | 76 | 76 |
| Heavy Vehicles, \% | 2 | 56 | 71 | 2 | 71 | 54 |
| Mvmt Flow | 0 | 25 | 258 | 8 | 20 | 321 |



| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 0.2 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | r |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 2 | 4 | 139 | 0 | 0 | 114 |
| Future Vol, veh/h | 2 | 4 | 139 | 0 | 0 | 114 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, $\%$ | 100 | 2 | 49 | 2 | 2 | 62 |
| Mvmt Flow | 2 | 4 | 156 | 0 | 0 | 128 |


| Major/Minor M | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 284 | 156 | 0 | 0 | 156 | 0 |
| Stage 1 | 156 | - | - | - | - | - |
| Stage 2 | 128 | - | - | - | - | - |
| Critical Hdwy | 7.4 | 6.22 | - | - | 4.12 | - |
| Critical Hdwy Stg 1 | 6.4 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 6.4 | - | - | - | - | - |
| Follow-up Hdwy | 4.4 | 3.318 | - | - | 2.218 | - |
| Pot Cap-1 Maneuver | 540 | 890 | - | - | 1424 | - |
| Stage 1 | 681 | - | - | - | - | - |
| Stage 2 | 704 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 540 | 890 | - | - | 1424 | - |
| Mov Cap-2 Maneuver | 540 | - | - | - | - | - |
| Stage 1 | 681 | - | - | - | - | - |
| Stage 2 | 704 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 10 |  | 0 |  | 0 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 732 | 1424 | - |
| HCM Lane V/C Ratio |  | - | - | 0.009 | - | - |
| HCM Control Delay (s) |  | - | - | 10 | 0 | - |
| HCM Lane LOS |  | - | - | B | A | - |
| HCM 95th \%tile Q(veh) |  | - | - | 0 | 0 | - |


| Intersection |  |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Int Delay, s/veh | 4.1 |  |  |  |  |  |
| Movement | WBL | WBR | NBT | NBR | SBL | SBT |
| Lane Configurations | T |  | $\uparrow$ |  |  | $\uparrow$ |
| Traffic Vol, veh/h | 0 | 86 | 144 | 0 | 96 | 114 |
| Future Vol, veh/h | 0 | 86 | 144 | 0 | 96 | 114 |
| Conflicting Peds, \#/hr | 0 | 0 | 0 | 0 | 0 | 0 |
| Sign Control | Stop | Stop | Free | Free | Free | Free |
| RT Channelized | - | None | - | None | - | None |
| Storage Length | 0 | - | - | - | - | - |
| Veh in Median Storage, \# | 0 | - | 0 | - | - | 0 |
| Grade, \% | 0 | - | 0 | - | - | 0 |
| Peak Hour Factor | 89 | 89 | 89 | 89 | 89 | 89 |
| Heavy Vehicles, \% | 2 | 100 | 48 | 2 | 90 | 62 |
| Mvmt Flow | 0 | 97 | 162 | 0 | 108 | 128 |


| Major/Minor | Minor1 |  | Major1 |  | Major2 |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Conflicting Flow All | 506 | 162 | 0 | 0 | 162 | 0 |
| Stage 1 | 162 | - | - | - | - | - |
| Stage 2 | 344 | - | - | - | - | - |
| Critical Hdwy | 6.42 | 7.2 | - | - | 5 | - |
| Critical Hdwy Stg 1 | 5.42 | - | - | - | - | - |
| Critical Hdwy Stg 2 | 5.42 | - | - | - | - | - |
| Follow-up Hdwy | 3.518 | 4.2 | - | - | 3.01 | - |
| Pot Cap-1 Maneuver | 526 | 680 | - | - | 1021 | - |
| Stage 1 | 867 | - | - | - | - | - |
| Stage 2 | 718 | - | - | - | - | - |
| Platoon blocked, \% |  |  | - | - |  | - |
| Mov Cap-1 Maneuver | 466 | 680 | - | - | 1021 | - |
| Mov Cap-2 Maneuver | 466 | - | - | - | - | - |
| Stage 1 | 867 | - | - | - | - | - |
| Stage 2 | 636 | - | - | - | - | - |
|  |  |  |  |  |  |  |
| Approach | WB |  | NB |  | SB |  |
| HCM Control Delay, s | 11.2 |  | 0 |  | 4.1 |  |
| HCM LOS | B |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Minor Lane/Major Mvmt |  | NBT | NBRWBLn1 |  | SBL | SBT |
| Capacity (veh/h) |  | - | - | 680 | 1021 | - |
| HCM Lane V/C Ratio |  | - | - | 0.142 | 0.106 | - |
| HCM Control Delay (s) |  | - | - | 11.2 | 8.9 | 0 |
| HCM Lane LOS |  | - | - | B | A | A |
| HCM 95th \%tile Q(veh) |  | - | - | 0.5 | 0.4 | - |

7. Site Closing (2059) Background AM Peak Hour w Signal

1: University Parks Dr (FM 3400) \& SH 6 WBFR


## 7. Site Closing (2059) Background AM Peak Hour w Signal

2: University Parks Dr (FM 3400) \& SH 6 EBFR

8. Site Closing (2059) Background PM Peak Hour w Signal 1: University Parks Dr (FM 3400) \& SH 6 WBFR

8. Site Closing (2059) Background PM Peak Hour w Signal

2: University Parks Dr (FM 3400) \& SH 6 EBFR

9. Site Closing (2059) Background Site Peak Hour w Signal 1: University Parks Dr (FM 3400) \& SH 6 WBFR

|  |  |  | $4$ | $4$ |  | $\dagger$ | $\pm$ |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Group |  | WBT | WBR | NBL | NBT | SBT | SBR | $\varnothing 1$ | $\varnothing 2$ | $\varnothing 4$ | $\emptyset 8$ | $\varnothing 12$ | $\varnothing 16$ |
| Lane Configurations |  | ** | 「 | ${ }^{1}$ | 4 | 4 | 「 |  |  |  |  |  |  |
| Traffic Volume (vph) |  | 25 | 23 | 119 | 325 | 137 | 214 |  |  |  |  |  |  |
| Future Volume (vph) |  | 25 | 23 | 119 | 325 | 137 | 214 |  |  |  |  |  |  |
| Turn Type |  | NA | Perm | pm+pt | NA | NA | Perm |  |  |  |  |  |  |
| Protected Phases |  | 816 |  | 5 | 56 | 6 |  | 1 | 2 | 4 | 8 | 12 | 16 |
| Permitted Phases |  |  | 816 | 56 |  |  | 6 |  |  |  |  |  |  |
| Detector Phase |  | 816 | 816 | 5 | 56 | 6 | 6 |  |  |  |  |  |  |
| Switch Phase |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Minimum Initial (s) |  |  |  | 5.0 |  | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) |  |  |  | 22.5 |  | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) |  |  |  | 52.0 |  | 22.0 | 22.0 | 44.0 | 39.0 | 25.0 | 34.0 | 12.0 | 12.0 |
| Total Split (\%) |  |  |  | 43.3\% |  | 18.3\% | 18.3\% | 37\% | 33\% | 21\% | 28\% | 10\% | 10\% |
| Yellow Time (s) |  |  |  | 3.5 |  | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) |  |  |  | 1.0 |  | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) |  |  |  | 0.0 |  | 0.0 | 0.0 |  |  |  |  |  |  |
| Total Lost Time (s) |  |  |  | 4.5 |  | 4.5 | 4.5 |  |  |  |  |  |  |
| Lead/Lag |  |  |  | Lag |  | Lead | Lead | Lag | Lead | Lag | Lag | Lead | Lead |
| Lead-Lag Optimize? |  |  |  | Yes |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode |  |  |  | None |  | Max | Max | None | Max | None | None | None | None |
| Act Effct Green (s) |  | 16.0 | 16.0 | 63.0 | 68.6 | 18.2 | 18.2 |  |  |  |  |  |  |
| Actuated g/C Ratio |  | 0.18 | 0.18 | 0.70 | 0.76 | 0.20 | 0.20 |  |  |  |  |  |  |
| v/c Ratio |  | 0.20 | 0.07 | 0.15 | 0.29 | 0.49 | 0.47 |  |  |  |  |  |  |
| Control Delay |  | 32.7 | 0.4 | 1.2 | 1.5 | 40.4 | 8.5 |  |  |  |  |  |  |
| Queue Delay |  | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 |  |  |  |  |  |  |
| Total Delay |  | 32.7 | 0.4 | 1.2 | 1.7 | 40.4 | 8.5 |  |  |  |  |  |  |
| LOS |  | C | A | A | A | D | A |  |  |  |  |  |  |
| Approach Delay |  | 25.5 |  |  | 1.6 | 20.9 |  |  |  |  |  |  |  |
| Approach LOS |  | C |  |  | A | C |  |  |  |  |  |  |  |
| Intersection Summary |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cycle Length: 120 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Actuated Cycle Length: 90.1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Natural Cycle: 90 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Control Type: Semi Act-Uncoord |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Maximum v/c Ratio: 0.49 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Intersection Signal Delay: 11.9 |  |  |  |  | Intersection LOS: B |  |  |  |  |  |  |  |  |
| Intersection Capacity Utilization 35.3\% |  |  |  |  | ICU Level of Service A |  |  |  |  |  |  |  |  |
| Analysis Period (min) 15 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Splits and Phases: 1: University Parks Dr (FM 3400) \& SH 6 WBFR |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ${ }^{\# 2}{ }_{\square}$ |  |  |  |  |  |  | $\stackrel{2}{4}_{\square 12}$ | $\#_{01}$ |  |  |  |  |  |
| 39 s |  |  | 25 s |  |  |  | 12 s | 44 s |  |  |  |  |  |
|  | $\begin{array}{\|l\|l\|} \hline \# 1 \\ 405 \end{array}$ |  |  |  |  |  | ${ }^{\# 1}{ }^{1}{ }^{\circ}$ |  |  | ${ }^{1}$ |  |  |  |
| 12 s | 52 s |  |  |  |  |  | 2 s |  | 34 s |  |  |  |  |

9. Site Closing (2059) Background Site Peak Hour w Signal

2: University Parks Dr (FM 3400) \& SH 6 EBFR




|  |  |  | $4$ |  |  | $\ddagger$ | 4 |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Lane Group |  | WBT | WBR | NBL | NBT | SBT | SBR | $\varnothing 1$ | $\varnothing 2$ | $\emptyset 4$ | $\emptyset 8$ | $\varnothing 12$ | $\varnothing 16$ |
| Lane Configurations |  | ¢4 | 「 | ${ }^{7}$ | 4 | 4 | 「' |  |  |  |  |  |  |
| Traffic Volume (vph) |  | 27 | 35 | 187 | 587 | 214 | 393 |  |  |  |  |  |  |
| Future Volume (vph) |  | 27 | 35 | 187 | 587 | 214 | 393 |  |  |  |  |  |  |
| Turn Type |  | NA | Perm | pm+pt | NA | NA | Perm |  |  |  |  |  |  |
| Protected Phases |  | 816 |  | 5 | 56 | 6 |  | 1 | 2 | 4 | 8 | 12 | 16 |
| Permitted Phases |  |  | 816 | 56 |  |  | 6 |  |  |  |  |  |  |
| Detector Phase |  | 816 | 816 | 5 | 56 | 6 | 6 |  |  |  |  |  |  |
| Switch Phase |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Minimum Initial (s) |  |  |  | 5.0 |  | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Minimum Split (s) |  |  |  | 22.5 |  | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 | 22.5 |
| Total Split (s) |  |  |  | 54.0 |  | 29.0 | 29.0 | 42.0 | 39.0 | 27.0 | 25.0 | 12.0 | 12.0 |
| Total Split (\%) |  |  |  | 45.0\% |  | 24.2\% | 24.2\% | 35\% | 33\% | 23\% | 21\% | 10\% | 10\% |
| Yellow Time (s) |  |  |  | 3.5 |  | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 |
| All-Red Time (s) |  |  |  | 1.0 |  | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| Lost Time Adjust (s) |  |  |  | 0.0 |  | 0.0 | 0.0 |  |  |  |  |  |  |
| Total Lost Time (s) |  |  |  | 4.5 |  | 4.5 | 4.5 |  |  |  |  |  |  |
| Lead/Lag |  |  |  | Lag |  | Lead | Lead | Lag | Lead | Lag | Lag | Lead | Lead |
| Lead-Lag Optimize? |  |  |  | Yes |  | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Recall Mode |  |  |  | None |  | Max | Max | None | Max | None | None | None | None |
| Act Effct Green (s) |  | 19.7 | 19.7 | 74.8 | 79.3 | 24.5 | 24.5 |  |  |  |  |  |  |
| Actuated g/C Ratio |  | 0.18 | 0.18 | 0.69 | 0.73 | 0.23 | 0.23 |  |  |  |  |  |  |
| v/c Ratio |  | 0.24 | 0.11 | 0.26 | 0.51 | 0.62 | 0.70 |  |  |  |  |  |  |
| Control Delay |  | 39.4 | 0.6 | 2.1 | 4.5 | 46.4 | 15.8 |  |  |  |  |  |  |
| Queue Delay |  | 0.0 | 0.0 | 0.2 | 0.6 | 0.0 | 0.0 |  |  |  |  |  |  |
| Total Delay |  | 39.4 | 0.6 | 2.3 | 5.1 | 46.4 | 15.8 |  |  |  |  |  |  |
| LOS |  | D | A | A | A | D | B |  |  |  |  |  |  |
| Approach Delay |  | 29.3 |  |  | 4.5 | 26.6 |  |  |  |  |  |  |  |
| Approach LOS |  | C |  |  | A | C |  |  |  |  |  |  |  |
| Intersection Summary |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cycle Length: 120 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Actuated Cycle Length: 108.1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Natural Cycle: 90 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Control Type: Semi Act-Uncoord |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Maximum v/c Ratio: 0.70 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Intersection Signal Delay: 15.5 |  |  |  |  | Intersection LOS: B |  |  |  |  |  |  |  |  |
| Intersection Capacity Utilization 65.0\% |  |  |  |  | ICU Level of Service C |  |  |  |  |  |  |  |  |
| Analysis Period (min) 15 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Splits and Phases: 1: University Parks Dr (FM 3400) \& SH 6 WBFR |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | $\# 2$ |  |  |  | $\#_{\square 12}$ | $\#_{\square 1}$ |  |  |  |  |  |
| 39 s |  |  | 27 s |  |  |  | 12 s | 42 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  | ${ }^{\# 1}$ |  |  |  |
| 12 s 54 s |  |  |  |  |  |  | 29 s |  |  |  |  |  |  |





## Appendix G: TxDOT Access Management Manual Extract

## Access Management Manual



## July 2011

© 2011 by Texas Department of Transportation
(512) 302-2453 all rights reserved

Table 2-2: Other State Highways Connection Spacing Criteria

| Other State Highways Minimum Connection Spacing ${ }^{(1)(2)(3)}$ |  |
| :--- | :---: |
| Posted Speed (mph) | Distance (ft) |
| $\leq 30$ | 200 |
| 35 | 250 |
| 40 | 305 |
| 45 | 360 |
| 50 | 425 |
| (1) Distances are for passenger cars on level grade. These distances may be <br> adjusted for downgrades and/or significant truck traffic. Where present or <br> projected traffic operations indicate specific needs, consideration may be <br> given to intersection sight distance and operational gap acceptance measure- <br> ment adjustments. <br> (2) When these values are not attainable, refer to the variance process as <br> described in Chapter 2, Section 5. <br> (3) Access spacing values shown in this table do not apply to rural highways <br> outside of metropolitan planning organization boundaries where there is little, <br> if any, potential for development with current ADT levels below 2000. <br> Access connection spacing below the values shown in this table may be <br> approved based on safety and operational considerations as determined by <br> TxDOT. |  |

Corner clearance refers to the separation of access connections from roadway intersections. Table 2-2 provides minimum corner clearance criteria.

Where adequate access connection spacing cannot be achieved, the permitting authority may allow for a lesser spacing when shared access is established with an abutting property. Where no other alternatives exist, construction of an access connection may be allowed along the property line farthest from the intersection. To provide reasonable access under these conditions but also provide the safest operation, consideration should be given to designing the driveway connection to allow only the right-in turning movement or only the right-in/right out turning movements if feasible.

## Auxiliary Lanes

This subsection describes the basic use and functional criteria associated with auxiliary lanes. Auxiliary lanes consist of left-turn and right-turn movements, deceleration, acceleration, and their associated transitions and storage requirements. Left-turn movements may pose challenges at driveways and street intersections. They may increase conflicts, delays, and crashes and often complicate traffic signal timing. These problems are especially acute at major highway intersections
where heavy left-turn movements take place, but also occur where left-turn movements enter or leave driveways serving adjacent land development. As with left-turn movements, right-turn movements pose problems at both driveways and street intersections. Right-turn movements increase conflicts, delays, and crashes, particularly where a speed differential of 10 mph or more exists between the speed of through traffic and the vehicles that are turning right.

Table 2-3 presents thresholds for auxiliary lanes. These thresholds represent examples of where left turn and right turn lanes should be considered. Refer to the TxDOT Roadway Design Manual, Chapter 3, for proper acceleration and deceleration lengths.

Table 2-3: Auxiliary Lane Thresholds

| Median Type | Left Turn to or from Property |  | Right Turn to or from Property (5) |  |
| :--- | :--- | :--- | :--- | :--- |

(1) Refer to Table 3-11, TxDOT Roadway Design Manual, for alternative left-turn-bay operational considerations.
(2) A left-turn acceleration lane may be required if it would provide a benefit to the safety and operation of the roadway. A left-turn acceleration lane would interfere with the left-turn ingress movements to any other access connection.
(3) Additional right-turn considerations:

- Conditions for providing an exclusive right-turn lane when the right-turn traffic volume projections are less than indicated in Table 2-3:
- High crash experience
- Heavier than normal peak flow movements on the main roadway
- Large volume of truck traffic
- Highways where sight distance is limited
- Conditions for NOT requiring a right-turn lane where right-turn volumes are more than indicated in Table 2-3:
- Dense or built-out corridor where space is limited
- Where queues of stopped vehicles would block the access to the right turn lane
- Where sufficient length of property width is not available for the appropriate design
(4) The acceleration lane should not interfere with any downstream access connection.
- The distance from the end of the acceleration lane taper to the next unsignalized downstream access connection should be equal to or greater than the distances found in Table 2-2.
- Additionally, if the next access connection is signalized, the distance from the end of the acceleration lane taper to the back of the 90th percentile queue should be greater than or equal to the distances found Table 2-2.
(5) Continuous right-turn lanes can provide mobility benefits both for through movements and for the turning vehicles. ${ }^{\text {a }}$ Access connections within a continuous right turn lane should meet the spacing requirements found in Table 22. However, when combined with crossing left in movements, a continuous right-turn lane can introduce additional operational conflicts.


## Appendix H: TxDOT Roadway Design Manual Extract

## Roadway Design Manual


© 2022 by Texas Department of Transportation
(512) 463-8630 all rights reserved


TYPICAL SECTION


## TYPICAL CLIMBING LANE SECTION

Notes:
(1) For widths of travel lanes and shoulders, see Table 3-8.
(2) See Table 2-12
(3) See Chapter 2, Section 6 for side slope rates
(4) Slope may be exceeded in rock cuts, for restricted right of way or deep cut conditions, or where ditch is not within the horizontal clearance requirements.
(5) See discussion of preferred ditch sections in Chapter 2, Section 6.
(6) See Table 3-1 (Width of Speed Change Lanes) for climbing lane widths.
(7) Consideration should be given to removing fixed objects 10 ft beyond the toe of slope.
Figure 3-7. Cross Sections for Arterial and Collector Two-Lane Rural Highways.
Left-Turn Deceleration Lanes. The additional expense of adding left-turn lanes on two-lane highways at intersecting cross roads is often not justified due to low volumes. For certain moderate or high-volume two-lane highways with heavy left-turn movements, however, left-turn lanes may be
justified in view of reduced road user crash costs. Table 3-10 provides recommendations for when left-turn lanes should be considered for a typical two-lane highway intersection. Lengths of leftturn deceleration lanes are provided in Table 3-12.

In instances on three-leg intersections where a left turn lane is not warranted due to low major roadway volume, but separation of through and turning traffic is still desired due to moderate to high left turn volume, a bypass lane can be installed (see Figure 3-8). For width of left-turn deceleration lanes see Table 3-1.

Table 3-10. Guide for Left-Turn Lane Warrants on Two-Lane Highways in Rural Areas ${ }^{1}$

| Left-Turn Lane PeakHour Volume (veh/hr) | Three-Leg Intersection Major-Road Peak-Hour Volume (veh/hr/ln) for a Bypass Lane | Three-Leg Intersection Major-Road Peak-Hour Volume (veh/hr/ln) for a Left-Turn Lane | Four-Leg Intersection Major-Road Peak-Hour Volume (veh/hr/ln) for a Left-Turn Lane |
| :---: | :---: | :---: | :---: |
| 5 | 50 | 200 | 150 |
| 10 | 50 | 100 | 50 |
| 15 | $<50$ | 100 | 50 |
| 20 | $<50$ | 50 | $<50$ |
| 25 | $<50$ | 50 | $<50$ |
| 30 | $<50$ | 50 | $<50$ |
| 35 | $<50$ | 50 | $<50$ |
| 40 | $<50$ | 50 | $<50$ |
| 45 | $<50$ | 50 | $<50$ |
| 50 or More | $<50$ | 50 | $<50$ |
| Note: <br> 1. These guidelines apply where the major road is uncontrolled and the minor-road approaches are stop- or yield-controlled. Both the left-turn peak-hour volume and the major-road volume warrants should be met as shown in Figure 3-8. |  |  |  |



Figure 3-8. Suggested Left-Turn Warrants Based on Results from Benefit-Cost Evaluations for Intersections on Two-Lane Highways in Rural Areas.
Source: AASHTO's A Policy on Geometric Design of Highways and Streets
Example:
Three Leg Intersection
Left Turn Volume $=17 \mathrm{veh} / \mathrm{hr}$
Major Road Volume $=150 \mathrm{veh} / \mathrm{hr} ; 2 \ln$
Choose the next highest turn lane volume of $20 \mathrm{veh} / \mathrm{h}$. The major road is $75 \mathrm{veh} / \mathrm{h} / \mathrm{ln}$, which is greater than 50 , therefore a left turn lane is warranted.

Where used, left-turn lanes should be delineated with striping and pavement markers or jiggle bars. Passing should be restricted in advance of the intersection, and horizontal alignment shifts of the approaching travel lanes should be gradual. Figure 3-9 shows typical geometry for a rural two-lane highway with left-turn bays at an intersecting crossroad.


Figure 3-9. Typical Two-Lane Highway Intersection with Left-Turn Lanes.
Right-Turn Deceleration Lanes. Shoulders 10-ft wide alongside the traffic lanes generally provide sufficient area for acceleration or deceleration of right-turning vehicles. Where the right turn deceleration or acceleration lane is being constructed adjacent to the through lanes, the minimum lane
width is $10-\mathrm{ft}$ with a $2-\mathrm{ft}$ surfaced shoulder. Speed change lanes should be symmetrical along both sides of the highway to provide drivers with a balanced section.

A deceleration-acceleration lane on one side of a two-lane highway, such as at a "tee" intersection, results in the appearance of a three-lane highway and may result in driver confusion. Therefore, right-turn speed change lanes are generally inappropriate for "tee" intersection design except where a four-lane section is provided. An example of this configuration is two through lanes, one median left turn lane and one right acceleration/deceleration lane.

Figure 3-5 shows an example of right-turn deceleration lanes.
The length of a right-turn deceleration lane is the same as that for a left-turn lane (see Table 3-12). On some low-volume rural highways, it may be acceptable to provide right turn lanes shorter than the lengths given in Table 3-12.

Right-Turn Acceleration Lanes. Right-turn acceleration lanes may be appropriate on some two-lane rural highways such as high-volume highways where significant truck percentages are encountered. See Table 3-13 for acceleration distances and taper lengths.

## Grade Separations and Interchanges

See Grade Separations and Interchanges, Freeways and Chapter 10 of AASHTO's A Policy on Geometric Design of Highways and Streets.

## Intersections

The provision of adequate sight distance is of utmost importance in the design of intersections along two-lane rural highways. At intersections, consideration should be given to avoid steep profile grades and limited horizontal or vertical sight distance. An intersection should not be situated just beyond a short crest vertical curve or a sharp horizontal curve. Where necessary, backslopes should be flattened and horizontal and vertical curves lengthened to provide additional sight distance. For more information on intersection sight distance, see Intersection Sight Distance in Chapter 2.

The roadways should intersect at approximately right angles and should not intersect less than 75 degrees. Where crossroad skew is less than 75 degrees to the highway, the crossroad should be realigned to provide for a near perpendicular crossing. As a general rule, the higher the functional classification, the closer the crossroad intersection should be to 90 degrees.

Chapter 7 provides additional information regarding the accommodation of various types of truck class vehicles in intersection design in the section on Minimum Designs for Truck and Bus Turns. Further information on intersection design may also be found in AASHTO's A Policy on Geometric Design of Highways and Streets.
taper, and deceleration lengths for design are illustrated in Figure 3-13 and summarized in Table 312. Taper lengths shorter than those in Table 3-12 may be acceptable on some low volume rural highways. Also, adjustments for grade are given in Table 3-14

(See Table 3-3 for taper, deceleration and storage lengths) SINGLE LEFT-TURN LANE

(See Table 3-4 for taper, deceleration and storage lengths) DUAL LEFT-TURN LANE
Figure 3-13. Left Turn Lanes on Multilane Rural Highways.

Table 3-12: Lengths of Median Turn Lanes Multilane Rural Highways

| Mainlane Design <br> Speed (mph) | Taper Length <br> $(\mathbf{f t})^{\mathbf{1}}$ | Deceleration <br> Length (ft) $^{\mathbf{2}}$ |
| :---: | :---: | :---: |
| 30 | 50 | 150 |
| 35 | 50 | 205 |
| 40 | 50 | 265 |
| 45 | 100 | 340 |
| 50 | 100 | 415 |
| 55 | 100 | 505 |
| 60 | 150 | 600 |
| 65 | 150 | 700 |
| 70 | 150 | 815 |
| 75 | 150 | 935 |
| 80 | 150 | 1,060 |

Notes:

1. For low volume median openings, such as those serving private drives or U-turns, a taper length of $100-\mathrm{ft}$ may be used regardless of mainlane design speed.
2. Based on $6.5 \mathrm{ft} / \mathrm{s}^{2}$ deceleration to stopped condition throughout the entire length. Larger deceleration rates may be used when deceleration lengths based on $6.5 \mathrm{ft} / \mathrm{s}^{2}$ are impractical.

Storage Length Calculations. For storage length calculations on multi-lane rural highways, the storage length calculations in Urban Streets apply.

Right Turn Lane. Right turn lanes (12-ft lane with 4-ft adjacent shoulders) provide deceleration or acceleration areas for right-turning vehicles. The deceleration length and taper lengths for right turn lanes are the same as for Median Turn lanes (see Table 3-12). Adjustment factors for grade effects are shown in Table 3-14.

Acceleration Lanes. Acceleration lanes for right-turning or left-turning vehicles may be desirable for vehicles entering on multi-lane rural highways. Examples of both tapered and parallel accelerations lanes are shown in Figure 3-14. Recommended acceleration lengths are shown in Table 3-13. Adjustments for grade are given in Table 3-14.


## Parallel Design <br> - B -

Figure 3-14. Examples of Tapered and Parallel Acceleration Lanes.
Notes:

1. $\mathrm{L}_{\mathrm{a}}$ is the recommended acceleration length as shown in Table 3-13 or as adjusted by Table 314.
2. Point A is the feature that controls speed on the acceleration lane. La should not start back on the curvature of the ramp unless the radius equals $1,000-\mathrm{ft}$ or more.
3. $\mathrm{L}_{\mathrm{g}}$ is the recommended gap acceptance length. Lg should be a minimum of 300 to $500-\mathrm{ft}$ depending on nose width. (Nose width 2'-10')
4. The value of $L_{a}$ or $L_{g}$, whichever produces the greater distance downstream from where the nose equals $2-\mathrm{ft}$, is suggested for use in the design of the acceleration lane distance.

Table 3-13: Minimum Acceleration Lane Lengths for Entrance Terminals with Flat Grades of Less Than 3\%

| Design Speed of Controlling Feature on Ramp (mph) |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Highway Design Speed (mph) | Stop Condition | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
| 30 | 180 | 140 | - | - | - | - | - | - | - |
| 35 | 280 | 220 | 160 | - | - | - | - | - | - |
| 40 | 360 | 300 | 270 | 210 | 120 | - | - | - | - |
| 45 | 560 | 490 | 440 | 380 | 280 | 160 | - | - | - |
| 50 | 720 | 660 | 610 | 550 | 450 | 350 | 130 | - | - |
| 55 | 960 | 900 | 810 | 780 | 670 | 550 | 320 | 150 | - |
| 60 | 1,200 | 1,140 | 1,100 | 1,020 | 910 | 800 | 550 | 420 | 180 |
| 65 | 1,410 | 1,350 | 1,310 | 1,220 | 1,120 | 1,000 | 770 | 600 | 370 |
| 70 | 1,620 | 1,560 | 1,520 | 1,420 | 1,350 | 1,230 | 1,000 | 820 | 580 |
| 75 | 1,790 | 1,730 | 1,630 | 1,580 | 1,510 | 1,420 | 1,160 | 1,040 | 780 |
| 80 | 2,000 | 1,900 | 1,800 | 1,750 | 1,680 | 1,600 | 1,340 | 1,240 | 980 |

Table 3-14: Speed Change Lane Adjustment Factors as a Function of a Grade

| (US Customary) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Deceleration Lanes |  |  |  |  |  |  |  |  |
| Design <br> Speed of Roadway (mph) | Ratio of Length on Grade to Length on Level ${ }^{1}$ |  |  |  |  |  |  |  |
|  | 3 to $4 \%$ Upgrade |  | 3 to $4 \%$ Downgrade |  | 5 to 6\% Upgrade |  | 5 to 6\% Downgrade |  |
| All | 0.9 |  | 1.2 |  | 0.8 |  | 1.35 |  |
| Acceleration Lanes |  |  |  |  |  |  |  |  |
| Design Speed of Roadway (mph) | Ratio of Length on Grade to Length on Level ${ }^{1}$ for Design Speed (mph) of Turning Roadway Curve |  |  |  |  |  |  |  |
|  | 20 | 25 | 30 | 35 | 40 | 45 | 50 | All Speeds |
|  | 3 to 4 \% Upgrade |  |  |  |  |  |  | $\begin{gathered} 3 \text { to 4\% } \\ \text { Downgrade } \end{gathered}$ |
| 40 | 1.3 | 1.3 | 1.3 | 1.3 | ---- | ---- | ---- | 0.7 |
| 45 | 1.3 | 1.3 | 1.35 | 1.35 | ---- | ---- | ---- | 0.675 |
| 50 | 1.3 | 1.35 | 1.4 | 1.4 | 1.4 | ---- | ---- | 0.65 |
| 55 | 1.35 | 1.4 | 1.45 | 1.45 | 1.45 | 1.45 | ---- | 0.625 |
| 60 | 1.4 | 1.45 | 1.5 | 1.5 | 1.5 | 1.55 | 1.6 | 0.6 |

Table 3-14: Speed Change Lane Adjustment Factors as a Function of a Grade

| (US Customary) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 65 | 1.45 | 1.5 | 1.55 | 1.55 | 1.6 | 1.65 | 1.7 | 0.6 |
| 70 | 1.5 | 1.55 | 1.6 | 1.65 | 1.7 | 1.75 | 1.8 | 0.6 |
| 75 | 1.6 | 1.65 | 1.7 | 1.75 | 1.8 | 1.9 | 2.0 | 0.6 |
| 80 | 1.7 | 1.75 | 1.8 | 1.9 | 2.0 | 2.05 | 2.1 | 0.6 |
|  | 5 to 6\% Upgrade |  |  |  |  |  |  | $\begin{gathered} 5 \text { to 6\% } \\ \text { Downgrade } \end{gathered}$ |
| 40 | 1.5 | 1.5 | 1.5 | 1.6 | ---- | ---- | ---- | 0.6 |
| 45 | 1.5 | 1.55 | 1.6 | 1.6 | ---- | ---- | ---- | 0.575 |
| 50 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | ---- | 0.55 |
| 55 | 1.6 | 1.7 | 1.8 | 1.9 | 2.05 | 2.1 | ---- | 0.525 |
| 60 | 1.7 | 1.8 | 1.9 | 2.05 | 2.2 | 2.4 | 2.5 | 0.5 |
| 65 | 1.85 | 1.95 | 2.05 | 2.2 | 2.4 | 2.6 | 2.75 | 0.5 |
| 70 | 2.0 | 2.1 | 2.2 | 2.4 | 2.6 | 2.8 | 3.0 | 0.5 |
| 75 | 2.15 | 2.25 | 2.35 | 2.58 | 2.8 | 3.03 | 3.25 | 0.5 |
| 80 | 2.3 | 2.4 | 2.5 | 2.75 | 3.0 | 3.25 | 3.5 | 0.5 |
| Note: <br> 1. Ratio in this table multiplied by length of deceleration or acceleration distances in Table 3-3 and Table 3-13, gives length of deceleration/acceleration distance on grade. |  |  |  |  |  |  |  |  |

## Travel Lanes and Shoulders

Travel Lanes. Travel lanes should be provided with widths as shown in Table 3-11. The Highway Capacity Manual should be consulted to determine the number of lanes to be used in the design.

Shoulders. Shoulders should be provided with widths as shown in Table 3-11.

## Intersections

In the design of intersections, careful consideration should be given to the appearance of the intersection from the driver's perspective. Design should be kept simple to avoid driver confusion. In addition, adequate sight distance should be provided, especially in maneuver or conflict areas. See Stopping Sight Distance and Intersection Sight Distance in Chapter 2, Section 4 for further information regarding sight distance. For guidance on Alternative Intersections and Interchanges, see Appendix E.

Right angle crossings are preferred to skewed crossings. Alignment modifications are generally necessary where skew angles exceed 75 or 105 degrees. Turn Lanes may be provided in accordance with previous discussions in this manual.

Table 3-3 provides recommended taper lengths, deceleration lengths, and storage lengths for leftturn lanes. These guidelines may also be applied to the design of right-turn lanes.

Table 3-3: Lengths of Single Left-Turn and Right-Turn Lanes on Urban Streets ${ }^{1}$

| Design Speed (mph) | Deceleration Length ${ }^{2}$ (ft) Speed Differential ${ }^{3}$ |  |  | Taper Length (ft) | Minimum ${ }^{6,7}$ <br> Storage Length <br> (ft) |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | None | 5-mph ${ }^{4}$ | 10-mph ${ }^{5}$ |  |  |
| 30 | 150 | 105 | 70 | 50 | 100 |
| 35 | 205 | 150 | 105 | 50 | 100 |
| 40 | 265 | 205 | 150 | 50 | 100 |
| 45 | 340 | 265 | 205 | 100 | 100 |
| 50 | 415 | 340 | 265 | 100 | 100 |
| 55 | 505 | 415 | 340 | 100 | 100 |
| 60 | 600 | 505 | 415 | 100 | 100 |

## Notes:

1. The minimum length of a left-turn lane is the sum of the deceleration length plus queue storage. In order to determine the design length, the deceleration plus storage length must be calculated for peak and off-peak periods, the longest of these two lengths will be the minimum design length.
2. Based on $6.5 \mathrm{ft} / \mathrm{s} 2$ deceleration to stopped condition throughout the entire length. Larger deceleration rates may be used when deceleration lengths based on $6.5 \mathrm{ft} / \mathrm{s} 2$ are impractical.
3. Speed differential $=$ the difference between the assumed speed of a turning vehicle at the moment when it arrives at the taper and the design speed of the roadway.
4. Based on $6.5 \mathrm{ft} / \mathrm{s} 2$ deceleration from 5 mph less than design speed to stopped condition throughout the entire length.
5. Based on $6.5 \mathrm{ft} / \mathrm{s} 2$ deceleration from 10 mph less than design speed to stopped condition throughout the entire length.
6. See Storage Length Calculations discussion. For right-turn lanes the minimum queue storage is $30-\mathrm{ft}$.
7. The minimum storage length applies when: (1) the required queue storage length calculated is less than the minimum length, or (2) there is no rational method for estimating the left-turn volume. A design waiver will be required only if the 100 ft minimum storage length cannot be provided.

Deceleration Length. Deceleration length, with no speed differential, as shown in Table 3-3 assumes that deceleration starts at the beginning of the taper and continues to a stopped condition. Where providing this deceleration length is impractical, it may be acceptable to assume that turning vehicles will begin decelerating prior to arriving at the taper and clearing the through traffic lane. Using this assumption, see Table 3-3 for 5 mph and 10 mph speed differential deceleration lengths.

Storage Length Calculations. The required storage may be obtained using an acceptable traffic model such as the latest version of the Highway Capacity Manual software (HCS), SYNCHRO, or VISSIM or other acceptable simulation models. Where such model results have not been applied, the following formulas may be used:

## Signalized:

$\mathrm{L}=\left(\frac{\mathrm{V}}{\mathrm{N}}\right)(2)(\mathrm{S})$

Where:

- $\quad L=$ storage length, ft
- $\quad V=$ left-turn volume per hour, vph

Consider multiple turn lanes when $V>150$.

- $N=$ number of cycles per hour

Recommend between 20 and 25 cycles per hour for peak period operations if unknown.

- $2=$ a factor that provides for storage of all left-turning vehicles on most cycles

A value of 1.8 may be acceptable on collector streets.

- $S=$ queue storage length, in feet, per vehicle

| $\mathbf{\%}$ <br> trucks | $\mathbf{S}$ <br> $(\mathbf{f t})$ |
| :---: | :---: |
| $<5$ | 25 |
| $5-9$ | 30 |
| $10-14$ | 35 |
| $15-19$ | 40 |

## Unsignalized:

$\mathrm{L}=\left(\frac{\mathrm{V}}{30}\right)(2)(\mathrm{S})$

Where:

- $L=$ storage length in feet
- $\quad V=$ left-turn volume per hour, vph
- $2=$ a factor that provides for storage of all left-turning vehicles on most cycles A value of 1.8 may be acceptable on collector streets.
- $\quad S=$ queue storage length, in feet, per vehicle

| $\mathbf{\%}$ <br> trucks | $\mathbf{S}$ <br> $(\mathbf{f t})$ |
| :---: | :---: |
| $<5$ | 25 |


| $\mathbf{\%}$ <br> trucks | $\mathbf{S}$ <br> $(\mathbf{f t})$ |
| :---: | :---: |
| $5-9$ | 30 |
| $10-14$ | 35 |
| $15-19$ | 40 |

Dual Left-Turn Deceleration Lanes. For major signalized intersections where high peak hour leftturn volumes exceeding 150 vehicles per hour are expected, dual left-turn lanes should be considered. As with single left-turn lanes, dual left-turn lanes should include lengths for deceleration, storage, and taper. Table 3-4 provides recommended lengths for dual left-turn lanes.

Table 3-4: Lengths of Dual Left-Turn and Right-Turn Lanes on Urban Streets ${ }^{1}$

| Design Speed (mph) | Deceleration Lengths ${ }^{\mathbf{2}} \mathbf{( f t )}$ | Taper Length (ft) | Minimum $^{\mathbf{3}, 4}$ <br> Storage Length (ft) |
| :---: | :---: | :---: | :---: |
| 30 | 150 | 100 | 100 |
| 35 | 205 | 100 | 100 |
| 40 | 265 | 100 | 100 |
| 45 | 340 | 150 | 100 |
| 50 | 415 | 150 | 100 |
| 55 | 505 | 150 | 100 |
| 60 | 600 | 150 | 100 |

Notes:

1. The minimum length of a left-turn lane is the sum of the deceleration length plus queue storage. In order to determine the design length, the deceleration plus storage length must be calculated for peak and off-peak periods, the longest total length will be the minimum design length.
2. Based on $6.5 \mathrm{ft} / \mathrm{s}^{2}$ deceleration to stopped condition throughout the entire length. Larger deceleration rates may be used when deceleration lengths based on $6.5 \mathrm{ft} . / \mathrm{s}^{2}$ are impractical.
3. See Storage Length Calculations discussion.
4. The minimum storage length shall apply when: (1) the required queue storage length calculated is less than the minimum length, or (2) there is no rational method for estimating the left-turn volume. A design waiver will be required only if the 100 ft minimum storage length cannot be provided.

Right-Turn Deceleration Lanes. Figure 3-5 illustrates a right-turn deceleration lane. The length of a single right-turn deceleration lane is the same as that for a single left-turn lane (Table 3-3). However, the minimum queue storage is 30 ft for right-turn lanes. The length for a dual right-turn lane is the same for a dual left-turn lane (Table 3-4). Refer to the TxDOT Access Management Manual for guidelines as to when to consider a right-turn deceleration lane.

## APPENDIX I/II-G

## ORIGINAL LANDFILL PERMIT

July 26, 1977
lionorable M. A. Suith
Mayor of Waco
P. O. Box 1370

Weco, Texas 76703
Subject: Solid Waste - McLennan County City of Waco - Solid Waste Permit No. 1039 $3,000 \mathrm{Ft}$. SW of Int. of FM 434 (S. 3rd St.) and Tinsley Rd. and $1 / 3 \mathrm{Mi}$. S of Tinsley Rd. Coordinates: N $31^{\circ} 30.00^{\prime}$ W $97^{\circ} 05.00^{\circ}$

Dear Mayor Smith:
A permit for your solid waste disposal site at the above location is enclosed. We appreciate your cooperation in our evaluation and approval procedures.

Acceptance of this permit constitutes an acknowledgement that the permittee will comply with all of the terms, provisions, conditions, iimitations, and other restrictions embodied in this permit; with the "Municipal Solid Waste Management Regulations" of the Texas Department of Health Resources; and with the pertinent laws of the State of Texas.

We are enclosing a copy of this Department's latest "Municipal Solid Waste Management Regulations" which became effective Apri1 20, 1977. Particular attention is Invited to Section $F$ which prescribes procedures which must be followed with respect to ground and surface water protection; the disposal of mixed and special wastes; and disposal of hazardous wastes.

# Your solid waste disposal facility is subject to inspection by State and local authorities and public health officials at any reasonable time. If this Department can provide any further information or should you have any questions regarding the requirements of this Department's "Municipal Solid Waste Management Regulations", please feel free to contact us at any time. 

Sincerely,

G. R, Herzik, Jr., P. E.<br>Deputy Director for thvironmental<br>and Consumer Health Protection

## JCC:lat <br> Enclosure

ce: Region 6, TDHR
Waco-Mchennan County Health Department
Senator Grant Jones
Representative Betty Denton
Represantative Lyadon O1son, Jr.

## Texas Department of Health Resources

AUSTIN

TEXAS
INTER-OFFICE

```
    Edwin B. Fuller
FROM
    Hearings Examiner
T0 Division of Solid Waste Management
subuect _ Solid Waste - McLennan County
    City of Waco
    Permit Application No. }103
    The attached permit with special provisions has been signed
    and sealed by the Director and received a final review by
    the Hearings Examiner.
    This permit is now ready to be transmitted to the applicant.
    Notice of this action has been sent this date to Mr. Greg
    Humbocch, 6224 May Dr., Waco, Texas }76710
                                    SIGNED
```



```
EBF/ah
DATE JUlY 22. 1977
```

Permit No. 1039
Coordinates in $31^{\circ} 30.00^{\prime \prime}$ if $97^{\circ} 05.00^{\prime \prime}$
PROUIT FOR A MUNICIPAL SOLD WASTE FACILITY
isaued under proviaiono of Article 4477-7, Vernon's
Texas 'Civil Statutes, apd the Texas Departioant of Health
Renourcea' "Mratcipal fioltd Waste Managenont Regulations"

## Ponaiteae

| Kant | City of Waco |
| :---: | :---: |
| Add:asss: | P, O. Jox 1370 |
|  | Waco, Texas 76703 |

Site ornes
Name:
Addreasa: Bocley Sand and Gravel, Inc.
Naco, Texnar 76703
Adđđreas:

Lesul Description of Sires Thin Iogal description as subutted is the application is tiereby nado a part of this pernit.

Size, and Location of Sica: The 64.71-aere aite id loceted 3,000'foet southwest of
 Tinsley Road in the extraterritorial jurisdiction of the city of Waco in Mciennan County.

## Operational Clasaification of Site: Type I

Wase Disposal. Mathods Used at Blet: Area method of diepowel with dafly conpaction of sinlid wate and cover viti at ahamum of $s i x$ ( 6 ) inchas of coupacted earth, except as oitherviue required by the atcached Special Provialoms.

Desiciliption of Waste Naterials Processed at Site: Solidd was tes under the regulatory jurfidiction of the Taxas Department of liealth Resources, whan disposed of or processed In accordnnce with the Departnent's "Yunicipal Solid Wasto Namagement Regulations".

Standary Provision: Aeceptazce of this peraft conatitutea an ecknowledgenent thiat the pernitiee will comply with all of the terna, proviaions, conditions, limitatione and other reetrictions eabodied in this permit; with the "hanicipal solid Waste Manageaent Zegulationa" of the Texns Department of liehlth Kesources; and with the pertiant laws of the state of texas.

This perilit will be valid uitil cancelled or revoked by the Director of the Texas Depariment of dealth Reaourcia or until the site is complecely filled and readered unusable, whichever occurif first.

Given under my thand and Seal of office at Austin, Texas on the 22 nd day of July , 1977.

## SPECLAL PROVISIONS FOR MUNICIPAL SOLID WASTE PERMIT NO. 1039

A. Proparty Rightg: It is the reaponaibility of the herein named peraittee to possess or acquire a sufficient interest in or right to the use of the property herein described for the purposes for which this peritit is issued. The granting of this permit does not convey any property rights or interest in either real or personal property, nor does it authorize any injury to private property or Invasion of personal rights, nor any infringement of Federal, State or local laws or ragulationa outside the scope of the authority under which this permit in insued.
B. Groundwater Protection: Prior to depositing any solid waste in any excavation, the permittee shall provide to the Department a certificate from a registered professional engineer that testing by a soils laboratory of soil layers, in their undisturbed, natural, or original condition, that will form the bottom and sides of such excavation has been perforised and ining provided where necessary. Such report of testing shall include soll classification, depth of ining, and field densities to insure aufficient impermeability.
C. Surface Water Protection: Rainfall rumoff within the landfill that has become contaninated by aolld waste shall not be discharged from the site.
D. Odor and Air Pollution Control:

1. Any ponded water at the site must not become a source of obnoxious odors.
2. All applicable Texas Air Control Board regulations concerning air pollution control shall be observed.

## 5. Site Development and Operation:

1. The pernittee shall monitor bird filght activity to deteraine if birds which may be attracted to the landfill site create an air navigation hazard in the primary approach and departure areas of the nearby airport. The perndttee, for a period of two (2) years, shall submit to the Fort Worth Airports District Office, Pedaral Aviation Administretion, P. O. Box 1689, Fort Worth, Texas 76101, with a copy to the Texas Department of Health Resources, a monthly letter report indicating the level of bird activity associated with the operation of this aite. At any time that there is an increase in the avount of birds attracted to the landfill site, the permittee shall contact the airport manager to determine if the landfill bird activity is creating an air navigation safety hazard. Should such a hazard appear to exist in the opinion of the attport manager, the permittee shall submit a special letter report to the Airports District Office with a copy to the Department. Upon receipt of such report, the Airports District office and the Department may conduct a foint inspection of the landfill site and airport area to determine if an air navigation hazard exists and whether or not the hazard is attributed to the landfill operation. If it is determined that the hazard is attributed to the landfill, the permittee shall immediately cease receiving solid waste and cover all exposed solld waste with two feet of soll. Operations shall not be resumed without the concurrence of the Department.

At any time subsequent to the initial two-year reporting period, the Department may reinstitute the requirement to submit periodic bird activity reports if a site inspection by the Department reveals that the landfill site is attracting a significant anount of birds which could create an air navigation afety hazard.
2. Bruah and construction-demolition waste disposal shall be accomplished as outifned in subsection $\mathrm{F}-3$ (Operational Standards for Type IV Operation) of the Department's "Municipal Solid Waste Management Regulations" dated April 1977 within an area specifically designated for that purpose and physically separated from other disposal operations by fencing, with access through a separate or controlled entrance.
7. Site Closing: When disposal operations are completed and/or before abandonment of the site, the disposal area shall be completely and properly closed in accordance with the regulations of the pexas Department of Health Resources pertaining thereto.
G. Surety Bond: Not required.

## State of texas

county of Melennan
64.71 acres of land out of the Carlos $0^{\prime}$ Campo Grant in McLennan County, Texas and being a part of those certain tracts of land described as being First, Second, Third and Fourth Tracts by deeds to Jim Radie and recorded in Volume 855. Page 426 and Volume 916 . Page 72 of the McLennan County, Texas deed Records, respectfully.

Beginning at an iron stake in the west ine of Farm-to-Market Road $\$ 434$, sometimes known and referred to as the South 3 rd Street Road, at its point of Intersection with the south Ine of the Second Tract for the southeast corner of thia; eaid point of beginning also being the southwest corner of that certain 0.056 acre tract of land conveyed to the Mclennan County, Texas by deed recorded in Volume 621, Page 185 of the said deed records:

Thence S $62^{\circ}$ W 2950.67 ft ( 1062.24 vrs .) vith the south line of the said Second Tract, an old fence line, to an Iron stake at its southwest corner;

Thence w $27^{\circ} 4^{\prime}$ W $70 \mathrm{ft}(25.2 \mathrm{vrs}$.$) , S 63^{\circ} 55^{\prime} \mathrm{W} 874.72 \mathrm{ft}(314.9 \mathrm{vrs}$.$) and$ $\mathrm{s} .2^{\circ}{ }^{\circ} 15^{\circ} \mathrm{W} 674.83 \mathrm{ft}(242.94 \mathrm{vrs}$.) to an iron stake in the east line of the S.A. \& A.P. Raflroad right-of-way and in the west line of the said Fourth Tract for the southwest corner of this;

Thence $N 14^{\circ} 45^{\circ}$ W $1473.33 \mathrm{ft}(530.4 \mathrm{vrs})$ with the east line of the said S.A. 8 A.P. Railroad right-of-way and the west lines of the said Fourth and Firut Tracts to an fron stake for the northeast corner of this; said stake being the northwest corner of the said First Tract;

Thence if $61^{\circ} 15^{\circ} \mathrm{E} 1140.8 \mathrm{ft}(410.69 \mathrm{vrs}$.$) with the north line of the said$ Firat Tract, an old fence line, to an iron stake at its northeast corner;

Thence $S 30^{\circ} 28^{\prime} \mathrm{E} 1248.07 \mathrm{Ft}(449.31 \mathrm{vrs}$. ) with the east ine of the said Firat Tract and along a meandering fence ine to an 1ron stake at its southeast corner and at the northwest conner of the said Second Tract;

Thence along a fence line, the north line of the said Second Tract, $\mathrm{N} 62^{\circ}$ $26^{\prime}$ E $1581.90 \mathrm{ft}\left(569.48 \mathrm{vrs}\right.$ ) and N $62^{\circ} 21^{\prime}$ E $1392.77 \mathrm{ft}(501.4 \mathrm{vrs}$.) to an iron stake in the west ine of the said F. M. Road $\$ 434$ and at the northwest corner of the said MeLennan County, Texas Tract;

Thence S $26^{\circ} 22^{\prime}$ E 234.3 ft ( 102.35 vra.) with the west 1 ine of the said F. M. Road 434 and the weat line of the said McLennan County, Texas Tract to the point of beginning.
ec: City-County Health Department

```
Jack C. Carnichael, P. E.
Director
Division of Solid Waste Manegement
```

Mr. Hal L. Nelson, Assistant Chief Legal and Clains Services

```
Solid Waste - McLennan County
City of Waco - Permit Application No. 1039
3,000 Ft. SW of Int. of TM 434 (S 3rd St.) and Tinsley Rd., and 1/3 MA. S of Tinsley Rd.
Coordinates: if \(31^{\circ} 30.00^{\prime}\) W \(97^{\circ} 05.00^{\prime}\)
```

On February 22, 1977, the Teras Departnent of Health Resources received an application for a pernit to operate a proposed Type 1 mealcipal solld waste landfill near Nace, Melanian County, Toxas. The applicetion was processed in accordance with chis Departigent's "Yunicipal Solid Waste Managenent Regulations", and the "Solid Waste Dlaposal Act", Axticle 4477-7, Vernon's Texas Civil Statutes. Appropriate agencies, officials, and euthorities vere provided an opportunity to comment on the application. Folloving due notice by putilcation in a local newspaper of a public hearing potice, of put 11c hearing was held at the City Council Roon, Cicy Hall, In Weco, Mcleman County, on May 25, 1977. The hearing record was closed at the end of the hearing, there being no apparent reeson for the record to remain open. The decision by the Director of the Toxas Departnent of heejth Resources will be due by July 25, 1977.

The application for perilt and supporting enterfaln received by the Texas Departdent of Health Resources from the applicant consistod of the following:

1. Municipal Salld Nas te Permit Application
2. Map showing the location of the site
3. Legal description of the site
4. Engineering report prepared by City of Haco Bngineering Depertuent
5. Soll teat report

The following persong frot the Texas Department of liealth Resources conducted the public hearing:

1. Mr. Edvin 3. Puller, Hearings Examiner
2. Mr. Robert at. Ray, P. E., Project Engineer

The following person from the Texas Department of Ifealth Resources also participated In the public hearing:

Mr. Karl A. Balluan, P. E., Region 6

Significant comments by review agencies are sumarized as follows:

1. Texan Water Quality, Board: If this aite is approved by the Texas Department of lloalth Resources, the follouing recomendations may be cousidered to dacrease the hazard to grownd and burface vater quality:
a. Solld waste should not be disposed of within three feet of the vater table. Conaideration should be given to the possibility of varfations in the depth to water table at this sita.
b. Any excavation at the site should be lined with suitable taaterial to prevent the exfiltration of leachates. Such lining is essential where vater-benring sands and/or gravels are prosent.
c. Surface water diversion dikes should be constructed to divert runoff away fron the site. Diversion dikes also aerve to contain contaminated surface vater within the alte boundaries.
d. Norking face berms should be constructed to minimize the anount of contaninnted water.
e. Coneanfnated vater should not be disciarged from the site.
2. Texns A1r Control Roard: We have reviewed-the above cited document and recommend approval. An investigation of the site indicates outdoor buming is prohibited under Texas Air Control Board Regulation I, Rule 101.28. We vould reaind the applicant that the site must be operated In compliance with all Board Zules and Regulations, specifically those pertaining to oucdoor buraing, particulate matter and nuisances.
3. Texas Water Development Board: The proposed operation will not affect the flood vaterg of any stream and an "Application for Approval of a Levee Profect" will not be required.
4. State Departyent of Hishwnys and Public Iramsportation: This agency was not contacted inasmuch as no primary highway is located vithin 1,000 feet of this atte.
5. County Judge: To cosments were received.
6. Gounty Fealth Authority: No conments were received.
7. Mayor of Haco: No coments were requested inasmuch as the City is the applicant.
8. Municipal Health Authority: (Waco-McLennan County Health Department) No consenta were recelved.

C1ty of Waco Peruft Application
9. Fedaral Aviation Adninistration: The proposed site is adjacent to the Flying Neart Ranch Airport owned by Mr. Joe A. Stahl, Route 6, Box 230, Waco, Texas 76706. As you may realize, there is a landfill imediately adjacent to the airport. This landfill has been in existence for sevoral years, and we have received no complaints of birds in the area. For this reason, we do not object to the issuance of this pornit; hovever, it is requested that the usual two year, monthly reporting procedure be included as a special condition of the pertalt.
10. Fort Vorth District, U.S. Army Corps of Engineers: A Corps of Engineera permit under the "Tederal Water Pollution Control Act" will not be required inasmuch na no fill materials will be discharged into navigable waters or contiguous or adjacent wetlands.

Texas Department of Nealth Nesources Coments:

1. TPIIR Region 6: The proposed solid waste site contains 64.71 acres with estinated taeege of two yeare. The site is under the extraterritorial furisdiction of the City of Waco and leased from Neeley Sand and Gravel, Inc. Gravel and sand was minod from the site by the owner. The land une within one aile of the site 10 prisurily used for agricultural purposes. Some mining of snnt and gravel continues in the vicinity. The City is currently using a site directiy north of the proponed aite. The residence nearont the south side of the site obtains 1ts water for human consumption frot a combiley wator systen. The City plans to monitor the individual water welln as shown on the engincerint plans on a monthly basis in order to malke sure that there 1s no contamination occuring.

The ground veter table varies from 13 to 13 foet below the normal ground alevation according to the soil boring informntion. The sides and bottons of all landfill trenches or disposal areas must be properly lined with a mintmum of three (3) feet of selected impermeable clay type matertal to prevent the percolation of leachace into the groundwater when permeable soil areas are encounterad. The selected imperneable clay type materlal referred to should have a pormeability of not more then $1 \times 10^{-7} \mathrm{~cm} /$ sec with a. Liquid Linit of not less than 30 , and a Plasticity Indar of not less than 15. A todnimum of three feot of botton lining munc be maintained above the groundrater elevation before placement of solid vaste.

Suftable working face dikes and/or any other suitable water divarsion methods should be provided to control and minimize contact betwen the water and solid waste.

Clety of Waco Permit Application Page 4

Rainfall runoff within landfill area must not be discharged from the site. The site is located 100 feet from the end of the secondary runway and 1,250 feet parallel to the privary runway of a private airstrip owned by the Tlying Heart Ranch. The City officials stated that the owner presently uses the alrstrip very seldom. The city's existing sanitary landeill occupies the land that is leased from the Flying Heart kanch. The existing landfill site is located adjacent to both rumbays.

Mr. Jia Nam, Director of Public Services, states that the City plans to amend the pernit application not only for a Type I site, but also for a Type 7 (Druah-Demolition Waste Disposal Site) within the same factilty.

Based on the ingpection of the site location and information, available it is the vritor's (Marl A. Ballman, P. E.) opinion that the disposal of municipal solitd waste at the site, if operated in conpliance with the Department's "Wuatetpal Soltd Waste Managenent Regulations", dated April 1977, will not prosent any public health problems to the surroundIng area.

## 2. Divialon of Solid Ease Management:

a. Deolorist: Site is loented in abandoned sand and gravel quarry In fluviatile terrace deposita composed of gravel, sand, silt, and clay along tho Brazos Rivar. These denosito overlie the Ozan formation ("lowor Taylor var1"). Sand and gravel have apparently been removed from excavations which were carried to a depth of about 24 feet or to the "blue clay" (Ozan), with the "fines" left so that the p1t is backfliled to within about 12 feet at the surface. Depth to gromdvater in the borings ranged between elevations 386 feet and 391 feet. The groumdvater level at this site is ilkely subject to IIuctuation ag it probably is in hydrologic contact with the mrazos River flow. These terrace and alluvial doposits produce uscable troundvater. Site should be satisfactory if operational procedure es described in Section $H, 5$ of the application is maintained, namely: "This pit will be cleaned around the periphery down to the shale bottom and the afdes vill be sealed from 4 feet to 6 feet horlzontal thickness of the hoavy Bell clay up to above the groundvater lovel. Botton and sides of the eite will be sealed with 2 feet to 4 feet of the heavy Bell clay". Atterberg 1 imits and permeability tests on the Be11 clay overburden indicate that it ahould be suftable ining material when recoupacted.
b. Profect Engineer: This is a proposed Type I solid waste landfill located within the extraterritorial jurisdiction of the City of Waco in Melennan County. The site contains an area of approximately 64.71 acres. The aite is located to the south of an existing landf111. The surrounding land use is taninly agricultural with some sand and gravel mining. There are no water wells within 500 feet of the proposed site. The houses in the vicinity of the landfill are reported by the city of Waco to receive drinking water from a community water syatem. The engineering report states that a monthly chemical analysis will be made of the wells near this site to detertaine if contanfnation has taken place. The water table is from 13 feet to 18 feet below natural ground level in the area of this site. There were six (6) soil borings made but only one (1) bag sample was aubmitted to a commercial testing laboratory for analysis for permeability, liquid iimits and plasticity index, all of which meet the requirements of the Department's Regulations. The logs of the borings indicate that a gravel stratun is encountered as shallow as 6 feet below the surface. It is recomended that this site be lined, in the bottom and aldes, with a minimum of three (3) feet of conpacted clay to prevent groundwater contamination. The operational plan subinitted by the City of Waco, if followed, should prevent any contamination of ground or surface water in the area.

## Additional Coments or Considerntions:

The testinony presented at the public hearing indicatee that this can be operated as a good Type I solid waste dioposal site. I'r. James O. Hanm, P. E., Director of Public Services for the City of Waco, testified that there vere no water wolls within 500 feet of the proposed site. The City has had soil testa made on the aofle at the site and these meet or exceed the requirements of the Department. This proposed site is adjacent to the existing landfill. The water that is presently in the site will be pumped out and the aite will be lined with three (3) feet of compacted clay-type material before it is put into operation. The groundwater level in this area varies fron 13 to 18 feet below the surface and the plan is to stay 3 feet above the water table. There will be an area set off for brush and constructiondemolition matariala. There are no pipe ifnes on the site and no hazardous materials are accepted. If disposal of this type of material is requested of the C1ty, the liealth Department will be contacted for special instructions before such materials are accepted for disposal.

A site inspection by the Profect Engineer indicates that the testimony presented and the information contained in the engineering report subinitted with the permit application are correct.

The coments by the Texas Water Quality Board concerning lining of the site, depoaiting material within 3 feet of the water table, diversion dikes and discharge of contaminated water from the aite were answered in the engineering report nubmitted by the C1ty and the testimony at the public hearing. All of the requirements auggested will be complied with.

It is recommended that pernit No. 1039 with special provisions to operate a solid waste disposal site, as proposed in the attachment bereto, be issued to the City of Waco in view of the preceding comments and for the following specific reasons:

1. Recomendations froh responsible officials and agencies regarding the technical aspects of the application are almost totally favorable to the issuance of a pernit. Issuance of the permit with the proposed apecial provisions should not significantly endanger the health, welfare or physical property of the residents of the area.
2. The information submitted by the applicant and the testimony presented at the pubile hearing indicate that this can be operated as a good Type I Boifd traste diaposal landfill.
3. The landfili, if pperated according to the Texas Department of Health Resourcon' "Whaicipal;Solid Waste Memagement Regulacions", is not expected to becom a public health hazard or puhlic nuisance.
4. There was no opposition or obfections to the operation of this solid waste dlapoaal oite offered before or during the public hearing.

RIRBlat
Attachments


## Type V Transfer Station Registration Application <br> Part III Site Development Plan <br> City of Waco Transfer Station Closed City of Waco Landfill TCEQ Registration No. TBD McLennan County, Texas

City of Waco
501 Schroeder Dr. Waco, Texas 76710


# SCS ENGINEERS 

16222063.00 | October 2023

## Table of Contents

Section
1.0 Introduction ..... III-1
1.1 Site Location and History ..... III-1
1.2 Land Use and Zoning [§330.63(A)]. ..... III-1
2.0 General Facility Design ..... III-2
2.1 Facility Access ..... III-2
2.1.1 Adequacy of Access Roads and Highways [§330.63(a)] ..... III-2
2.1.2 Fences and Access Control [§330.63(b)(1)] ..... III-2
2.2 Waste Movement §330.63(b)(2) ..... III-3
2.2.1 Waste Flow Diagram §330.63(b)(2)(A) ..... III-3
2.2.2 Waste Process Schematic View §330.63(b)(2)(B) ..... III-3
2.2.3 Ventilation and Odor Control §330.63(b)(2)(C) ..... III-3
2.2.4 Generalized Construction Details §330.63(b)(2)(D) through (F) ..... III-3
2.2.5 Noise Pollution Control and Visual Screening §330.63(b)(2)(1) ..... III-4
2.3 Sanitation and Water Pollution Control §330.63(B)(3) \& (4) .....  III-4
2.3.1 Surface Water and Groundwater Protection §330.63(b)(3)(A) \& (4) ..... III-5
2.3.2 Floor Wash Down§330.63(b)(3)(A) through (D) and §330.243(a) ..... III-5
2.3.3 Protection of Endangered Species §330.63(b)(5) ..... III-6
3.0 Surface Water Drainage Report §330.63(c) ..... III-7
3.1 Drainage Design §330.63(C) ..... III-7
3.2 Floodplain Considerations §330.63(C). ..... III-7
4.0 Waste Management Unit Design §330.63(d)(1) ..... III-8
4.1 Waste Operations §330.63(D)(1)(A) ..... III-8
4.2 Spill Prevention and Control $\S 330.63(\mathrm{D})(1)(\mathrm{B})$ and $\S 330.227$ ..... III-8
4.3 Spill Prevention and Control §330.63 (D)(1)(B) and §330.227 ..... III-8
5.0 Closure Plan §330.63(H) ..... III-9
6.0 Cost Estimate For Closure §330.63(J) ..... III-10

## Attachments

## Attachment 1 General Facility Design Plan <br> Attachment 2 Closure Plan

Attachment 3 Closure Cost Estimate


SCS Engineers
TBPE Reg. \# F-3407

## 1 INTRODUCTION

In accordance with 30 TAC §330.63(a), the following sections include applicable portions of Part III of a registration application that summarize the land-use and zoning and the adequacy of access roads and highways surrounding the facility. Part III also provides information on the general design of the facility to safeguard the health, welfare, and physical property of people and the environment.

### 1.1 Site Location and History

City of Waco Transfer Station Facility (Facility or Site) will be located over a closed landfill site (MSW Permit No. 1039) located on South University Parks Drive (FM-3400) in Waco, Texas, approximately 0.1 mile northwest of the intersection of South University Parks Drive and Radle Road. Site location is shown on Figure I/II-1 in Parts I/II of this registration application. Additionally, an aerial photograph showing the site and access roads is included as Part I/II, Figure I/II-3, and a general topographic map is included as Part I/II, Figure I/II-2.

At its peak, the new facility will have a waste intake capacity projected at approximately 1,800 tons/day.

The physical address for the facility is South University Parks Drive, Waco, Texas 76712. The approximate coordinates of the facility entrance are N $31^{\circ} 29^{\prime} 46.6^{\prime \prime}$ latitude and $W 97^{\circ} 4 \prime 56.6^{\prime \prime}$ longitude.

### 1.2 Land Use and Zoning

Existing use of the site and surrounding areas is shown on Figure I/II-5, Land Use Map, and described in Section 3.1.2 of Parts I/II.

## 2 GENERAL FACILITY DESIGN

In accordance with 30 TAC §330.63(b), the general facility design is discussed in the following sections.

### 2.1 Facility Access

### 2.1.1 Adequacy of Access Roads and Highways [§330.63(a)]

A traffic impact analysis (TIA) of the adequacy of South University Parks Drive was performed for the facility. Based on this analysis, it is recommended that a southbound turn lane be constructed for South University Parks Drive to provide access into the facility. As such, the City of Waco has coordinated with TxDOT to implement this recommendation and a copy of this coordination is provided in Appendix I/II-A.3. Additionally, a copy of the TIA performed for South University Parks Drive is included in Appendix I/II-F.

### 2.1.2 Fences and Access Control [§330.63(b)(1)]

Public access to the facility will be controlled by means of a perimeter fence which encompasses the entire registration boundary. Access to the facility is limited to the gated site entrance located off of South University Parks Drive.

Site security measures will be designed to prevent unauthorized persons from entering the site, to protect the facility and its equipment from possible damage caused by trespassers, and to prevent disruption of facility operations caused by unauthorized site entry. Unauthorized entry into the site will be minimized by controlling access to the facility with 6 -foot high chain link fencing, artificial barriers, and by locked entrance and exit gates. Part III, Attachment 1, Figure III-1.1 shows the location of proposed fencing and gates, in accordance with $\S 330.61$ (c)(11).

During operating hours, site personnel will monitor the site entrance gate to prevent any unauthorized entry to facility. Entry to the tipping floor of the transfer station structure will be restricted to designated personnel, approved waste haulers, and properly identified persons whose entry is authorized by site management.

In accordance with §330.69(b)(1), a conspicuous sign consisting of dark lettering, at least 3 inches in height, on a white background and measuring a minimum 4 feet by 4 feet will be maintained at facility entrance, and state the following:

- Facility name;
- Facility type;
- Registration number issued by TCEQ;
- Hours and days of operation;
- Emergency 24-hour contact phone number(s); and
- Local emergency fire department phone number.

In accordance with §330.69(b)(2), the sign will be located within 10 feet of the property line and facility entrance and will be visible and readable from South University Parks Drive. A sign stating a list of acceptable and prohibited wastes will be posted at the facility, as discussed in Part IV, Site Operating Plan.

### 2.2 Waste Movement §330.63(B)(2)

### 2.2.1 Waste Flow Diagram §330.63(b)(2)(A)

A waste flow diagram indicating the unloading of waste collection vehicles, storage, and loading (into waste transfer trailers) sequences for various types of wastes received is shown on Figure III-1.2 located in Part III, Attachment 1. The facility will not accept or store grease, oil, or sludge; therefore, the requirements of $\S 330.63(\mathrm{~b})(2)(\mathrm{G})$ do not apply.

### 2.2.2 Waste Process Schematic View §330.63(b)(2)(B)

A schematic view indicating the waste processing, storage, and disposal, as applicable, is shown on Figure III-1.3 in Part III, Attachment 1. This figure includes the transfer station registration boundary and the traffic flow patterns.

### 2.2.3 Ventilation and Odor Control §330.63(b)(2)(C)

Ventilation will be provided and odors controlled in accordance with the current TCEQ MSW Air Permitting rules and regulations applicable to municipal solid waste facilities. The transfer station's building will provide adequate passive ventilation through the multiple doors of the structure. Additionally, as the transfer station facility will be constructed on a closed landfill, each enclosed structure will be constructed with a methane barrier and gas ventilation system, in accordance with the Subchapter T Development Permit Application submitted to TCEQ in May 2023, including subsequent revisions during the TCEQ review process.

A minimum 50-foot buffer will be provided between the transfer station structure and site boundaries. In addition to the building's design features and buffers, the owner will take further steps to prevent and control potential odors being generated and migrating off site. These include:

- Prompt and efficient flow of waste through the transfer station building;
- Bi-weekly washing of the tipping floor;
- Use of tarps to cover the waste in the event waste is stored overnight at the facility; and
- Routine pumping of optional contaminated water holding tanks, if needed

Solid waste processing operations will be conducted within the transfer station structure to prevent nuisance odors from developing. No waste tipping, processing, or disposal will occur outside the transfer station building, with the exception of waste placed in roll-off containers at the CCS. Roll-off containers will be emptied, as needed, to prevent odors from developing and to maintain a sanitary condition.

The site will be graded to prevent the ponding of water and to maintain positive drainage, thereby minimizing any odors associated with stagnant water.

### 2.2.4 Generalized Construction Details §330.63(b)(2)(D) through (F)

The facility includes the transfer station building, a scale house with scale(s), citizen's convenience station (CCS), brush management area, two contaminated water holding tanks (optional), drainage features, and a perimeter fence with locking gates. The transfer station structure is a single-level building with an above-grade processing floor (tipping floor). The building footprint will initially be 180
feet wide by 120 feet long with concrete floors, steel framing, metal exterior panels/walls (including vehicle access doors on the north and south sides), and a roof. The building footprint may be expanded in the future to be approximately 180 feet wide by 200 feet long. The transfer station facility will be constructed in accordance with the Subchapter T Development Permit Application, submitted to TCEQ in May 2023.
A Site Layout Plan is included as Part III, Attachment 1, Figure III-1.1. The general design and construction details for the facility layout and building components are also shown in Part III, Attachment 1, Figures III-1.4, III-1.5, and III-1.7.
The processing area (tipping floor) will be used for processing, holding, and storage of waste. Contaminated water resulting from waste processing operations will include incidental liquid within the waste brought in by the haul vehicles and wash water from the tipping floor cleaning activities. Contaminated water will be directed toward one end of the tipping floor and collected in a grit trap, which will drain by gravity to an oil/water separator and then to a sump to enable pumping to the City's off-site sanitary sewer system, or alternatively, to an optional contaminated water holding tank for storage and disposal. A contaminated water management plan, showing the layout of the grit trap and sump, oil/water separator, optional contaminated water holding tank, and associated piping for the handling of contaminated water is included in Part III, Attachment 1, Figure III-1.6. Details of the contaminated water management components are included in Part III, Attachment 1, Figure III-1.7. Management of contaminated water is also addressed in Section 2.3.
The transfer station building features a metal roof structure that covers the reinforced concrete pad (tipping floor) used for waste processing and waste storage and truck loading and transfer. The building has an approximate eave height of 37.5 feet and a peak height of approximately 53 feet. Trucks will enter the building on the south and exit to the north. The building is set back on the property and approximately 950 feet from South University Parks Drive.

The single-level building structure allows for more efficient flow of both the collection trucks and the transfer trucks. The direct loading into transfer trailers minimizes the residence time of the waste on the floor. Driving through the transfer station building with in-line unloading (rather than backing up and discharging into a loading pit or unloading area) promotes safer handling of the waste material and enhances employee safety.

### 2.2.5 Noise Pollution Control and Visual Screening §330.63(b)(2)(I) and §330.239

The site will be designed and located on the property to minimize the potential noise pollution and visual impact to neighboring landowners and the public. Visual screening is provided by the location of the transfer station being located approximately 950 feet from South University Parks Drive. Waste unloading and processing operations will be conducted within the transfer station structure, with the exception of waste dropped off at the CCS, and brush dropped off in the brush management area, as outlined in the Site Operating Plan, thereby minimizing noise pollution and visually screening the operation.
The primary noise source of concern will be back-up alarms on equipment and trucks. The transfer station manager will utilize equipment with backup alarms set at the lowest possible noise level consistent with safety considerations and will work with the owners of vehicles using this facility toward controlling noise as well. CCS waste drop-off will not be performed using heavy equipment, and as such, will minimize potential for noise pollution.

### 2.3 Sanitation and Water Pollution Control §330.63(B)(3) \& (4)

All liquids resulting from transfer station operation will be disposed of in a manner that will prevent surface water or groundwater pollution. The drainage design plan, which directs storm water away from the transfer station building, will provide surface water protection.

Uncontaminated water is any water that has not come into contact with waste (referred to as storm water, clean storm water, surface water, and uncontaminated surface water). Contaminated water includes water that has come into contact with waste, incidental liquid within the waste brought in by the haul vehicles, and wash water from the tipping floor cleaning activities.

Pavement and surface around the perimeter of the transfer station building will be graded to promote uncontaminated surface water drainage away from the building and toward the surface drainage features. Surface water flow direction for handling of clean stormwater is depicted on Part III, Attachment 1, Figure III-1.6.

Solid waste processing operations will be conducted on a concrete-paved area (tipping floor) inside the transfer station structure that will be sloped such that contaminated water will not be allowed to accumulate on the tipping floor. The City will directly connect to the City's off-site sanitary sewer system for handling all on-site contaminated water. As an alternative to a direct connection to the sanitary sewer system, the City will provide two optional dual-contained holding tanks for storage of contaminated water.

A Contaminated Water Management Plan, showing the layout of the grit trap, sump, oil/water separator, optional contaminated water holding tank located adjacent to the transfer station structure, and associated piping for the handling of contaminated water is included in Part III, Attachment 1, Figure III-1.6. Details of the contaminated water management components are included in Part III, Attachment 1, Figure III-1.7. If installed, the contaminated water stored within the holding tanks will be removed prior to reaching capacity. A vacuum truck will remove wastewater from the holding tanks and transport it to a permitted wastewater plant or a registered/permitted liquid processing/transfer/disposal facility. The contaminated water holding tanks will be inspected on a monthly basis for evidence of leaks (water in the outside tank of the dual-wall tank), pump performance, and condition of automatic switch. The tanks will be cleaned as necessary.

### 2.3.1 Surface Water and Groundwater Protection §330.63(b)(3)(A) \& (4)

The facility will be constructed, maintained, and operated to manage run-on and run-off during the peak discharge of a 25 -year rainfall event. As described in Section 2.3, contaminated water will be managed within the transfer station structure to prevent off-site drainage of contaminated water. Additionally, surface water in and around the facility will be controlled by grading the area around the transfer station structure away from the building to prevent surface water running into the transfer station structure. Since all contaminated water will be managed in a controlled manner within the transfer station structure, as discussed in Section 2.3, groundwater will be protected. In summary, the facility design will comply with the requirements of 30 TAC $\S 330.303$, relating to Surface Water Drainage for Municipal Solid Waste Facilities.

### 2.3.2 Floor Wash Down §330.63(b)(3)(A) through (D) and §330.243(a)

Waste processing operations within the transfer station structure will be conducted on a covered tipping floor. All walls will be constructed from metal panels and floors in operating areas will be constructed of masonry, concrete, or other hard-surfaced materials that can be hosed down and scrubbed. Consistent with 30 TAC 330.243(a), the tipping floor will be washed down on a weekly basis. A spray nozzle, such as a pressure-washer, will be used to hose down the concrete tipping floor. It is estimated that each floor washing will require no longer than two hours. Using a pressure-washer with a discharge rate of 2.75 gallons/minute, it is estimated that each washing event will generate 330 gallons. Tipping floor wash down water will be directed toward one end of the tipping floor and collected in a grit trap, which will drain by gravity to a sump to enable pumping to the City's off-site sanitary sewer system. Alternatively, if installed, the wash down water will be pumped into a 4,000gallon (minimum) to 6,000-gallon (maximum) contaminated water holding tank. A vacuum truck will remove wastewater from the holding tanks and transport it to a permitted wastewater plant or a registered/permitted liquid processing/transfer/disposal facility.

A fire hydrant adjacent to the transfer station facility will provide supplemental water supply for wash down of the concrete tipping floor and will also be used, if needed, for fire protection, as described in Part IV - Site Operating Plan, Section 11. As shown on Figure III-1, the City will connect to an off-site water supply line, which will then supply water to this fire hydrant.

### 2.3.3 Protection of Endangered Species §330.63(b)(5)

As detailed in Section 3.6 of Parts I/II, a Protected Species Habitat Assessment was conducted that concluded that "... the proposed project is not expected to have any impacts on the federally or statelisted threatened or endangered species."

## 3 SURFACE WATER DRAINAGE REPORT §330.63(C)

In accordance with §330.63(c), the drainage and floodplain criteria applicable to this facility are summarized in the following sections.

### 3.1 Drainage Design §330.63(C)

The facility will be constructed and operated to comply with the requirements of $\S 330.303$. The design of the facility will manage run-on and runoff during the peak discharge of a 25 -year rainfall event and will prevent the off-site discharge of waste and feedstock material, including, but not limited to, inprocess and/or processed materials. Surface water drainage in and around the facility will be controlled to minimize surface water running onto, into, and off of the processing area.

### 3.2 Floodplain Considerations §330.63(C)

As indicated on Figure I/II-8, the transfer station facility and access road will not be constructed within the 100-year floodplain or the floodway.

## 4 WASTE MANAGEMENT UNIT DESIGN §330.63(D)(1)

In accordance with $\S 330.63(\mathrm{~d})$, the general design and waste operations and storage are summarized in the following sections.

### 4.1 Waste Operations §330.63(D)(1)(A)

The facility is designed for efficient waste processing and transfer. All solid waste will be stored on the building tipping floor only and processed or transferred promptly, thereby preventing nuisances and public health hazards. Waste will be unloaded from collection vehicles onto the facility processing floor (tipping floor) and loaded into open-top transfer trailers that will be covered and transported to an authorized disposal facility.

As shown on Part III, Attachment 1, Figures III-1.3, collection vehicles will enter the site and weigh-in at the scale house. The trucks will proceed to the transfer station building where they will unload waste onto the tipping floor for processing and then return to the on-site access road to the exit the site. Processed waste will be loaded into transfer trucks and fully loaded transfer trucks will be tarped prior to exiting the facility. Empty transfer trucks that are awaiting loading will queue up on the area leading to the building.

A brush management area will be designated for the processing of brush waste.

## $4.2 \quad$ Spill Prevention and Control §330.63 (D)(1)(B) AND §330.227

Staging and processing areas at this facility will be located within the transfer station structure. The tipping floor is designed to control and contain spills and contaminated water. Contaminated water generated within the transfer station structure consists of wash down water applied to the tipping floor. Contaminated water is conveyed from the tipping floor to the City's off-site sanitary sewer or optional contaminated water holding tanks, which will be pumped by a registered hauler and transported to a permitted waste water treatment facility or a registered/permitted liquid processing/transfer/disposal facility for disposal.

### 4.3 Waste Storage Period §330.63 (D)(1)(A) AND (C)

The facility will not accumulate solid waste in quantities that cannot be processed within such time as will preclude the creation of odors, insect breeding, or harborage of other vectors. Solid waste will be stored in a manner to prevent fires, ensure safety, prevent a health hazard, or preclude food or harborage for animals and vectors, and contained to minimize windblown solid waste and litter. Solid waste will be stored either in a transfer trailer with a tarp cover or on the tipping floor with a tarp cover. Recyclable materials stored on the tipping floor or in enclosed containers will not require tarping. The maximum storage time for waste material will not exceed 48 hours for the transfer station, except on holidays or weekends, during which time maximum storage time will not exceed 72 hours. No solid waste unloading, storage, disposal, or processing operations will occur within any easement, buffer zone, or right-of-way.

## 5 CLOSURE PLAN §330.63(H)

A closure plan is included as Part III, Attachment 2.

## $6 \quad$ COST ESTIMATE FOR CLOSURE §330.63(J)

A cost estimate for the final closure of the facility is included as Part III, Attachment 3. The estimated cost in 2023 dollars is $\$ 123,530$.

# Type V Tra nsfer Station Registration Application 

Part III - Attachment 1<br>General Facility Design Plan

City of Wa co Transfer Station Closed City Of Waco Landfill TCEQ Registration No. TBD McLennan County, Texas

City of Waco
501 Schroeder Dr.
Waco, Texas 76710


# SCS ENGINEERS 

16222063.00 | October 2023

Figures
Figure III-1.1 Site Layout Plan
Figure III-1.2 Waste Movement Flow Chart
Figure III-1.3 Waste Process Schematic View
Figure III-1.4 Transfer Station Building Layout
Figure III-1.5 Transfer Station Building Elevations
Figure III-1.6 Contaminated Water Management Plan
Figure III-1.7 General Construction Details


SCS Engineers
TBPE Reg. \# F-3407

Figures








# Type V Tra nsfer Station Registration Application 

Part III - Attachment 2 Closure Plan

City of Wa co Transfer Station Closed City Of Waco Landfill TCEQ Registration No. TBD McLennan County, Texas

City of Waco
501 Schroeder Dr.
Waco, Texas 76710

# SCS ENGINEERS 


16222063.00 | October 2023

## Table of Contents

Section ..... Page
1.0 Introduction ..... III-2-1
2.0 Closure Requirements ..... III-2-2
3.0 Certification of Final Facility Closure. ..... III-2-4
4.0 Post-Closure Care Requirements ..... III-2-5


## 1 INIRODUCTION

In accordance with 30 TAC $\S 330.459$ and 30 TAC $\S 330.461$, Section 2.0 of this plan describes the steps necessary to close the facility at any point during its active life. Section 3.0 discusses PostClosure Land Use of the site. Post-closure maintenance of the site is not required as all wastes and waste residues will be removed during closure in accordance with 30 TAC §330.463(a)(1).

## 2 CLOSURE REQUIREMENIS

The facility includes the transfer station structure, a scale house with scales, two optional contaminated water holding tanks, stormwater drainage features, and a perimeter fence with locking gates.

At the time of closure, the Owner or Operator will transport any remaining waste, waste residues, and any recovered materials to an off-site disposal facility permitted by the TCEQ. The tipping floor and processing areas within the transfer station structure will be washed down and disinfected. There are no facility units to be dismantled or removed off-site. If the optional contaminated water storage tanks are installed, they will be emptied, flushed, and disinfected, but will remain at the site. The scale house building will be closed and locked. The grit trap, sump, and oil/water separator for the contaminated water at the transfer station structure will be emptied, flushed, and disinfected, but will remain intact. The related piping will be capped/plugged at the exit from the grit trap, sump, and oil/water separator. The stormwater drainage features at the site will remain intact in a functioning condition.

If there is evidence of a release from the facility, the executive director may require an investigation into the nature and extent of the release and an assessment of measures necessary to correct an impact to groundwater, in accordance with 30 TAC §330.459(c).

In accordance with 30 TAC §330.461(a), no later than 90 days prior to the initiation of a final closure, the Owner will, through a public notice in the newspaper(s) of largest circulation in the vicinity of the facility, provide public notice for final facility closure. This notice will include the name, address, and physical location of the facility, the permit number, and the last day of intended receipt of materials for processing at the facility. The Owner or Operator will also make available an adequate number of copies of the approved Closure Plan for public access and review. The Owner or Operator will also provide written notification to the TCEQ of the intent to close the facility and place this Notice of Intent in the facility's operating record.

Closure activities for the site will begin after the date on which the facility receives the known final receipt of materials to be processed, and will include the following:

- Notification to TCEQ.
- Posting at least one sign at the entrance to the facility notifying all persons who may utilize the facility of the date of closing for the facility and the prohibition against further receipt of waste materials after the stated date.
- Installing suitable barriers at all gates or access points, or alternatively, fence around the entire waste processing area, to adequately prevent the unauthorized dumping of solid waste at the closed facility.
- Removing wastes, waste residues, and any recovered materials for disposal at an appropriate off-site location.
- Flushing and disinfecting the dual-contained contaminated water holding tanks, if installed.
- Washing and disinfecting the transfer station building tipping floor and surfaces that have been in contact with waste, including contaminated water grit trap, sump, oil/water separator and related piping. Plugging related piping at the exit from the grit trap, sump, and oil/water separator.
- Washing and disinfecting the citizen's collection station area that has been in contact with waste, including any roll-off containers.
- Conducting vector control procedures.
- Installing suitable barriers, locks, and signs stating that the facility is closed.
- Repairing any damaged fencing and gates and secure the site.
- Sampling/testing/classification of waste not readily identifiable as garbage, trash, or refuse, and transport to an approved disposal facility.
- Performing site inspection and preparing certification of closure in accordance with §330.461.


## 3 CERIIRCATION OF RNAL FACILTY CLOSURE

Following completion of all final closure activities for the facility, the Owner or Operator will submit, within 10 days, to the executive director for review and approval, a documented certification, signed by an independent registered professional engineer, verifying that final closure has been completed in accordance with the approved Closure Plan and the applicable rule provisions of 30 TAC Chapter 330, Subchapter K. The submittal to the executive director will include all applicable documentation necessary for certification of final closure.

Following receipt of the required final closure documents, as applicable, TCEQ's regional office will conduct an inspection and provide a report verifying proper closure of the facility according to the approved Closure Plan before terminating operation and closing the facility will be acknowledged and the facility deemed properly closed.
In accordance with $\S 330.461$ (c)(3), City of Waco will submit a request to TCEQ for voluntary revocation of the facility permit.

## 4 POST-CLOSURE CARE REQUIREMENIS

Post-closure maintenance of the site is not required as all wastes and waste residues will be removed during closure in accordance with 30 TAC §330.463(a)(1). Therefore, no post closure care period is required

# Type V Tra nsfer Station Registration Application 

Part III - Attachment 3 Closure Cost Estimate

City of Wa co Transfer Station Closed City of Waco Landfill TCEQ Permit No. MSW-TBD McLennan County, Texas

City of Waco
501 Schroeder Dr.
Waco, Texas 76710


# SCS ENGINEERS 

16222063.00 | October 2023

1901 Central Drive, Suite 550
Bedford, Texas 76021
817-571-2288

## Table of Contents

Section ..... Page
1.0 Introduction. ..... III-3-1
2.0 Closure Cost Estimate. ..... III-3-1

Tables

Table III-3.1 Closure Cost Estimate

## Appendices

Appendix III-3A
Closure Cost Calculation


SCS Engineers
TBPE Reg. \# F-3407

## 1 INIRODUCTION

This closure cost estimate for the City of Waco Transfer Station Facility (Facility or Site) has been prepared in accordance with 30 TAC $\S 330.505$. Current TCEQ rules do not require post-closure maintenance for the transfer station.

## 2 CLOSURE COSTESTIMATE

The facility includes a transfer station structure, a scale house with a scales, citizens' convenience station, two optional contaminated water holding tanks, drainage features, and a perimeter fence with locking gates. The transfer station structure is a single-level building with an above-grade processing floor (tipping floor). The structure footprint will initially be approximately 180 feet wide by 120 feet long with a concrete tipping floor, steel framing, metal exterior panels/walls (including vehicle access doors on the north and south sides), and a roof. The building footprint may be expanded in the future to be approximately 180 feet wide by 200 feet long.

A detailed estimate in current dollars of the cost of hiring a third party that is not affiliated (as defined in 30 TAC §328.2) with the Owner or Operator to close the facility at any time during the active life, when the extent and manner of its operation would make closure most expensive, is included in Table III-3.1. The cleanup and disposition costs for onsite waste material are based on a per ton measure, as shown in closure cost calculations provided in Appendix 3A. Engineering costs associated with the closure are based on standard engineering practice based on SCS Engineers' experience in completing these services at similar facilities ${ }^{1}$. No dismantling of the transfer station, scale house, concrete pad(s) or drainage structures will be conducted at closure. No changes to the site elevations at closure will occur that will affect the final contour map.
The estimated closure cost based on the above considerations is included in Table III-3.1 in 2023 dollars. A copy of the required documentation to demonstrate financial assurance will be submitted 60 days prior to initial receipt of waste. During the active life of the facility, the Owner or Operator will annually adjust the Closure Cost Estimate and the amount of financial assurance for inflation in accordance with 30 TAC, Chapter 37, Subchapter J. An increase in the closure cost estimate and the amount of financial assurance will be made if changes to the facility conditions increase the maximum cost of closure. A reduction in the closure cost estimate and the amount of financial assurance may be approved if the cost estimate exceeds the maximum cost of closure and the Owner or Operator has provided written notice to the TCEQ of the detailed justification for this reduction. A permit modification, in accordance with $\S 307.70$, will be submitted to reduce the closure cost estimate and the amount of financial assurance. Continuous financial assurance coverage for closure will be provided until all requirements of the Closure Plan are completed and the site is determined to be closed in writing by the TCEQ.

1. SCS Engineers is a national environmental engineering company providing solid waste services (including closure plans for transfer stations) as a core business.

Table III-3.1

## Cost Estimate for Third Party Closure

| Item | Description | Cost |
| :---: | :---: | :---: |
| A | State Administration of Site Closure |  |
| A. 1 | Survey site and review files to determine closure activities. | \$3,000 |
| A. 2 | Prepared engineering plans and specifications. | \$4,500 |
| A. 3 | Procure Bids. | \$5,000 |
| A. 4 | Contract award and administration contract. | \$5,000 |
| B | General Cleanup of Site and Process Units |  |
| B. 1 | Cleanup and remove waste stored onsite | \$12,150 |
| B. 2 | Transport waste by a properly authorized transporter and dispose of waste at a properly authorized facility. | \$70,200 |
| B. 3 | General cleanup to include wash down of facility. To include removal, transport, treatment, and disposal of all wash down waters/media. | \$6,750 |
| B. 4 | Vector control procedures. | \$1,675 |
| B. 5 | Contaminated Water Disposal from tanks (Optional). | \$880 |
| C | Secure Site |  |
| C. 1 | Install locks and a sign stating the facility is closed. Make any needed repairs to fence and gate. Secure fence and gate. | \$2,000 |
| D | Certification of Abandonment and Completion of Cleanup |  |
| D. 1 | Perform site inspection and prepare certification of closure. | \$6,750 |
| D. 2 | Sample/test/classify waste (ash, liquid, sludge, other waste not readily identifiable as garbage, trash, refuse). To include lab reports, chain of custody, quality assurance and quality control. | \$3,400 |
| D. 3 | Perform verification re-sampling and laboratory analysis. | \$2,225 |
|  | Total | \$123,530 |

## APPENDIX III-3A

## CLOSURE COST CALCULATION



SCS Engineers
TBPE Reg. \# F-3407

## CLOSURE COST ESTIMATE CALCULATIONS CITY OF WACO TRANSFER STATION

| Item <br> No. | Description | Estimated Quantity | Units | Approx. Unit Cost | Extend ed Cost | Notes |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A | State Administration of Site Closure |  |  |  |  |  |
| 1 | Survey site and review files to determine closure activities | 1 | L.S. | \$3,000.00 | \$3,000.00 | Permit area to be surveyed |
| 2 | Prepare Engineering Plans and Specifications | 1 | L.S. | \$4,500.00 | \$4,500.00 |  |
| 3 | Procure Bids | 1 | L.S. | \$5,000.00 | \$5,000.00 |  |
| 4 | Contract award and administer contract | 1 | L.S. | \$5,000.00 | \$5,000.00 |  |
| B | General Cleanup of Site and Process U nits |  |  |  |  |  |
| 1 | Cleanup and remove waste stored onsite | 1,800 | Tons | \$6.75 | \$12,150.00 | Max. waste to be stored on site per SOP |
| 2 | Transport waste by a properly authorized transporter dispose of waste at a properly authorized facility. | 1,800 | Tons | \$39.00 | \$70,200.00 | Large capacity transfer trucks (cost based on operator experience) |
| 3 | General cleanup to include wash down of Facility. To include removal, transport, treatment, and disposal of all wash down waters/media | 1 | L.S. | \$6,750.00 | \$6,750.00 |  |
| 4 | Vector control procedures | 1 | L.S. | \$1,675.00 | \$1,675.00 | Assumes site requires one treatment by pest control co. |
| 5 | Contaminated Water Disposal from Tanks (Optional) | 8,000 | Gallons | \$0.11 | \$880.00 | Assumes installation of optional storage tanks and cost of transportation/disposal at appropriate facility. Includes cost of disposing volume in 6000 gallon storage tank, plus additional washdown. |
| C | Secure Site |  |  |  |  |  |
| 1 | Install locks and a sign stating the facility is closed. Make any needed repairs to fence and gate. Secure fence and gate. | 1 | L.S. | \$2,000.00 | \$2,000.00 |  |
| D | Certification of Abandonement and Completion of Cleanup |  |  |  |  |  |
| 1 | Perform site inspection and prepare certification of closure | 1 | L.S. | \$6,750.00 | \$6,750.00 |  |
| 2 | Sample/test/classify waste (ash, liquids, sludge, other waste not readily identifiable as garbage, trash, refuse). To include lab reports, chain of custody, quality as sur ance and quality control. | 1 | L.S. | \$3,400.00 | \$3,400.00 |  |
| 3 | Perform verification re-sampling and laboratory analysis. | 1 | L.S. | \$2,225.00 | \$2,225.00 | Estimated |
|  | GRAND TOTAL |  |  |  | \$123,530 |  |

Notes: 1. This estimate assumes the maximum volume of waste permitted will be stored onsite at the time of cleanup.
2. This estimate assumes the cleanup will be performed by a third party contractor.
3. Additional calculations for contaminated water disposal are included on Page III-3A-3.

## City of Waco Transfer Station Contaminated Water Disposal Cost

| Description | Value/Cost |
| :--- | ---: |
| Mileage from site to WMARSS Wastewater Treatment Plant | 3 miles |
| Mileage for roundtrip | 6 miles |
|  |  |
| Cost per mile (i.e., hauling cost per miling including profit for hauler) | $\$ 5.00$ |
| Size of truck (gallon capacity) | 6,000 gallons |
| Disposal fee (per gallon) charged by WWTP ${ }^{1}$ | $\$ 0.100$ |
|  |  |
| Contaminated Water Volume (including washdown) | 8,000 gallons |
| Truck Trips | 2.00 trips |
| Hauling Cost (i.e., mileage cost) | $\$ 60.00$ |
| mileage cost/gallon | $0.01000 /$ gallon |

Total cost per gallon (including hauling and disposal)
\$0.110 /gallon

1. Based on experience at various WWTPs.

# Type V Transfer Station Registration Application 

## Part IV - Site Operating Plan

City Of Waco Transfer Station<br>Closed City Of Waco Landfill TCEQ Registration No. TBD McLennan County, Texas

City of Waco
501 Schroeder Dr.
Waco, Texas 76710


# SCS ENGINEERS 

16222063.00 | October 2023

## TABLE OF CONTENTS

## Section

## 1 Introduction

1.1 General Facility Design
1.2 General Facility Operation
1.3 General Facility Personnel
1.3.1 Transfer Station Manager

1.3.2 Equipment Operators ..... IV-3
1.3.3 Scale Attendants ..... IV-3
1.3.4 Laborers ..... IV-3
1.4 General Facility Equipment. ..... IV-4
1.4.1 Equipment for Emergencies ..... IV-4
2 Waste Acceptance and Analysis (30 TAC §330.203) ..... IV-5
2.1 Waste Sources and Characteristics ..... IV-5
2.2 Measures for Controlling Prohibited Wastes ..... IV-7
2.2.1 Managing of Prohibited Wastes ..... IV-8
2.2.2 Load Inspection Procedure ..... IV-8
2.3 Waste Acceptance Rate ..... IV-9
2.4 Waste Storage and Processing Time ..... IV-9
2.5 Waste Disposal ..... IV-10
2.6 Waste and Effluent Testing ..... IV-10
$3 \quad$ Facility - Generated Wastes (30 TAC §330.205) ..... IV-11
4 Contaminated Water Management (30 TAC §330.207) ..... IV-11
5 Storage Requirements ( 30 TAC §330.209) ..... IV-13
6 Approved Containers (30 TAC §330.211) ..... IV-14
7 Citizen’s Collection Station (30 TAC §330.213) ..... IV-15
8 Requirements for Stationary Compactors (30 TAC §330.215) ..... IV-16
9 Pre-Operation Notice (30 TAC §330.217) ..... IV-17
10 Record-Keeping and Reporting Requirements (30 TAC §330.219). ..... IV-18
11 Fire Protection Plan (30 TAC $\S 330.221$ ) ..... IV-20
11.1 Fire Protection Training ..... IV-21
12 Access Control (30 TAC §330.223) ..... IV-22
12.1 Site Security ..... IV-22
12.2 Traffic Control ..... IV-22
13 Unloading Waste (30 TAC §330.225) ..... IV-23
14 Spill Prevention and Control (30 TAC §330.227) ..... IV-24
15 Operating Hours (30 TAC §330.229) ..... IV-25
16 Facility Sign (30 TAC §330.231) ..... IV-26
17 Control of Windblown Material and Litter (30 TAC §330.233) ..... IV-27
18 Materials Along Route to the Facility (30 TAC §330.235) ..... IV-28
19 Facility Access Roads (30 TAC §330.237) ..... IV-29
20 Noise Pollution and Visual Screening ( 30 TAC §330.239) ..... IV-30
21 Overloading and Breakdown (30 TAC §330.241) ..... IV-31
22 Sanitation (30 TAC §330.243) ..... IV-32
23 Ventilation and Air Pollution Control (30 TAC §330.245) ..... IV-33
24 Health and Safety ( 30 TAC §330.247) ..... IV-34
24.1 Emergency Preparedness ..... IV-34
24.1.1 General Measures ..... IV-34
24.1.2 Measures For The Unloading And Receiving Area ..... IV-34
24.2 Emergency And Contingency Procedures ..... IV-35
25 Employee Sanitation Facilities (30 TAC §330.249) ..... IV-36
26 Disease Vector Control ..... IV-37
27 Disposal of Large Items ..... IV-38
28 Salvaging and Scavenging ..... IV-39
29 Handling of Industrial Wastes ..... IV-40
30 Facility Inspection and Maintenance ..... IV-41
Tables
IV-1 Summary of Waste Types
IV-2 Operating Record
IV-3 Facility Inspection and Maintenance List
Appendices
Appendix IV-1 Waste Acceptance Plan


SCS Engineers
TBPE Reg. \# F-3407

## 1 INTRODUCTION

This Site Operating Plan (SOP or Plan) for the City of Waco Transfer Station Facility (Facility or Site) has been prepared based on Title 30 of the Texas Administrative Code (30 TAC) Chapter 330, Subchapter E. The facility is a Type V municipal solid waste transfer station owned and operated by the City of Waco. The purpose of this SOP is to provide general instruction to site management and operating personnel throughout the operating life of the facility. This document provides an operating guide for site management to maintain the facility in compliance with the engineering design and applicable regulatory requirements of the Texas Commission on Environmental Quality (TCEQ) or appropriate successor agency, to protect human health and the environment, and to prevent nuisances. This plan is formatted to follow the regulatory criteria set forth in 30 TAC §330.201-249 (Subchapter E of the TCEQ Municipal Solid Waste Regulations). Additionally, as applicable, provisions have been included in this SOP related to operation of a Citizens' Collection Station (CCS) in accordance with Chapter 330, Subchapter E (related to operational standards for municipal solid waste storage and processing units) and Chapter 328 (related to recycling) and operation of a brush management area in accordance with Chapter 332 (related to mulching operations). The plan may also serve as a reference source to assist in personnel training. This SOP and the registration will be kept on-site throughout the facility's life.

If, at any time during the life of the transfer station, the facility manager becomes aware of any condition in the approved SOP which necessitates a variation from the SOP to accommodate new technology or improved methods which makes it impractical to keep the facility in compliance with the SOP, the City will submit a revised SOP to the TCEQ. Such proposed changes to the approved SOP may require an updated registration application or partial application submittal consistent with the TCEQ rules regarding registered facilities at closed landfill sites. The appropriate submittal will be submitted for action by the TCEQ.

### 1.1 General Facility Design

The transfer station site includes a transfer station structure with a scale house/office and vehicle scales, CCS, and brush management area. One inbound and one outbound scale will be installed initially, while an additional inbound scale may be installed in the future at the discretion of Transfer Station Manager (Manager). The facility will include stormwater drainage features, a fence with locking gates, and two optional contaminated water holding tanks. The transfer station structure is a singlelevel building with a processing floor (tipping floor). The building footprint will initially be approximately 180 feet wide by 120 feet long with concrete floor, steel framing, metal exterior walls/panels (including vehicle access doors on the north and south sides), and a roof. The building footprint may be expanded in the future to be approximately 180 feet wide by 200 feet long. The general design and construction details for building components are included in Part III, Attachment 1, including a Site Layout Plan provided on Figure III-1.1. Figure III-1.5 shows the location of the metal exterior walls and the doors of the building. Construction layout and building components are shown in Figures III-1.4 through III-1.7. The transfer station facility will be constructed in accordance with the Subchapter $T$ Development Permit Application, submitted to TCEQ in May 2023, including subsequent revisions during the TCEQ review process. The brush management area is shown on Figure III-1.1, however, this location is subject to change at the discretion of the City.

### 1.2 General Facility Operation

It is anticipated that incoming waste will mostly come in collection trucks (front-end-, rear-end, and side-loaded) and in roll-off boxes, with a lesser component received directly from small vehicles, dump trucks or end-dump style semi-tractor trailers. Waste collection vehicles will enter the site and be weighed at the scale. The scale attendant will screen incoming loads for their contents and
acceptability and then direct these vehicles to the transfer station structure. Acceptable wastes will be off-loaded onto the tipping floor, inspected for prohibited wastes, and then loaded with site equipment into transfer trailers. Once transfer trailers are full, they will be covered with tarp and taken to an appropriate licensed, registered, or permitted facility for waste disposal and/or treatment.

### 1.3 General Facility Personnel

### 1.3.1 Transfer Station Manager

The Manager will be responsible for the following:

- Overall facility management;
- Confirming adequate number of personnel and equipment are available to provide facility operation in accordance with the SOP and TCEQ regulations;
- Serving as contact person for regulatory compliance matters;
- Authority to reject any and all unauthorized loads and have unauthorized materials removed from the facility.
- Conducting daily operations;
- Administration of the facility's SOP, includes verifying that compliance with the SOP is maintained as required by regulation and the SOP;
- Ensuring all site operating personnel are trained in the contents of the SOP, other applicable components of the registration application, and appropriate rules and regulations that are required to keep the facility in compliance;
- Serving as the emergency coordinator;
- Operating of equipment (when necessary); and
- Designation of an alternate manager in their absence that will be capable of assuming and fulfilling the duties and responsibilities above.

Additionally, in accordance with $\S 335.586(\mathrm{a})$ and (c), facility personnel must successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that maintains facility compliance with the regulations and they must take part in an annual review of their initial training. The Manager must ensure that the training program includes all the elements to comply with §335.586(a)(2). The program must be directed by a person trained in waste management procedures, and must include instruction that teaches facility personnel waste management procedures relevant to the positions in which they are employed. The training program must be designed to so that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems. Personnel training records will be maintained in the Site Operating Record and will include evidence of successful completion of the training, type of training received, and the name of the instructor.

The Manager will maintain and document all training relative to this requirement in accordance with the record-keeping requirements outlined in Section 10.0 of this SOP.

Qualifications: Will be required to have a minimum of one year of operations experience with either a transfer station, MSW Type 1 landfill, or similar facility; high school diploma or equivalent; be familiar
with TCEQ regulations; and the various uses and capabilities of transfer station equipment. The Manager will maintain a MSW Class A or B license, as defined in 30 TAC $\S 30.210$.

### 1.3.2 Equipment Operators

Equipment Operators are responsible for the safe operation of the equipment they operate. As the personnel most closely involved with the actual operations, these employees are responsible for being alert for potentially dangerous conditions or careless and improper actions on the part of nonemployees and other persons while on the premises. Equipment Operators will be trained to check for and identify prohibited wastes, and to alert the Manager for proper removal. Equipment Operators monitor and direct unloading vehicles and are also responsible for maintenance, litter abatement, and general site cleanup. Equipment Operators intervene as necessary to prevent accidents and report unsafe conditions immediately to the Manager. Examples of their daily responsibilities may include, but are not limited to: loading materials into transfer trailers and using equipment to sweep the tipping floor. The Manager or designated representative will supervise the equipment operations.

Qualifications: At a minimum, be capable of fulfilling the obligations and duties described under this section. Equipment Operators that are hired on the basis of specific heavy equipment experience may be assigned to operate specific types of equipment without additional training.

### 1.3.3 Scale Attendants

Scale Attendants will manage the scale house to receive waste and perform the following tasks: control site access and screen incoming waste; visually inspect open containers to verify contents, including inquiring/checking for prohibited waste; dispense information on the proper utilization of the site; assess tipping fee charges; maintain records of each transaction and vehicles entering the facility; and direct persons to the transfer station structure or CCS as appropriate. The Manager or designated representative will supervise the Scale Attendants.

Qualifications: Will be required to have experience and education commensurate with job requirements, as described above, and computer literacy skills. If the new employee does not have previous transfer station experience, he/she will be required to complete a training program or on-thejob training specific to their job responsibilities, prior to working in an unsupervised position.

### 1.3.4 Laborers

Laborers will provide miscellaneous operations support at the transfer station that will include, but is not limited to, sweeping the operations areas, performing facility wash-down, collecting and disposing of windblown litter, performing general equipment and building maintenance, and directing vehicles in the unloading areas. Other site personnel or Laborers may be employed from time to time in categories such as maintenance, litter abatement, and general site cleanup.

At a minimum, one laborer will be employed to perform the duties of a Spotter at the CCS, when the CCS is in operation. A Spotter will direct waste hauling vehicles to the appropriate location to unload and will inspect and observe loads as they are disposed of at the CCS. A Spotter will direct citizens to appropriate locations for unloading waste or recyclables at the CCS and observe that the respective materials are unloaded in the correct bin or container. Spotters will be trained to recognize unauthorized waste, the procedures if unauthorized waste is detected, fire procedures, and other specific training procedures.

The minimum qualifications for Laborers are the demonstrated abilities to perform assigned duties in a safe and effective manner. The Manager and/or the Equipment Operators will supervise the Laborers.

### 1.4 General Facility Equipment

Sufficient equipment will be provided to have adequate capability to conduct site operations in accordance with the design and conditions of the Site Development Plan (SDP) and this SOP.

The facility will typically use one bucket front-end loader and one raised-cab basket grapple loader (or similar materials handling equipment) for the transfer operations. The minimum equipment required to operate the facility is one front-end loader. Collection vehicles will unload MSW within the transfer station on the tipping floor. A front-end loader will typically push the MSW towards a grapple loader (or similar materials handling equipment), which will transfer the MSW from the tipping floor into the transfer trailers. The facility will have a permitted maximum rate of waste acceptance of 1,800 tons per day (561,600 tons per year).

The facility will provide sufficient equipment if the volume of daily waste transfer will require additional equipment. Additional City-owned or rental equipment, such as road tractors, water trucks, and backhoes, may be provided as necessary to enhance operational efficiency. At infrequent times, such as during equipment breakdown or periodic maintenance, additional equipment stationed at other City-owned facilities will be transported to the transfer station as needed. Other equivalent types of equipment may be substituted on an as-needed basis to adequately maintain the transfer station and meet the operational standards required by TCEQ's regulations in accordance with all applicable local, state, and federal regulations.

### 1.4.1 Equipment for Emergencies

Each major piece of equipment, scale house, transfer station structure, and CCS will be equipped with fire extinguishers. The on-site fire hydrant located adjacent to the transfer station facility and yard hydrant located adjacent to the CCS will be available for firefighting purposes. A first-aid kit will be maintained at the site. Personal Protective Equipment will be required for the operators and laborers.

## 2 WASTE ACCEPTANCE AND ANALYSIS (30 TAC §330.203)

### 2.1 Waste Sources and Characteristics

This transfer station is authorized to accept municipal solid waste (MSW), Class 2 and 3 industrial nonhazardous waste, and certain special waste that are described in this section. Special waste may be accepted at the facility provided the wastes are properly identified and provided the acceptance of such waste does not interfere with site operations. The parameter limitations, as required by §330.203(a), applicable to this facility are associated with the types or classification of waste not accepted at the transfer station as described below and Section 2 of Part IV, Appendix IV-1 - Waste Acceptance Plan.

Waste accepted at the facility is expected to consist of the following wastes as defined in 30 TAC §330.3:

- Municipal Solid Waste - Solid waste resulting from or incidental to municipal, community, commercial, institutional, and recreational activities, including garbage, rubbish, ashes, street cleanings, automobile parts, and all other solid waste other than industrial solid waste;
- Putrescible Waste - Organic wastes, such as garbage, that are capable of being decomposed by microorganisms with sufficient rapidity as to cause odors or gases or are capable of providing food for or attracting birds, animals, and disease vectors;
- Rubbish - Non-putrescible solid waste (excluding ashes), consisting of both combustible and noncombustible waste materials. Combustible rubbish includes paper, rags, cartons, wood, excelsior, furniture, rubber, plastics, brush, or similar materials; noncombustible rubbish includes glass, crockery, tin cans, aluminum cans, and similar materials that will not burn at ordinary incinerator temperatures (1,600 degrees Fahrenheit to 1,800 degrees Fahrenheit);
- Yard Waste - Leaves, grass clippings, yard and garden debris, and brush, including clean woody vegetative material not greater than six inches in diameter that results from landscaping maintenance and land-clearing operations. The term does not include stumps, roots, or shrubs with intact root balls;
- Special Waste - Any solid waste or combination of solid waste that because of its quantity, concentration, physical or chemical characteristics, or biological properties requires special handling and disposal to protect the human health or the environment. The following special waste that do not interfere with site operations will be accepted at this facility:
o Dead animals that are incidental to routine collection of municipal solid waste and that can be systematically processed along with other solid waste;
o Pharmaceuticals, contaminated foods, or contaminated beverages other than those contained in normal household waste on a case by case basis;
o Empty containers which have been used for pesticides, herbicides, fungicides or rodenticides, provided the containers have been triple rinsed, crushed, or rendered unusable upon receipt at the gate; and
o Non-RACM - Incidental amounts of non-regulated asbestos containing materials (NonRACM) (incidental amount is defined as the maximum of 10 percent of the waste received on an annual basis by scale weight).
o Waste generated outside the boundaries of Texas that contains any industrial waste, which if generated in Texas, would be classified as Class 2 or Class 3 industrial waste;
any waste associated with oil, gas, and geothermal exploration, production, or development activities, or any material listed in the bullets above.
- Construction or Demolition (C \& D) Waste - Waste resulting from construction or demolition projects; includes all materials that are directly or indirectly the by-products of construction work or that result from demolition of buildings and other structures, including, but not limited to, paper, cartons, gypsum board, wood, excelsior, rubber, and plastics;
- Class 2 Industrial Wastes - Any individual solid waste or combination of industrial solid waste that are not described as Hazardous, Class 1, or Class 3 as defined in $\S 335.506$ of the TCEQ regulations (relating to Class 2 Waste Determination); and
- Class 3 Wastes - Inert and essentially insoluble industrial solid waste, usually including, but not limited to, materials such as rock, brick, glass, dirt, and certain plastics and rubber, etc., that are not readily decomposable, as further defined in $\S 335.507$ of the TCEQ regulations (relating to Class 3 Waste Determination).

Additionally, the CCS may also receive recyclable materials in accordance with Chapter 328, related to waste minimization and recycling. The CCS will be comprised of an elevated deck area with an allweather surface, with collection containers situated behind a retaining wall for drop-off of waste and recyclables, such as aluminum, glass, plastic, cardboard/newspapers, and scrap-metal. These recyclables will be unloaded into containers or bins for either mixed or segregated recycling, as discussed in Section 7 of this SOP.

The facility will not accept the following wastes, referred to herein as prohibited wastes:

- Regulated hazardous wastes;
- Polychlorinated biphenyls (PCB) waste;
- Radioactive waste;
- Regulated Asbestos Containing Materials (RACM);
- The following Special Wastes:
o Hazardous waste from conditionally exempt small-quantity generators that may be exempt from full controls under Chapter 335, Subchapter $N$ of this title (relating to Household Materials Which Could Be Classified as Hazardous Wastes);
o Class 1 non-hazardous industrial waste;
o Untreated medical waste
o Municipal wastewater treatment plant sludges, other types of domestic sewage treatment plant sludges, and water-supply treatment plant sludges;
o Septic tank pumpings;
o Grease and grit trap wastes;
o Waste from commercial or industrial waste water treatment plants; air pollution control facilities; and tanks, drums, or containers used for shipping or storing any material that has been listed as a hazardous constituent in 40 code of Federal Regulations (40 CFR), Part 261, Appendix VIII but has not been listed as a commercial product in 40 CFR, §261.33(e) or (f);
o Slaughterhouse wastes;
o Incinerator ash;
o Soil contaminated by petroleum products, crude oils, or chemicals in concentrations greater than $1,500 \mathrm{mg} / \mathrm{kg}$ total petroleum hydrocarbons, or contaminated by constituents of concern exceeding the concentrations listed in Table 1 of 30 TAC §335.521(a)(1);
o Lead acid storage batteries;
o Used oil; and
o Used oil filters from internal combustion engines.
- Whole used or scrap tires, except for incidental scrap tires picked up in enclosed municipal solid waste collection vehicles in accordance with 30 TAC 328.54(b);
- Items containing chlorinated fluorocarbons (CFC's), such as refrigerators, freezers, and air conditioners, will only be accepted at the site if the generator or transporter provides written certification that the CFC has been evacuated from the unit and that it was not knowingly allowed to escape into the atmosphere; and
- Liquid waste (any waste material that is determined to contain "free liquids" as deemed by EPA Method 9095 (Paint Filter Test), as described in "Test Methods for Evaluating Solid Wastes, Physical Chemical Methods" (EPA Publication Number SW-846)) will not be accepted unless it is:
o Bulk or non-containerized liquid waste that is: household waste other than septic waste, or contained liquid waste and the container is a small container similar in size to that normally found in the household waste, the container is designated to hold liquids for use other than storage, or the waste is a household waste.

As mentioned above, the transfer station may receive brush, wood waste, and yard waste for mulching in accordance with Chapter 332, related to mulching operations. The Scale Attendant will direct hauling vehicles with brush, untreated wood waste, and yard waste to unload these materials at a designated brush management area. Brush, untreated wood waste, and yard waste will be routinely mulched. Mulching operations will be performed in accordance with $\S 332.4$ (related to general requirements) and $\S 332.8$ (related to air quality requirements).

Waste Acceptance Plan (WAP) is included in Part IV, Appendix IV-1. Other limiting parameters, as well as procedures for coordinating with the landfill receiving any special wastes from the transfer station, are addressed in Section 2 of the WAP.

### 2.2 Measures for Controlling Prohibited Wastes

In order to address the detection and prevention of regulated hazardous wastes as defined in 40 Code of Federal Regulations (CFR) Part 261 and of polychlorinated biphenyls (PCB) waste as defined in 40 CFR Part 761, a Waste Screening Plan (WSP) and Waste Exclusion Program (WEP) will be implemented at the transfer station. The purpose of the program is to:

- Prevent the unauthorized entry and disposal of wastes not approved by the rules and regulations of the TCEQ and the facility Registration;
- Protect the site operating personnel and customers using the facility;
- Maintain regulatory compliance;
- Assure that the site and surrounding areas are protected from possible contamination from prohibited wastes; and
- Provide implementation procedures for the detection and exclusion program.

Procedures to detect and control the receipt of prohibited wastes include:

- Informing facility customers and drivers of incoming hauling vehicles of prohibited wastes by posting one or more signs at the facility entrance listing prohibited wastes;
- Providing customers and drivers of incoming hauling vehicles (regular and occasional) with a written list of prohibited wastes; and
- Training facility personnel:
o Training for appropriate facility personnel responsible for inspecting or observing incoming loads to recognize regulated hazardous waste and PCB waste
o Conducting random inspections of incoming loads in accordance with procedures described in this section
o Maintaining records of all inspections
Facility personnel will be trained to inspect vehicles and identify regulated hazardous waste, polychlorinated biphenyl (PCB) waste, and other prohibited wastes. At a minimum, the scale attendant and equipment operators will be trained in inspection procedures for prohibited waste. Supervisors will provide personnel with on-the-job training. Records of employee training on prohibited waste control procedures will be maintained in the site operating record.
If transfer station personnel identify any of the above indicators in an incoming load, then that load will be directed to an area out of the flow of traffic and facility personnel will further assess the load. If the load is determined to contain prohibited waste, then the load will be rejected and directed back to the generator.


### 2.2.1 Managing of Prohibited Wastes

Known prohibited wastes detected during inspection are returned immediately to the hauler. If the hauler is not available, waste will be placed in suitable collection bins. An effort is first made to identify the entity that deposited the prohibited wastes and have them return to the site and properly disposed of the waste material. In the event that identification of the source is not possible, the Manager will manage the waste so it is disposed of properly; however, the waste will not be allowed to remain on the site in the collection bins for more than 72 hours.

In the event unauthorized waste is not discovered until after the collection vehicle that delivered it is gone, the site will attempt to segregate the unauthorized waste and manage it properly as directed by the Manager. The site will, if necessary, notify the TCEQ and seek guidance on how to dispose of the waste. Documentation will be included in the site operating record each time unauthorized or prohibited waste is discovered and removed from the site. Site personnel will have a basic understanding of both industrial and hazardous waste and their transportation and disposal requirements.
Unknown wastes undergoing analysis are properly segregated and protected against the elements, secured against unauthorized removal, and isolated from other waste and activities.

### 2.2.2 Load Inspection Procedure

Equipment Operators in the transfer station will visually inspect all incoming loads. Should any indication of prohibited waste be detected, appropriate personnel will conduct a thorough evaluation
of the load. The driver will be directed to a load inspection area in an unused area of the tipping floor where the load will be discharged from the vehicle. The inspector will break up the waste pile and inspect the material for any hazardous or prohibited waste. Facility personnel will flag suspicious wastes. Known prohibited waste will be placed back into the vehicle and the driver will be instructed to depart the site. Should any regulated hazardous waste be detected, the entire load will be refused.

Reports of load inspections will be completed for each inspected load. The reports will include (at a minimum), the date and time of inspection, the name and address of the hauling company and driver, the type of vehicle, the size and source of the load, the contents of the load, the indicators of prohibited waste, and the results of the inspection.

In addition to the above procedure, incoming loads will be inspected on a random basis. At a minimum, the transfer station will randomly inspect one percent of all incoming loads (not to be less than one incoming waste vehicle) per day. The driver of a randomly selected load will be notified at the scale house and instructed to proceed to the inspection area of the tipping floor that is out of the flow of normal transfer station traffic. At this point, the operator will visually inspect the contents of the load and document the contents for the type of waste contained. Following any random inspection, documentation of the inspection will be placed in the site's operating record. The documentation will include information such as the date, time, name of inspector(s), transporter/generator information, and waste information.

### 2.3 Waste Acceptance Rate

Waste acceptance rate in the first year of operation is expected to be approximately $800-1,000$ tons per day. In accordance with 30 TAC $330.61(\mathrm{~b})(1)(\mathrm{B})$, the projected maximum amount of waste to be received daily and annually for the first five years of facility operation is estimated to be approximately 1,000 tons per day. The projected maximum amount of waste to be received daily and annually over the lifetime of the facility is estimated to be approximately 1,800 tons per day ( 561,600 tons per year). An estimate of the amount of waste to be received daily, by waste type, is as follows:

Table IV-1
Summary of Waste Types

| Waste Type | Estimated Daily Amount |
| :---: | :---: |
| MSW | $50 \%$ to $100 \%$ |
| C \& D | $0 \%$ to $50 \%$ |
| Special Wastes | $0 \%$ to $25 \%$ |
| Yard Waste | $0 \%$ to $25 \%$ |
| Class 2 | $0 \%$ to $25 \%$ |
| Class 3 | $0 \%$ to $25 \%$ |

These waste amounts are only estimates and are not intended to be a limitation or constraint on site operations.

### 2.4 Waste Storage and Processing Time

At the estimated peak, the amount of waste (all types as discussed above in Table IV-1) to be received daily will be 1,800 tons per day. The maximum volume of waste that will be stored overnight at the transfer station at any given time is 900 tons. Waste storage or holding will occur on the tipping floor, including partially-filled transfer vehicles at the end of the operating day. No storage of waste materials will occur off the tipping floor, other than loaded, covered transfer vehicles waiting to haul waste offsite, or materials dropped off at the CCS. Solid waste will generally be processed within an average of

4 to 6 hours. Waste dropped off at the CCS will be collected daily as discussed in Section 7. Solid waste will not be allowed to accumulate on-site for such a period that will allow the creation of nuisances or public health hazards due to odors, fly breeding, or harborage of other vectors. Storage periods significantly above average are as a result of equipment breakdown or acts of God are addressed in Section 21.

### 2.5 Waste Disposal

All acceptable wastes received will be transported to appropriately licensed, registered or permitted facility for recycling, waste disposal, treatment or processing. Whole scrap tires will be removed from the waste stream for proper management either through recycling per 30 TAC Chapter 328 of the TCEQ regulations or transported to permitted landfills where they will be split in half, quartered or shredded prior to disposal.

### 2.6 Waste and Effluent Testing

As noted in Section 4, Contaminated Water Management, contaminated water may be stored in optional on-site tanks for transport to an approved wastewater treatment facility. Testing of wastewater, if required, will be performed consistent with the requirements of the wastewater treatment facility, which receives contaminated water generated by the transfer station.

The facility does not accept or process grit trap wastes or sludges for which requirements in $\S 330.203(c)(2)$ apply, and therefore, waste and effluent sampling and testing is not required for the proposed waste streams. The effluent testing requirements in §330.203(c)(1) do not apply to this facility since wastewaters are collected in an on-site tank and then transported by truck to a permitted wastewater plant or a registered/permitted liquid processing/transfer facility.

## 3 FACILITY - GENERATED WASTES (30 TAC §330.205)

The only wastes that the site will generate are contaminated water from the floor wash down process, incidental liquids in the trucks, and potential waste in the optional dual-contained holding tanks or portable sanitary facilities, if used. The characteristics and approximated constituent concentrations of waste in the optional dual-contained holding tanks or portable sanitary facility will consist of only human waste and approved deodorizing chemicals utilized by an approved portable toiler provider. Portable sanitary facilities will be maintained in accordance with instructions from the providers of such facilities.

Also, following approval by the McLennan County Health Department for an on-site sewage disposal permit, the City will install an on-site sewage disposal system, which directly connects to the City of Waco sanitary sewer off-site. At the appropriate times, the City will engage appropriately-trained contractors for maintenance of that system. If connection to the City of Waco sanitary sewer is not made, the City will install and connect to two dual-contained holding tanks located adjacent to the scale house and transfer station structure.

Contaminated water (wastewater) from incidental liquids in trucks, floor wash down process, and optional dual-contained holding tanks will be managed in accordance with $\S 330.207$ as described in Section 4.0 of this SOP. The transfer station structure will maintain documentation in the Site Operating Record indicating that contaminated water, as well as the portable sanitary waste, was (1) removed from the facility by a licensed or permitted entity eligible to receive and dispose of such wastes and (2) disposed of at a wastewater treatment facility permitted by the TCEQ.

The facility will not generate sludge; therefore, requirements of §330.205(d) do not apply.

## 4 C ONTAMINATED WATER MANAG EMENT (30 TAC §330.207)

All liquids resulting from the operation of the transfer station will be disposed of in a manner that will not cause surface water or groundwater pollution. Implementing a surface water drainage plan that is designed to minimize and route storm water away from the waste processing area will protect surface water, thus reducing the amount of contaminated water generated by the site.

Uncontaminated water is any water that has not come into contact with waste. Contaminated water is any water that has come into contact with waste. The pavement and ground surface around the perimeter of the transfer station structure will be graded to promote uncontaminated surface water drainage away from the building and toward the surface water drainage features. The surface water flow direction for the handling of the clean stormwater is depicted on Part III, Attachment 1, Figure III1.6.

Solid waste processing operations will be conducted on a concrete-paved area (tipping floor) inside the transfer station structure; therefore, contact of storm water with waste material will be very limited. To prevent creating odors or attracting vectors, contaminated water will be directed toward one end of the sloped tipping floor and will not be allowed to accumulate on the tipping floor. Contaminated water will be collected in a grated grit trap that is drained by gravity into an oil/water separator and a sump and then pumped to the City of Waco's off-site sanitary sewer system via dual-contained forcemain pipe, or optionally, a contaminated water holding tank for storage and disposal. A contaminated water management plan, showing the layout of the grit trap, sump, oil/water separator, optional contaminated water holding tank, and associated piping for the handling of contaminated water is included in Part III, Attachment 1, Figure III-1.6. The optional contaminated water holding tanks and interconnecting piping for grit trap/sump will be dual-contained. Details of the contaminated water management components are included in Part III, Attachment 1, Figure III-1.7. If installed, the
contaminated water stored within holding tanks will be removed, as necessary, by a vacuum truck and hauled to a permitted wastewater treatment facility or a registered/permitted liquid processing/transfer facility. The optional contaminated water holding tanks, sump, and associated piping will be inspected on a monthly basis. The tanks will be inspected for evidence of leaks (water in the outside dual-wall tank) and cleaned as necessary. Additionally, the pump and automatic switch will also be inspected.

Wastewater discharged to a permitted treatment facility permitted under Texas Water Code, Chapter 26 must not:

- Interfere with or pass-through the treatment facility processes or operations;
- Interfere with or pass-through the facility's sludge processes, use, or disposal; or
- Be inconsistent with the prohibited discharge standards, including 40 Code of Federal Regulations Part 403, General Pretreatment Regulations for Existing and New Source Pollution.

Furthermore, consistent with 30 TAC $\S 330.207(\mathrm{~g})$, the concentration of oil and grease of wastewater to be hauled to a permitted treatment facility will not exceed 200 milligrams per liter or concentration established by the treatment facility permitted under Texas Water Code, Chapter 26, the National Pollutant Discharge Elimination System. Off-site discharge of contaminated waters will be made only after approval under the Texas Pollutant Discharge Elimination System authority.

## 5 STORAGE REQUIREMENTS (30 TAC § 330.209)

Solid waste entering the facility will be stored in the covered transfer station structure or loaded in transfer trailers. All solid waste will be stored in a manner to prevent fires, ensure safety, prevent and control vectors and odors, and contained to prevent windblown solid waste and litter.

No solid waste loading, storage, or disposal will occur within any easement, buffer zone, or right-ofway that crosses the facility. When necessary, MSW material will be stored on-site at the transfer station structure for a maximum time not to exceed 48 hours, except on holidays and/or weekends, where it will not exceed 72 hours. The volume of MSW stored overnight will not exceed 900 tons. Waste that is stored overnight will be in tarped transfer trailers or will be covered with a tarp on the transfer station tipping floor. Tarping of segregated recyclable materials will not be required. No solid waste unloading, storage, disposal, or processing operations will occur within any easement, buffer zone, or right-of-way.

Solid waste and recyclables placed at the CCS will be stored in roll-off containers. Containers storing putrescible waste material will be emptied on a daily basis into the transfer station structure, while other MSW waste will be emptied, as needed, to prevent odors. Recyclable material will be emptied when containers reach capacity.

## 6 APPROVED CONTAINERS (30 TAC § 330.211)

Solid waste entering the facility is transferred from incoming haul vehicles to the tipping floor. Waste that is placed on the tipping floor will be transferred to transfer trailer vehicles via loading equipment. The transfer trailers will be durable and designed for safe handling and easy cleaning. The transfer trailers will be equipped with tarps or covers to be used during transport. In addition, the trailers are designed to prevent spillage or leakage during storage, handling, and transport, which are approved containers consistent with $\S 330.211$.

The transfer trailers are washed, as necessary, so that they do not constitute a nuisance and to restrict the harborage, feeding, and propagation of vectors.

Reusable containers emptied manually will be capable of being serviced without physical contact with waste.

## 7 CITIZENS' COLLECTION STATION (30 TAC §330.213)

A CCS will be constructed near the transfer station structure and utilized by individual haulers to drop off waste, recyclables, and other approved materials prior to transport and disposal at an authorized facility. Rules will be posted governing the use of the CCS, including who may use the CCS, and what materials are allowed for drop off. Trained personnel will monitor the incoming waste on the trucks. The CCS may receive recyclable materials in accordance with Chapter 328, related to waste minimization and recycling.

The CCS will be comprised of an elevated deck area with an all-weather surface, with collection containers situated behind a retaining wall for drop-off of waste and recyclables, such as aluminum, glass, plastic, cardboard/newspapers, and scrap-metal. The CCS will provide clearly identified roll-off containers to receive waste or recyclables. A Spotter will direct citizens to appropriate locations for unloading materials at the CCS and observe that the respective materials are unloaded in the correct bin or container.

Containers storing putrescible waste material will be emptied on a daily basis into the transfer station structure, while other MSW waste will be emptied, as needed, to prevent odors. Recyclable material will be emptied when containers reach capacity. The containers will be inspected for spills or leaks on a daily basis when the facility is in operation, and promptly repaired or replaced, if necessary, as a result of these inspections. Additionally, these containers will be routinely cleaned to prevent nuisance odors and to prevent the harborage, feeding, and propagation of vectors

## 8 REQ UIREMENTS FOR STATIONARY C OMPAC TORS (30 TAC §330.215)

The facility will not utilize a stationary compactor, therefore the requirements of $\S 330.215$ do not apply to this facility.

## 9 PRE-OPERATION NOTICE (30 TAC §330.217)

The facility will not operate a mobile liquid processing unit or perform any type of liquid waste processing; therefore, the requirements of $\S 330.217$ do not apply.

## 10 REC ORD-KEEPING AND REPORTING REQ UIREMENTS (30 TAC §330.219)

A copy of the registration, the approved Registration application, the approved site operating plan, an as-built set of construction plans and specifications, and other required plans and related documents will be maintained in the Site Operating Record at the facility scale house. These plans and documents will be furnished upon request to TCEQ representatives and made available for inspection at a reasonable time by TCEQ representatives or other interested parties. These plans and documents are part of the facility's Site Operating Record and may consist of hard copies or as electronic documents. The Site Operating Record will be maintained in an organized format that will allow information to be easily located and retrieved. All information contained within the operating record and the different required plans will be retained during the active life of the facility and until after certification of closure.
The following records will be kept, maintained, and filed as part of the Site Operating Record. Log books and schedules may be used.

- Access Control Inspection and Maintenance;
- Daily Litter Pickup;
- Windblown Waste and Litter Control Operations;
- Dust Nuisance Control Efforts;
- Access Roadway Regrading;
- Fire Occurrence Notices, if applicable.

In addition to plans and documents listed above, information listed in Table IV-2 will be promptly recorded and retained in the Site Operating Record.

Table IV-2
Site Operating Record

| Records To Be Maintained | Rule Citation |
| :---: | :---: |
| 1. All location-restriction demonstrations | §330.219(b)(1) |
| 2. Inspection records and training procedures | §330.219(b)(2) |
| 3. Closure plans and any monitoring, testing, or a nalytical data relating to closure requirements | §330.219(b)(3) |
| 4. Cost estimates and fina ncial assurance doc uments relating to financial assurance forclosure | §330.219(b)(4) |
| 5. Copies of all correspondence and responses relating to the operation of the facility, modifications to the registration, approvals, and other matters perta ining to technical assistance | §330.219(b)(5) |
| 6. Documents, manifests, shipping documents, trip tic kets, etc., involving special waste | §330.219(b)(6) |
| 7. Other document(s) as specified by the approved Registration or by the executive director | §330.219(b)(7) |
| 8. Record retention provisions for trip tic kets consistent with §312.145 | §330.219(b)(8) |


| Records To Be Maintained | Rule Citation |
| :--- | :--- |
| 9. Altemative schedules and notific ation requirements, if applic able | $\S 330.219(\mathrm{~g})$ |
| 10. Inspection records and tra ining procedures relating to fire <br> prevention and fac ility sa fety | $\S 330.221$ |
| 11. Access control breach and repair notices | $\S 330.223$ |
| 12. Waste unloading/prohibited waste discovery | $\S 330.225$ |
| 13. Record of altemative operating hours if applic able | $\S 330.229(\mathrm{~b})$ |

All reports and other information requested by the executive director will be signed by the City or operator of the facility as described in $\S 305.44$ or by a duly authorized representative of the City or operator. Consistent with $\S 330.219$ (c)(2), if an authorization is no longer accurate because of a change in individuals or position, a new authorization satisfying the requirements of the rule will be submit to the executive director prior to, or together with, any reports, information, or applications to be signed by an authorized representative. In accordance with $\S 330.219$ (c)(1)(A)-(C), a person is a duly authorized representative only if:

- The authorization is made in writing by the City or operator as described in §305.44(a);
- The authorization specifies either an individual or a position having responsibility for the overall operation of the facility or activity or for environmental matters for the City or operator, such as the position of plant manager, environmental manager, or a position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and
- The written authorization is submitted to the executive director.

The person signing the report will make the certification in accordance §305.44(b).
Additionally, annual reporting will be submitted to the executive director in accordance with §330.675(b).

## 11 FIRE PROTEC TION PLAN (30 TAC §330.221)

No burning of waste materials will be permitted at the site, unless specifically authorized under special conditions from the executive director. Accidental fires will be promptly extinguished. To minimize any hazards regarding fire, all employees will be instructed of the potential sources of fires and their appropriate control, as described below. All buildings and machinery at the site will be equipped with fire extinguishers of a type, size, number, and at locations specified by the fire marshal. All fire extinguishers will be kept fully charged, will have a current inspection, and will be ready for use at all times.

Flammable and combustible liquids will be stored in approved flammable-materials storage cabinets. Smoking, open flames, temporary heaters, and spark-producing containers, devices, or tools will not be permitted in areas where flammable materials are stored or handled. The storage cabinets containing flammable or combustible materials will be labeled.

Operating personnel will observe incoming waste collection vehicles to detect evidence of pre-ignited materials in the vehicle. In most instances, these pre-ignited conditions are evident from the discharge of smoke and odors from the vehicle containing pre-ignited waste materials. The vehicle will be directed to an area of the site outside and not adjacent to any building, where waste can be safely discharged and the fire extinguished.
If pre-ignited waste materials are discovered after having been unloaded inside the transfer station, the load will be pushed, if practical and safe, to a location outside and not adjacent to any building, for control and extinguishing. Extinguished waste materials will then be transported back into the transfer station for loading onto the transfer trailers.
The transfer station structure will be equipped with portable fire extinguishers, as specified by the fire marshal. Fire protection systems will be installed in conformance with local building and fire codes and subject to approval by the local fire marshal and will be coordinated during the development of the construction plans for the facility. A fire hydrant located adjacent to the transfer station facility will be installed per the required local codes, and may be used in conjunction with a standpipe and hose system installed nearby. The fire hydrant and hose system will be capable of providing sufficient pressure and water flow to reach the far corner of the tipping floor. The standpipe and hose system will be installed consistent with NFPA 14 - Standard for the Installation of Standpipes and Hose Systems.
Any additional fire protection procedures required at that time by the fire marshal to comply with the local fire codes will be incorporated into this Fire Protection Plan by an updated registration application or partial application submittal in accordance with §305.70.
Any fires managed at the site will be done so with the employees' safety in mind. Site personnel will initiate the following procedures upon detecting a fire:

1. Call the fire department;
2. Notify and request assistance from other operating personnel immediately;
3. Stop all site operations;
4. Push the fire out of the building if possible;
5. Use portable fire extinguishers and/or water hydrant;
6. Confine fire to a small area; and
7. Approach the fire from an upwind position to minimize exposure to combustible products.

The brush management area is a portion of the facility that stores, disposes and processes combustible materials, such as brush, untreated wood, yard waste, and mulch. In the event a fire occurs at this location, the steps described above will be implemented. Additionally, if it appears that a fire at one of these operations can be safely fought, transfer station personnel will attempt to extinguish the fire by use one of the following methods, depending on the waste stream involved:

1. Petroleum free materials, such as brush, wood waste, yard waste, mulch, newspaper/cardboard, municipal solid waste may be extinguished by spraying with water from the fire hydrant and taking measures using site equipment to diminish heat and segregate materials to minimize the potential for the fire to spread until arrival of the local Fire Department. Additionally, these materials may be extinguished by using dry fire extinguishing agents or devices, or smothering with soil.
2. Site personnel and equipment will be utilized to assist the local Fire Department as needed and as appropriate. If the fire is small enough, it may be fought with a handheld extinguisher.

If a fire occurs that is not extinguished within ten minutes of detection, the TCEQ's regional office will be contacted as soon as practical after detection, but no later than four hours by telephone, and in writing within 14 days with a description of the fire and the resulting response.

The following firefighting equipment will be readily available in the event of fire:

- Fire extinguishers located in the waste processing equipment (front-end loaders, excavators, etc. used within the building for processing); and
- Fire hydrant located adjacent to the transfer station structure. The fire hydrant will be able to provide an adequate supply of water under pressure for extinguishing fires that may occur in the transfer building.
- Yard hydrant at the CCS.


### 11.1 Fire Protection Training

Qualified professionals will train on-site personnel in firefighting techniques, fire prevention, response, and the fire safety and protection aspects of the SOP, as explained in the above sections. The training will occur as outlined previously in Section 1.3.1 of this SOP. Personnel will be familiar with the use and limitations of firefighting equipment available onsite. Records of this training will be included in the Site Operating Record in accordance with the recordkeeping requirement of Section 10.0 of this SOP.

## 12 ACCESS CONTROL (30 TAC §330.223)

Fences and gate encompassing the entire transfer station facility will control public access to the transfer station. Access will be limited to one gated site entrance on South University Parks Drive. This site entrance will be secured by a gate that is monitored by site personnel during normal site operating hours. Outside operating hours, the gate at the site entrance will be locked.

### 12.1 Site Sec urity

Site security measures are designed to prevent unauthorized persons from entering the site, to protect the facility and its equipment from possible damage caused by trespassers, and to prevent disruption of facility operations caused by unauthorized site entry. Unauthorized entry into the facility is minimized by controlling access with a 6 -foot high chain-link fence along the property boundary and by securing the entrance road by a locking gate. Access to the facility will be monitored by a site attendant that may consist of a Scale Attendant, Equipment Operator, Laborer or the Manager who will be on-site during operating hours. Outside the operating hours, the entrance gate will be locked.

Entry to the active portion of the facility is restricted to designated personnel, approved waste haulers, authorized users, and properly identified persons whose entry is authorized by site management. 30 TAC §330.223(b) requires safety bumpers at hoppers for vehicles. The transfer station structure will not contain hoppers; therefore, this regulation is not applicable to this facility.

The facility's perimeter fencing and gate will be inspected once weekly for integrity. Maintenance will be performed as needed to correct normal wear and tear. Site personnel or a third party company will perform repairs, as necessary.

### 12.2 Traffic Control

Access to the transfer station is limited to the site entrance located off of South University Parks Drive. Vehicular traffic to and from the facility will utilize this single access road. The site all-weather access road will be at least 30 -foot wide to accommodate two-way traffic entering and exiting the facility. The site exit onto South University Parks Drive will be controlled by a stop sign. The site entrance/exit location and traffic flow directions are shown on Figure III-1.3. The site entrance/exit road, as well as the internal access roadways are designed for the projected facility traffic and will provide the appropriate width and turning radii for waste vehicles to prevent a disruption in traffic flow at the facility. Mud and dust will be controlled in accordance with Section 19.0 of this SOP. Scale attendants or other designated employees will restrict site access to designated authorized vehicles and direct these vehicles appropriately. All visitor and employee parking and equipment storage will be located in an area outside of the transfer station traffic flow, as shown on Figure III-1.3.

Signs located at the entrance of the transfer station direct solid waste transportation vehicles to the appropriate unloading/loading areas. Site personnel provide traffic directions as necessary to facilitate safe movement of vehicles.

## 13 UNLOADING WASTE (30 TAC §330.225)

Waste authorized to be accepted at the transfer station is described in Section 2.1 of this plan. Once an incoming vehicle's weight has been recorded, the scale attendant will direct the vehicle to the tipping floor area of the transfer station or the CCS. The scale attendant will inform the hauler that the waste is only to be unloaded in the area where the hauler is directed to unload by site operating personnel. Signs directing traffic from the scale house to the transfer station structure or CCS will be located as needed along the route to each location. Trained personnel inside the transfer station structure or CCS will direct and observe the unloading of waste. The City or operator is not required to accept any solid waste which he/she determines will cause or may cause problems in maintaining compliance with TCEQ regulations. Signs directing traffic from the transfer station structure or CCS to the exit road will be located as needed along the route from each location.

Unloading waste in unauthorized areas will be prohibited. Any waste identified as having been deposited in an unauthorized area will be immediately moved to the tipping area. Trained personnel working inside the transfer station structure will observe each load that is dumped on the tipping floor or placed in the CCS roll-off containers. The trained personnel have the authority and responsibility to reject unauthorized loads and have the transporter remove unauthorized material. In situations where the transporter does not remove unauthorized material, the Manager will implement procedures as described in Section 2.2.1 of this plan and assess appropriate surcharges. A record of unauthorized material removal will be maintained in the Site Operating Record.

Prohibited waste will not be allowed to enter the transfer structure or CCS. The scale attendant will be the first point of contact with the hauler. The hauler will be asked to inform the scale attendant of the content of the load. The scale attendant will visually inspect open containers to verify contents. In the event that prohibited wastes are identified in the load, the entire load will be turned away from the gate and not allowed entrance to the facility. In the event that the prohibited waste is not detected in the load until unloading on the tipping floor, the load will be handled as discussed in Section 2.2.1 of this plan.

## 14 SPILL PREVENTION AND C ONTROL (30 TAC §330.227)

Solid waste processing operations will be conducted at the CCS or on a concrete-paved area (tipping floor) under the transfer station structure roof; therefore, contact of storm water with waste material is limited.

Waste or recyclables dropped off at the CCS will be placed in roll-off containers that will be maintained and inspected daily for spills or leaks, and promptly repaired or replaced if necessary. A contaminated water management plan and related details for handling contaminated water and clean storm water is included in Part III, Attachment 1, Figures III-1.6, and III-1.7.

## 15 OPERATING HOURS (30 TAC §330.229)

To promote efficient, safe and sanitary operations at the facility, and to prevent any disruption of solid waste management services in the area, the following operating hours will apply:

Waste Acceptance Hours 6:30 a.m. to 5:00 p.m., Monday - Friday
7:00 a.m. to 11:00 a.m., Saturday
Heavy Equipment Hours
5:00 a.m. to 7:00 p.m., Monday - Friday
5:00 a.m. to 1:00 p.m., Saturday
General Facility Operations (i.e. floor cleaning, preventative maintenance, office work, janitorial services) 24 hours per day, seven days a week
Disaster or Emergency Hours; Additional Temporary Hours (Regional Office Approval, as needed Document in Operating Record)

Alternative Operating Hours; Up to five additional days per annum (Special Occasions, Events, Holidays - Document in Operating Record)

The actual hours and days of operation will be posted on the entrance sign.
Hours of operation beyond the standard operating hours listed in 30 TAC § 330.229(a) are necessary to support the hauling operations that will utilize the facility and to ensure the efficient and timely receipt, processing, and transfer of solid waste for off-site disposal. Hauling operations in the area provide routine collection services on Saturdays and during the early morning hours. Extended hours will assist the City and operator in properly managing the demand and to maintain compliance with the approved site development and operating plans for the facility. General facility operations will typically occur outside waste acceptance and heavy equipment operating hours to avoid interference with solid waste management activities at the transfer station.

## 16 FACILITY SIGN(30 TAC §330.231)

A conspicuous and readable sign will be displayed at the site entrance off of South University Parks Drive. The sign will measure at least 4 feet by 4 feet, and have lettering at least 3 inches in height stating the name of the site, type of site, hours and days of waste acceptance, an emergency 24 -hour contact phone number(s), the local emergency fire department phone number, and the TCEQ Registration number. Another sign will list all prohibited wastes from receipt at the facility as discussed in this SOP and will be located along the facility entrance road.

Within the site, signs will be placed along the transfer station access road at an adequate frequency to direct users to the transfer station structure.

Signs prohibiting smoking will be posted near the facility entrance or scale house. A sign will be prominently displayed at the facility entrance stating that all loads will be properly covered or otherwise secured.

## 17 CONTROL OF WINDBLOWN MATERIAL AND LITTER (30 TAC §330.233)

Transfer of waste will occur within the confines of the transfer station structure tipping floor and will be protected from the wind; however, perimeter fence surrounding the site will capture any incidental windblown trash. Litter throughout the facility will be collected and brought to the processing area at least once per day when the facility is operating. Collection vehicles and transfer vehicles will be completely enclosed or covered as they enter and exit the facility to minimize windblown trash.

## 18 MATERIALS ALONG ROUTE TO THE FACILITY (30 TAC §330.235)

The Manager will take steps to encourage operators of open-top vehicles hauling waste to the facility to utilize tarpaulins, nets, or other means to effectively secure their loads. In addition to routine checks by the scale attendant, actions such as posting signs, reporting offenders to proper law enforcement officers, adding surcharges or similar measures will be taken to control the spillage of waste en-route to the facility. On days when the facility is in operation, the Manager will be responsible for at least once per day cleanup of waste spilled along and within the right-of-way of all public access roads serving the facility for a distance of 2 miles in either direction from the entrance to the facility. The Manager or his designee will consult with TxDOT officials as necessary concerning cleanup of state highways and rights-of-way consistent with 30 TAC $\S 330.235$.

## 19 FACILITY ACCESS ROADS (30 TAC §330.237)

The scale house area and entrance/exit road to/from the transfer station facility are designed to be accessible in all weather conditions. The entrance/exit road and all internal facility roadways are surfaced with reinforced concrete or asphalt, with the exception of the areas designated for parking or the CCS which may be surfaced with a gravel road base. The surface condition of these roads will be maintained and repaired regularly to minimize potholes or low spots to promote positive drainage. The surfacing of all site roadways will minimize the tracking of mud and trash onto public roads. Dust control will be provided through a street sweeper and/or water truck, as needed. Any tracked mud and associated debris that accumulates on facility roadways will be cleaned by washing down, sweeping, or scraping, as necessary, to minimize tracking those materials onto the public roadways. Litter and any other debris will be monitored at least daily, and picked up on an as-needed basis and taken to the transfer station for disposal as discussed in Section 18.0 of this plan.

Fugitive dust emissions will be minimized by the surfacing or watering of all on-site roadways and regular cleaning procedures.

## 20 NOISE POLLUTION AND VISUAL SCREENING (30 TAC § 330.239)

The site will be designed to minimize the potential noise pollution and visual impact to neighboring landowners and the public. Waste processing operations will be conducted within the transfer station structure, with the exception of waste dropped off at the CCS, as outlined in Section 7 of this SOP, thereby minimizing noise pollution and adverse visual impacts. CCS waste drop-off will not be performed using heavy equipment, and as such, will minimize potential for noise pollution.

## 21 OVERLOADING AND BREAKDOWN (30 TAC § 330.241)

The design capacity of the facility ( 1,800 tons per day) will not be exceeded. The facility will not accumulate solid waste in quantities that cannot be processed within such time as will preclude the creation of odors, insect breeding, or harboring of other vectors. If such accumulations occur, additional solid waste will not be received until the adverse conditions are abated.

The maximum volume of waste that will be stored at the transfer station at any given time is 900 tons. Waste storage or holding will occur on the tipping floor. No storage of waste materials will occur off the tipping floor, with exception loaded transfer vehicles waiting to haul waste off-site, or waste placed in roll-off containers in the CCS. However, waste placed in roll-off containers in the CCS will not accumulate as it will be collected daily.

If a significant work stoppage should occur at the facility due to a mechanical breakdown or other causes, the facility will accordingly restrict the receipt of solid waste. The solid waste will not be allowed to accumulate on-site for such a period that will allow the creation of a nuisance or public health hazard due to odors, fly breeding, or harborage of other vectors. If waste remains on the tipping floor during these periods, cover tarps will be used to control potential odors, flies and other vectors. The maximum holding time under these circumstances will not exceed 48 hours, except holidays and weekends. During holidays and/or weekends, waste may be temporarily stored at the facility not to exceed a time period of 72 hours. Waste is generally stored for less than 24 hours.

If the work stoppage is anticipated to last longer than the time periods noted above, steps will be taken to remove the accumulated solid waste from the site to an approved backup processing or disposal facility.

## 22 SANITATION (30 TAC § 330.243)

The tipping floor and any other working surface that comes into contact with wastes will be washed down at least weekly or more frequently, if necessary, to prevent odors. The slope of the transfer station floor and transfer station operations will prevent wash waters from accumulating, creating odors or an attraction to vectors. As discussed in Section 4, all wash waters will be collected and disposed of in an authorized manner.

## 23 VENTILATION AND AIR POLLUTION CONTROL (30 TAC §330.245)

Ventilation will be provided in accordance with the current TCEQ MSW Air Permitting rules and regulations applicable to municipal solid waste facilities. The transfer station's design and high ceiling will provide ample passive ventilation. Additionally, ventilator fans will be installed to enhance air flow and ventilation inside the transfer building, if necessary. Dust and particulates that may occur in the building will be controlled, as needed, using water sprays, mist systems, or similar methods. As the transfer station facility will be constructed on a closed landfill, each enclosed structure will be constructed with a methane barrier and gas ventilation system, in accordance with the Subchapter T Development Permit Application submitted to TCEQ in May 2023, including subsequent revisions during the TCEQ review process.

A minimum 50-foot buffer will be provided between the transfer building and the site boundaries to minimize the likelihood of nuisance odors from leaving the boundary of the facility. If, at any time, nuisance odors are found to be passing the facility boundary, the City or operator will modify waste transfer operations to reduce the time waste is accumulating on the tipping floor. If modified transfer operations do not succeed in abating odors, the City or operator will employ and properly maintain/operate odor control equipment. If necessary, the facility will suspend operations until the nuisance odors have been properly abated.

The facility will ensure that the operation of the facility does not violate any applicable requirements of the approved state implementation plan developed under the Federal Clean Air Act, Section 110, as amended, and TAC 330.15(d), which prohibits the burning of waste. Air emissions from the facility will not cause or contribute to a condition of air pollution as defined in the Texas Clean Air Act. Air emissions and odors will be controlled in accordance with the current TCEQ MSW Air Permitting rules and regulations applicable to municipal solid waste facilities. Appropriate authorization under Chapter 116 or Subchapter U (relating to Standard Air Permits for Municipal Solid Waste Landfill Facilities and Transfer Station), as applicable, will be obtained prior to operating the transfer station. Reporting emissions events, if applicable, will occur in accordance with 30 TAC §101.201 and reporting scheduled maintenance will occur in accordance with 30 TAC §101.211.

No waste loading, unloading, processing, or disposal will occur outside the building, with the exception of waste dropped off at the CCS as outlined in Section 7 of this Site Operating Plan, and brush dropped off in the brush management area. All liquid and solid waste shall be stored in odor-retaining containers and vessels. A minimum 50 -foot buffer will be provided between the transfer building and the site boundaries. The City's additional measures to prevent and control potential odors being generated and migrating off site include the following:

- Prompt and efficient flow of waste through the transfer station building;
- Routine washing of the tipping floor;
- Draining the contaminated water tank;
- Use of cover tarps in the event waste is stored overnight at the facility; and
- The deployment of a deodorizing system at appropriate locations, if necessary.

The site will be graded to prevent the ponding of water in improper locations which are not part of the drainage system. The on-site drainage structures will be maintained to promote positive drainage, thus minimizing any nuisance odors associated with stagnant water.

Wash down water will not be allowed to accumulate on the tipping floor and will be managed consistent with the procedures outlined in Section 4 of this Site Operating Plan.

## 24 HEALTH AND SAFETY (30 TAC § 330.247)

Designed for safety, the transfer station features traffic flow based primarily on safety considerations, including reduced risk from backing up. Transfer station operations are based on a predictable pattern of traffic, tipping and loading. The building's design and high ceiling eliminates the need for pits, thereby improving visibility. Facility personnel will be trained in accordance with the facility's health and safety plan.

Safety training for all personnel will be provided routinely and will be the responsibility of the transfer station manager. The transfer station manager will enforce safety rules and policies and promptly investigate and report all accidents. Operators will wear personal protective equipment such as hard hats, safety glasses, and dust masks, when appropriate. Fire extinguishers will be available at all times. The water for the site will be supplied by a connection to an off-site water supply line. Detailed procedures that comprise the Safety Plan for the facility are discussed below.

### 24.1 Emergency Preparedness

Preparedness and preventive measures to minimize both the frequency and severity of accidents and emergency situations threatening human health will be implemented at the facility. All personnel will undergo in-house training to introduce the measures below.

### 24.1.1 General Measures

The following general measures will be implemented for the overall facility to minimize frequency and severity of accidents and emergency situations:

- Access controls will prevent entry of unauthorized personnel;
- Routine equipment preventive maintenance will be provided;
- A management representative will perform regular site inspections;
- Appropriate personnel safety equipment will be maintained on site in good condition;
- Adequate turning area for hauling vehicles will be provided;
- Scavenging will not be allowed and individuals will be required to stay close to their vehicles for their protection;
- Unloading will be restricted to designated areas only;
- Site personnel will be alert for possible prohibited wastes entering site; and
- As discussed in Section 2 of this SOP, prohibited wastes will be controlled or contained and removed as necessary.


### 24.1.2 Measures for the Unloading and Receiving Area

The following measures will be implemented within the unloading/receiving area of the facility to minimize frequency and severity of accidents and emergency situations:

- Inspect loads as per procedures developed based on guidelines detailed in Section 2.2 of this SOP.
- Observe incoming vehicles for evidence of improper operation, faulty equipment, or other conditions that could be detrimental to the facility personnel or other persons on site.
- Make emergency equipment available and maintain a first-aid kit in the facility.
- Post emergency telephone numbers.
- Display signs warning transporters that hazardous wastes and PCB, radioactive, and other prohibited wastes are not accepted.


### 24.2 Emergency and Contingency Procedures

Emergency and contingency procedures will be implemented at the facility in the event of accidents, or environmentally significant releases of waste or waste constituents to air, soil, surface water or groundwater. These procedures constitute an initial response by facility staff that will be supplemented, as necessary, by outside emergency services. Emergency assistance requests will be handled through conventional means (e.g. calling 911).

## 25 EMPLOYEE SANITATION FACILITIES (30 TAC §330.249)

Potable water and sanitary facilities will be provided for all employees at the scale house. As noted in Section 3, the City will directly connect to the City's off-site sanitary sewer for handling all on-site sewage from the scale house. Alternatively, the City may install one dual-contained holding tank adjacent to the scale house. Portable sanitary facilities will be provided for visitors, as needed, and will be maintained in accordance with instructions from the providers of these facilities.

## 26 DISEASE VEC TOR C ONTROL

The transfer station is designed to prevent the nuisances that can attract disease vectors such as flies and rodents. The building is designed to allow waste to flow through and not accumulate in the structure. There are no pushwalls behind which waste can accumulate. There is no loading pit, pit scales, elaborate covered drains or electric sumps to keep clean. However, an exterminator will be contracted to spray/place traps at the facility twice per year to control vectors. Additional treatments will be scheduled, as appropriate.

## 27 DISPOSAL OF LARGE ITEMS

Bulky and large items arriving at the transfer station will be placed on the tipping floor so as to allow the loader to crush and flatten the items prior to loading into the transfer trailer. Where this is not possible, bulky or large items will be loaded into transfer trailers that have been partially filled to prevent damage to the trailer from impact due to the heavy weight of bulky or large items.

Refrigerators, freezers, air conditioners, and any other items containing chlorinated fluorocarbon (CFC) will be handled in accordance with 40 Code of Federal Regulations $\S 82.156(f)(2)$. Verification that the refrigerant has been evacuated from the appliance or shipment of appliances from whom the appliance or shipment of appliances is obtained, will be required prior to acceptance of the appliances at the facility. The verification will include a signed statement from whom the appliance or shipment of appliances is obtained, the name and address of the person who recovered the refrigerant, and the date the refrigerant was recovered. Any appliances inadvertently accepted containing refrigerant that has not been extracted or without verification, will be either returned to the generator, be temporarily set aside and refrigerant removed by an individual and/or company certified in refrigerant removal or taken to a certified refrigerant removing company where the refrigerant will be removed prior to processing at the transfer station.

## 28 SALVAGING AND SCAVENGING

Neither the public nor the site personnel will be allowed to salvage and scavenge waste materials delivered to the site for processing. Facility personnel will monitor the facility and use site access controls to prevent scavenging.

## 29 HANDLING OF INDUSTRIAL WASTES

The facility will not accept Class 1 non-hazardous industrial waste. Class 2 and 3 non-hazardous industrial waste may be accepted at the facility provided the wastes are properly identified and provided the acceptance of such waste does not interfere with site operations. Class 2 industrial waste accepted at the facility will generally consist of plant trash (paper, cardboard, linings, wrappings, paper and/or wooden packaging materials, food waste, uncontaminated wooden materials, and uncontaminated floor sweepings) as defined under 30 TAC §335.508(3) that may be disposed of with regular municipal solid waste. Class 3 non-hazardous industrial wastes will include inert and essentially insoluble industrial solid waste, including materials such as rock, brick, glass, dirt, certain plastics and rubber, etc., that are not readily decomposable as defined in $\S 335.507$ (relating to Class 3 Waste Determination).

## 30 FACILITY INSPECTION AND MAINTENANCE

Table IV-3 outlines inspection and maintenance lists of the facility that will be performed by the Manager or a designee. The inspection documentation will be retained in the Site Operating Record.

Table IV-3
Fa cility Inspection and Ma intenance List

| Item | Task | Frequency |
| :---: | :---: | :---: |
| Fence/Gate | Inspect perimeterfence and gate fordamage. Make repairs if necessary. | Weekly |
| Windblown Waste | Police working area, wind fences, access roads, entrance areas, and perimeterfence for loose trash. Clean up as necessary. | Daily as specified in Section 17.0. |
| Waste Spilled on Route to the Facility | Inspection and cleanup of waste materials along and within the right-of-way of the public access roads serving the transfer station (i.e., South University Parks Drive) at least 2 miles from the facility entrance, as needed. | Daily as specified in Section 18.0. |
| Facility Access/Egress Roads | Inspect facility access/egress roads for damage from vehicle traffic orexcessive mud accumulation. Maintain as needed. Grading equipment will be used as needed to control or remove mud accumulations from being tracked onto South University Parks Drive. | Weekly or more often during wet weather or extended dry weather periods. |
| Facility Signs | Inspect all facility signs for damage, general location, and accuracy of posted information. | Weekly |
| Odor | Inspect the perimeter of the facility to assess the performance of facility operations to control odor. | Daily |
| Perimeter Swales and Channels | Inspect drainage features to verify that they are functioning as designed (e.g., excess sediment removed, outlet structures intact), as applic able. | Weekly and within 72-hours of a rainfall event of 0.5 inches or more. |
| Contaminated Water Holding Tanks, Sump, and Piping | Inspect conta minated water hold ing tanks (if installed), sump, and associated piping for evidence of leaks. | Monthly |
| CCS | Inspect drop off area and roll-off containers to verify sanitary conditions, and absence of spills or leaks | Daily as specified in Section 7.0 |

## APPENDIX IV-1

## WASTE ACCEPTANCE PLAN

# Type V Transfer Station Registration Application <br> Part IV - Site Operating Plan <br> Appendix IV-1 <br> Waste Acceptance Plan 

## City Of Waco Transfer Station Closed City Of Waco Landfill TCEQ Registration No. TBD McLennan County, Texas

City of Waco
501 Schroeder Dr.
Waco, Texas 76710


# SCS ENGINEERS 

16222063.00 | October 2023

1901 Central Drive, Suite 550
Bedford, Texas 76021
Section Page
1 Introduction. ..... IV-1-1
2 Waste Acceptance ..... IV-1-3
3 Operating Procedures ..... IV-1-4

Tables
Table IV-1 Special Waste Processing Procedures Summary


## SCS Engineers

TBPE Reg. \# F-3407

## 1 INTRODUCTION

This Waste Acceptance Plan (WAP) outlines the acceptance requirements and review and approval process that will be used to accept special waste and industrial waste as defined by TCEQ at the City of Waco Transfer Station Facility (Facility or Site).

The TCEQ solid waste regulations define special waste as a "solid waste or combination of solid wastes that because of its quantity, concentration, physical, chemical or biological properties requires special handling and disposal to protect human health and the environment."

Only those special wastes identified below may be accepted at this facility without prior written approval from the Executive Director and will be handled in accordance with the provisions stated in the rules. Any requests for approval of special waste will be in accordance with Title 30 Texas Administrative Code (TAC) §330.171(b).

- Deceased animals that are incidental to routine collection of municipal solid waste and that can be systematically processed along with other solid waste;
- Pharmaceuticals, contaminated foods, or contaminated beverages, other than those contained in normal household waste;
- Empty containers which have been used for pesticides, insecticides, herbicides, fungicides, or rodenticides will be accepted provided the containers have been triple rinsed, crushed or rendered unusable upon receipt;
- Incidental amounts of non-regulated asbestos-containing material (NRACM). Incidental amount is defined as the maximum of 10 percent of the waste received on an annual basis by scale weight (annual basis is defined as the latest 4 consecutive quarters);
- Waste generated outside the boundaries of Texas that contains any industrial waste, which if generated in Texas, would be classified as Class 2 or Class 3 industrial waste; any waste associated with oil, gas, and geothermal exploration, production, or development activities, or any material listed in the bullets above.

No special waste will be received at the facility unless it is compatible with the loading equipment operated at the facility or unless modifications are made to the facility to accommodate the special waste.

The facility will not accept the following wastes:

- Regulated hazardous wastes;
- Polychlorinated biphenyls (PCB) waste;
- Liquid waste;
- Radioactive waste;
- Regulated Asbestos Containing Materials (RACM);
- Certain Special Wastes, including:
o Hazardous waste from conditionally exempt small-quantity generators that may be exempt from full controls under Chapter 335, Subchapter $N$ of this title(relating to Household Materials Which Could Be Classified as Hazardous Wastes);
o Class 1 non-hazardous industrial waste;
o Untreated medical waste;
o Municipal wastewater treatment plant sludges, other types of domestic sewage treatment plant sludges, and water-supply treatment plant sludges;
o Septic tank pumpings;
o Grease and grit trap wastes;
o Waste from commercial or industrial waste water treatment plants; air pollution control facilities; and tanks, drums, or containers used for shipping or storing any material that has been listed as a hazardous constituent in 40 code of Federal Regulations (40 CFR), Part 261, Appendix VIII but has not been listed as a commercial product in 40 CFR, §261.33(e) or (f);
o Slaughterhouse wastes;
o Incinerator ash;
o Soil contaminated by petroleum products, crude oils, or chemicals in concentrations greater than $1,500 \mathrm{mg} / \mathrm{kg}$ total petroleum hydrocarbons, or contaminated by constituents of concern exceeding the concentrations listed in Table 1 of 30 TAC §335.521(a)(1);
o Lead acid storage batteries;
o Used oil; and
o Used oil filters from internal combustion engines.
- Whole used or scrap tires, except for incidental scrap tires picked up in enclosed municipal solid waste collection vehicles in accordance with 30 TAC 328.54(b);
- Items containing chlorinated fluorocarbons (CFC's), such as refrigerators, freezers, and air conditioners, will only be accepted at the site if the generator or transporter provides written certification that the CFC has been evacuated from the unit and that it was not knowingly allowed to escape into the atmosphere; and
- Liquid waste (any waste material that is determined to contain "free liquids" as deemed by EPA Method 9095 (Paint Filter Test), as described in "Test Methods for Evaluating Solid Wastes, Physical Chemical Methods" (EPA Publication Number SW-846)) will not be accepted unless it is:
o Bulk or non-containerized liquid waste that is: household waste other than septic waste, or contained liquid waste and the container is a small container similar in size to that normally found in the household waste, the container is designated to hold liquids for use other than storage, or the waste is a household waste.


## 2 WASTE ACCEPIANCE

Special wastes listed above, other than the incidental special wastes contained in the waste loads, that will be received at the transfer station will be preapproved by the landfill that will receive the waste in accordance with the receiving landfill's special waste screening and acceptance procedures and the landfill-specific Waste Acceptance Plan (WAP). Since each landfill's WAP will include its own limiting parameters, the transfer station will include the limiting parameters of the landfill as those to be applied to special wastes received at the transfer station. Such special waste evaluation and approval will take place prior to delivery of the waste to the transfer station. If there are any questions about the acceptability of the special waste, the transfer station manager (or his designee) will clarify the matter with the disposal facility manager prior to approving the special waste at the transfer station. Typically, the landfill's special waste analyst (analyst) will utilize information provided by the generator (e.g., waste-specific chemical and characteristic information or process knowledge information) to determine the acceptability of a waste for disposal at the landfill. The analyst will be responsible for maintaining and utilizing current TCEQ guidelines and constituent limits for evaluation of wastes. The analyst will also be responsible for knowing and applying future changes to regulatory guidelines, review and acceptance procedures. This information will be provided to the appropriately trained transfer station personnel prior to waste acceptance at the transfer station.

Special waste review procedures will include:

- Special Waste Profile (SWP) must be completely filled out and legible including addresses, contact names, phone numbers and signatures.
- The information must include sufficient information to provide the analyst a clear understanding of the waste's type, origin, shipping method, rate of delivery, and total amount. If the description is insufficient, additional information will be requested of the generator.
- The physical characteristics of the waste must include information on the chemical and physical properties of the waste sufficient to allow the analyst to identify the waste and correlate the properties to the appropriate TCEQ and Federal regulations. It is important that this, and all portions of the profile, be completely filled out. By signing the profile the generator certifies the information is accurate.
- Site specific evaluation. The analyst will confirm that each special waste is acceptable in accordance with local, TCEQ and federal regulations as well the transfer station and receiving landfill.
- The analyst may request additional information from the generator including additional analytical, process description, and Safety Data Sheets (SDS).

When special waste arrives at the site, transfer station personnel may randomly select samples to visually compare the material presented for acceptance to the approved SWP to confirm that the physical characteristics (color, odor, appearance) of the material matches what is described on the profile. In the event the physical characteristic of the waste differs from the profile, the load will be detained, appropriate personnel called to investigate/evaluate the matter, and the generator will be notified. Additional process and chemical analysis may be requested. If the discrepancies cannot be resolved, the load will be rejected. Facility personnel have the right to refuse any special waste at the staff's discretion.

## 3 OPERATING PROCEDURES

The transfer station personnel will exercise appropriate care and safeguards when processing special wastes. Only on-site personnel who have received special waste training will be utilized for processing special wastes. Specific handling/disposal procedures are detailed in Table IV-1A for the special wastes that will be processed at the facility.
Transfer trucks containing special waste will provide the required documentation to the receiving landfill concerning the special waste contained within the transfer trailer. The landfill will be responsible to ensure the transferred special waste is disposed of in accordance with the landfill's permit.

## Table IV-1A <br> Special Waste Processing Procedures Summary

Table IV-1A

## Special Waste Processing Procedures Summary

## City of Waco Transfer Station Fa cility

| Special Waste | Special Handling Procedures |
| :---: | :---: |
| Deceased animals | Deceased animals that are incidental to routine collection of munic ipal solid waste and that can be systematic ally processed along with other solid waste will be accepted at this facility. This waste may contain some animal remains; however, the facility will not accept bulk quantities of deceased animals or animal remains in a specific shipment or load. All dead animals will be processed upon receipt or covered with a minimum of three feet of solid waste until it is processed into transfertrailers. The tipping floor and loading equipment will be cleansed with antibacterial cleaners at the end of each day when special waste containing deceased animal waste is processed. |
| Pha maceuticals and contaminated foodsthat are not considered controlled substances | These wastes will be processed into transfer trailers promptly upon receipt. Operators will observe unloading and loading of these waste materials to ensure no scavenging or salvaging of waste. The tipping floor and loading equipment will be cleansed with antibacterial cleaners at the end of each day when special waste containing conta minated food waste is processed. |
| Empty containers, including paper, cardboard and metal, that have been used forpesticides, insecticides, herbic ides, fungicides, or rodenticides | These conta iners will be processed in the transferstation upon receipt. These conta iners will not be allowed to accumulate on the tipping floor. All containers received will be handled in accordance with Title 30 TAC $\S 330.171$. All containers will be triple rinsed prior to a mival. If containers cannot be processed upon receipt they will be crushed with the loader and rendered unusable. |
| Inc idental a mounts of non-regulated asbestos-containing material (NonRACM) | Loads of Non-RACM will be pushed directly to the loader forloading into the transfer trailer. Non-RACM will not be subject to any crushing or compaction by loading equipment that could be crumbled into a friable state within the transfer station, prior to transport to an authorized disposal facility. These procedures will minimize the handling of Non-RACM so that the integrity of the material is maintained. |
| Waste generated outside the boundaries of Texas that conta ins any Class 2 and 3 industrial waste; any waste associated with oil, gas, and geothemal exploration, production, or development activities, or any other special waste that is accepted at the facility | This waste will be handled in accordance with the provisionsoutlined above for the specific type of waste. |


[^0]:    ${ }^{1}$ www.tceq.texas.gov/downloads/permitting/waste-permits/msw/forms/00650-instr.pdf
    2 www.tceq.texas.gov/goto/coredata

[^1]:    *Editor's note-Many provisions of this article have been superseded by the state law referenced after each provision pursuant to Vernon's Ann. Tex. Const. art. 8.

    State law references-Taxation authority, Vernon's Ann. Tex. Const. art. 11, § 5, V.T.C.A., Tax Code $\S 1.01$ et seq.; tax equalization and single appraisal districts and board of equalization, Vernon's Ann. Tex. Const. art. 8, § 11.

[^2]:    *State law reference-Planning and development, V.T.C.A., Local Government Code $\$ 371.001$ et seq.

[^3]:    *State law reference-Franchises, V.T.C.A., Local Government Code § 402.002 ,

[^4]:    Signature

    By: Bradley Ford, City Manager, City of Waco, Texas

[^5]:    4. 2025 BG AM.xuf
[^6]:    5. 2025 BG PM.xuf
[^7]:    Copyright © 2023 University of Florida. All Rights Reserved.

[^8]:    8. 2059 BG PM.xuf
[^9]:    Copyright © 2023 University of Florida. All Rights Reserved.

[^10]:    Copyright © 2023 University of Florida. All Rights Reserved.

[^11]:    Copyright © 2023 University of Florida. All Rights Reserved.

