LAKEWOOD VILLAGE TOWN HALL
100 HIGHRIDGE DRIVE
LAKEWOOD VILLAGE, TEXAS

TOWN COUNCIL MEETING
OCTOBER 13, 2016 7:00 P.M.

REGULAR SESSION – AGENDA

Call to Order and Announce a Quorum is Present

A. PLEDGE TO THE FLAG:

B. PUBLIC HEARING: – A public hearing is scheduled to provide an opportunity for citizen input on the proposed impact fees.

C. VISITOR/CITIZENS FORUM: At this time, any person with business before the Council not scheduled on the agenda may speak to the Council. No formal action may be taken on these items at this meeting.

D. REGULAR AGENDA:

1. Discussion of Water and Waste Water Impact Fee Study (Bushong)
2. Discussion of Well Feasibility Study (Bushong)
3. Consideration of Residential Code Ordinance - Removing Enforcement Requirement in the Extra Territorial Jurisdiction (Bushong)
4. Consideration of Plumbing Code Ordinance - Removing Enforcement Requirement in the Extra Territorial Jurisdiction (Bushong)
5. Consideration of Mechanical Code Ordinance - Removing Enforcement Requirement in the Extra Territorial Jurisdiction (Bushong)
6. Consideration of Fuel Gas Code Ordinance - Removing Enforcement Requirement in the Extra Territorial Jurisdiction (Bushong)
7. Consideration of Fire Code Ordinance - Removing Enforcement Requirement in the Extra Territorial Jurisdiction (Bushong)
8. Consideration of Energy Conservation Code Ordinance - Removing Enforcement Requirement in the Extra Territorial Jurisdiction (Bushong)
9. Consideration of Electrical Code Ordinance - Removing Enforcement Requirement in the Extra Territorial Jurisdiction (Bushong)
10. Consideration of Resolution for Town Attorney Opinions (Asbell)
11. Discussion of Recent Road Repairs (Tantalo)
12. Discussion of Fire Hydrant Project (Tantalo)
13. Discussion of Current Financials (Tantalo)
14. Consideration of the Minutes of the September 8, 2016 Council Meeting (Asbell)
15. Consideration of the Minutes of the September 22, 2016 Council Meeting (Asbell)

E. EXECUTIVE SESSION: Recess into executive session in compliance with (1) § 551.071(1), Texas Government Code to wit: Consultation with the Town Attorney regarding pending or contemplated litigation, re: Town of Lakewood Village V. Harry Bizios; (2)) § 551.071(2), Texas Government Code to wit: consultation with Town Attorney on a matter in which the duty of the attorney to the governmental body under the Texas Disciplinary Rules of Professional Conduct of the State Bar of Texas clearly conflicts with this chapter to receive legal advice. (3) § 551.072 Texas Government Code to wit: deliberations about real property; and (4) § 551.087 Texas Government Code to wit: Economic Development Negotiations

F. RECONVENE: Reconvene into regular session and consideration of action, if any, on items discussed in executive session

G. COUNCIL AND STAFF COMMENTS: Comments may be made by Council or Staff. No formal action may be taken on these items at this meeting.

H. ADJOURNMENT

I do hereby certify that the above notice of meeting was posted on the designated place for official notice at 5:55 p.m. on Friday, October 7., 2016.

Linda Asbell

Linda Asbell, TRMC, Town Secretary

The Town Council reserves the right to adjourn into closed session at any time during the course of this meeting to discuss any of the matters listed above, as authorized by Texas Government Code Section 551.071 (Consultation with Attorney), 551.072 (Deliberations about Real Property), 551.073 (Deliberations about Gifts and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations about Security Devices) and 551.087 (Economic Development).

This facility is wheelchair accessible and accessible parking spaces are available. Requests for accommodations or interpretive services must be made 48 hours prior to this meeting. Please contact the Town Secretary's office at 972-294-5555 or FAX 972-292-0812 for further information.

One or more members of the LAKEWOOD VILLAGE MUNICIPAL DEVELOPMENT DISTRICT may attend this meeting. No action will be taken by the MDD Board during this meeting.

2016

Water and Wastewater Impact Fees

Town of Lakewood Village, TX

Kimley»Horn

Town of Lakewood Village, Texas

Water and Wastewater Impact Fee Report for 2016

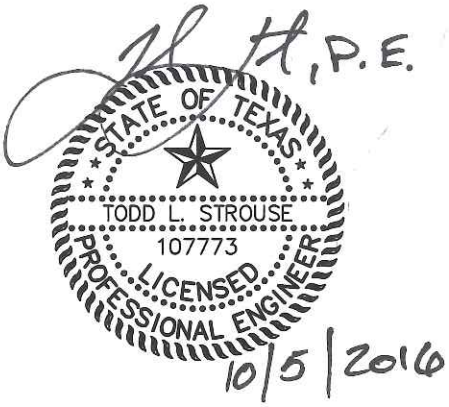
October 2016

Prepared for:
Town of Lakewood Village
100 Highridge Drive
Little Elm, TX 75068

Prepared by:
Kimley»Horn
Kimley-Horn and Associates, Inc.
106 West Louisiana St.
McKinney, TX 75069

Phone: 469 301 2580

TBPE Firm Registration Number: F-928



Project Number: 064487100

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Executive Summary

This study was performed to develop the Impact Fees for the Town of Lakewood Village's Water and Wastewater System Impact Fees. Water and wastewater system analysis and a Capital Improvements Plan (CIP) list are important tools for facilitating orderly growth of the water and wastewater system and for providing adequate facilities that promote economic development in the Town of Lakewood Village. The implementation of an impact fee is a way to shift a portion of the burden of paying for new facilities onto new development.

Water

Elements of the water system, including storage facilities, pumping facilities, water wells, and the distribution network itself, were evaluated against industry standards as outlined in the Design Criteria section of this report. Information related to the growth of the Town was obtained from discussions with the Town.

Water system improvements necessary to serve 10-year (2026) and ultimate system needs were evaluated. Typically, infrastructure improvements are sized beyond the 10-year requirements; however, Texas' impact fee law (Chapter 395) only allows recovery of costs to serve the 10-year planning period. The Town of Lakewood Village's Impact Fee Capital Improvements Plan recoverable cost total is $2,869,640. After a 50% reduction is applied, $1,434,820 is recoverable through impact fees serving the 10-year system needs.

Wastewater

Elements of the wastewater system, including lift stations, the wastewater treatment plant, force mains, and the collection network itself were evaluated against industry standards as outlined in the Design Criteria section of this report. Information related to the growth of the Town and the service areas that will potentially be served was obtained from discussions with the Town and is included in the Land Use assumptions section of this report.

Wastewater system improvements necessary to serve 10-year (2026) needs were evaluated. The Town of Lakewood Village's Impact Fee Capital Improvements Plan recoverable cost total is $3,837,990. After the 50% reduction calculation is complete, $1,918,995 is recoverable through impact fees serving the 10-year system needs.

Water and Wastewater Impact Fees

The impact fee law defines a service unit as follows: "'Service Unit' means a standardized measure of consumption attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards and based on historical data and trends applicable to the political subdivision in which the individual unit of development is located during the previous 10 years." Therefore, the Town of Lakewood Village defines a service unit as a unit of development that consumes the amount of water requiring a standard 5/8"x3/4" meter. For a development that requires a different size meter, a service unit equivalent is established at a multiplier based on its capacity with respect to the 5/8"x3/4" meter. The equivalency factor and associated impact fee by meter size is shown in Table 1.1.

Based on the Town's 10-year growth projections and the associated demand (consumption) values, 148 additional service units will need water and 324 additional service units will need wastewater service by the year 2026. Based on the additional service units and the recoverable capital improvements plans, the Town may assess a maximum water impact fee of $9,695 per service unit and a maximum wastewater impact fee of $5,923 per service unit.

Table 1.1 Maximum Assessable Water Impact Fee for Commonly Used Meters

Meter Size	Maximum Continuous Operating Capacity (gpm)**	Service Unit Equivalent	Maximum Assessable Fee Water	Maximum Assessable Fee Wastewater
5/8"x 3/4" PD	10	1	$9,695	$5,923
3/4" PD	15	1.5	$14,543	$8,885
1" PD	25	2.5	$24,238	$14,808
1 1/2" PD	50	5	$48,475	$29,615
2" PD	80	8	$77,560	$47,384
2" Compound	80	8	$77,560	$47,384
2" Turbine	160	16	$155,120	$94,768
3" Compound	175	17.5	$169,663	$103,653
3" Turbine	350	35	$339,325	$207,305
4" Compound	300	30	$290,850	$177,690
4" Turbine	650	65	$630,175	$384,995
6" Compound	675	67.5	$654,413	$399,803
6" Turbine	1,400	140	$1,357,300	$829,220
8" Compound	900	90	$872,550	$533,070
8" Turbine	2,400	240	$2,326,800	$1,421,520
10" Turbine	3,500	350	$3,393,250	$2,073,050

*PD = Positive Displacement Meter (typical residential meter)
**Operating capacities obtained from American Water Works Associate (AWWA) C700-15, C701-15, and C702-15. Turbine and Compound meter flows are based on Class II (in-line) meters.

1.0 Introduction

The Town of Lakewood Village (Town) retained the services of Kimley-Horn and Associates, Inc. (Kimley-Horn) for the purpose of developing the impact fees for water and wastewater system improvements required to serve new development. The Town currently does not have impact fees. Proposed fees were calculated in accordance with Chapter 395 of the *Local Government Code* (impact fees), which requires a political subdivision imposing impact fees to update the land-use assumptions and capital improvements plan upon which the fees are calculated.

The purpose of this report is to satisfy the requirements of the law and provide the Town with an updated impact fee capital improvements plan and associated impact fees.

For convenience and reference, the following is excerpted from Chapter 395 of the code:

(a) The political subdivision shall use qualified professionals to prepare the capital improvements plan and to calculate the impact fee. The capital improvements plan must contain specific enumeration of the following items:

(1) a description of the existing capital improvements within the service area and the costs to upgrade, update, improve, expand, or replace the improvements to meet existing needs and usage and stricter safety, efficiency, environmental, or regulatory standards, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;

(2) an analysis of the total capacity, the level of current usage, and commitments for usage of capacity of the existing capital improvements, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;

(3) a description of all or the parts of the capital improvements or facility expansions and their costs necessitated by and attributable to new development in the service area based on the approved land use assumptions, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;

(4) a definitive table establishing the specific level or quantity of use, consumption, generation, or discharge of a service unit for each category of capital improvements or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including but not limited to residential, commercial, and industrial;

(5) the total number of projected service units necessitated by and attributable to new development within the service area based on the approved land use assumptions and calculated in accordance with generally accepted engineering or planning criteria;

(6) the projected demand for capital improvements or facility expansions required by new service units projected over a reasonable period of time, not to exceed 10 years; and

(7) a plan for awarding:
   i. a credit for the portion of ad valorem tax and utility service revenues generated by new service unit during the program period that is used for the payment of

improvements, including the payment of debt, that are included in the capital improvements plan; or

ii. in the alternative, a credit equal to 50 percent of the total project cost of implementing the capital improvements plan.

The study process was comprised of three tasks:

A. Land Use Assumptions

In order to assess an impact fee, Land Use Assumptions must be developed to provide the basis for population and employment growth projections within a political subdivision. As defined by Chapter 395 of the Texas Local Government Code, these assumptions include a description of changes in land uses, densities, and population in the service area. In addition, these assumptions are useful in assisting the Town of Lakewood Village in determining the need and timing of capital improvements to serve future development. The first task in the study involved identification of current and future land use by category and projections of population within the Town's service area. Kimley-Horn developed the land use assumptions used for the purposes of this study with assistance from Town of Lakewood Village staff. The development of land use assumptions is utilized in:

- Establishing impact fee service areas for water and wastewater;
- Collecting/Determining of population and employment data; and
- Projecting the ten-year population and employment data by service area.

Figure 1.1 shows the Town of Lakewood Village's service areas for water and wastewater.

Growth projections for 2026 were calculated from discussions of future land uses with the Town of Lakewood Village. At this time, single family residential lots are the only planned land use for the Town. There are approximately 160 acres of undeveloped land inside Lakewood Village Town Limits that was assumed will be developed at 1 home per acre over 80% of the total area. An additional 20 homes were assumed to be platted on an existing 13 acre vacant tract of land inside the Town limits. These assumptions were used to determine the number of connections to be added to the Town in the next 10 years. Table 1.2 summarizes the residential 10-year growth projections for water within the Town of Lakewood Village from 2016 to 2026.

Table 1.2 Residential 10-Year Growth Projections for the Town of Lakewood Village

Water Land Use Assumptions		
	Residential Population	Residential Connections
2016	657	219
2026	1,101	367

Outside of current Town Limits, there are several properties owned by Mr. Steve Harvey and one tract of land owned by Little Elm ISD that the Town anticipates providing sewer service to. These lots have a total combined area of 110 acres. It was assumed that these properties would be developed as residential single family at a density of 2 lots per acre over 80% of the total area. This amounts to an additional 176 potential lots to be served outside of current Town Limits. These lots will be served by Lakewood Village's wastewater system in addition to the new lots that will

be developed inside Town Limits. Table 1.3 summarizes the residential 10-year growth projections for wastewater within the Town of Lakewood Village and surrounding properties previously mentioned from 2016 to 2026.

Table 1.3 Residential 10-Year Growth Projections for the Town of Lakewood Village and Extra Territorial Jurisdiction (ETJ)

Wastewater Land Use Assumptions		
	Residential Population	Residential Connections
2016	657	219
2026	1,629	543

B. Impact Fee Capital Improvements Plan

This task involved developing a list of necessary water and wastewater capital improvements by evaluating current infrastructure capacities and developing future water and wastewater demands. The existing infrastructure capacities were compared with future demands to identify necessary improvements to the system to accommodate the expected population growth in the 10-year planning window. Capital improvement projects identified for the water system are shown on Figure 2.1 and Figure 3.1 shows capital improvement projects identified for the wastewater system.

C. Impact Fee Analysis and Report

This task included calculating the additional service units, service unit equivalents, and credit reduction. These values were then used to determine the impact fee per service unit and the maximum assessable impact fee by meter size.

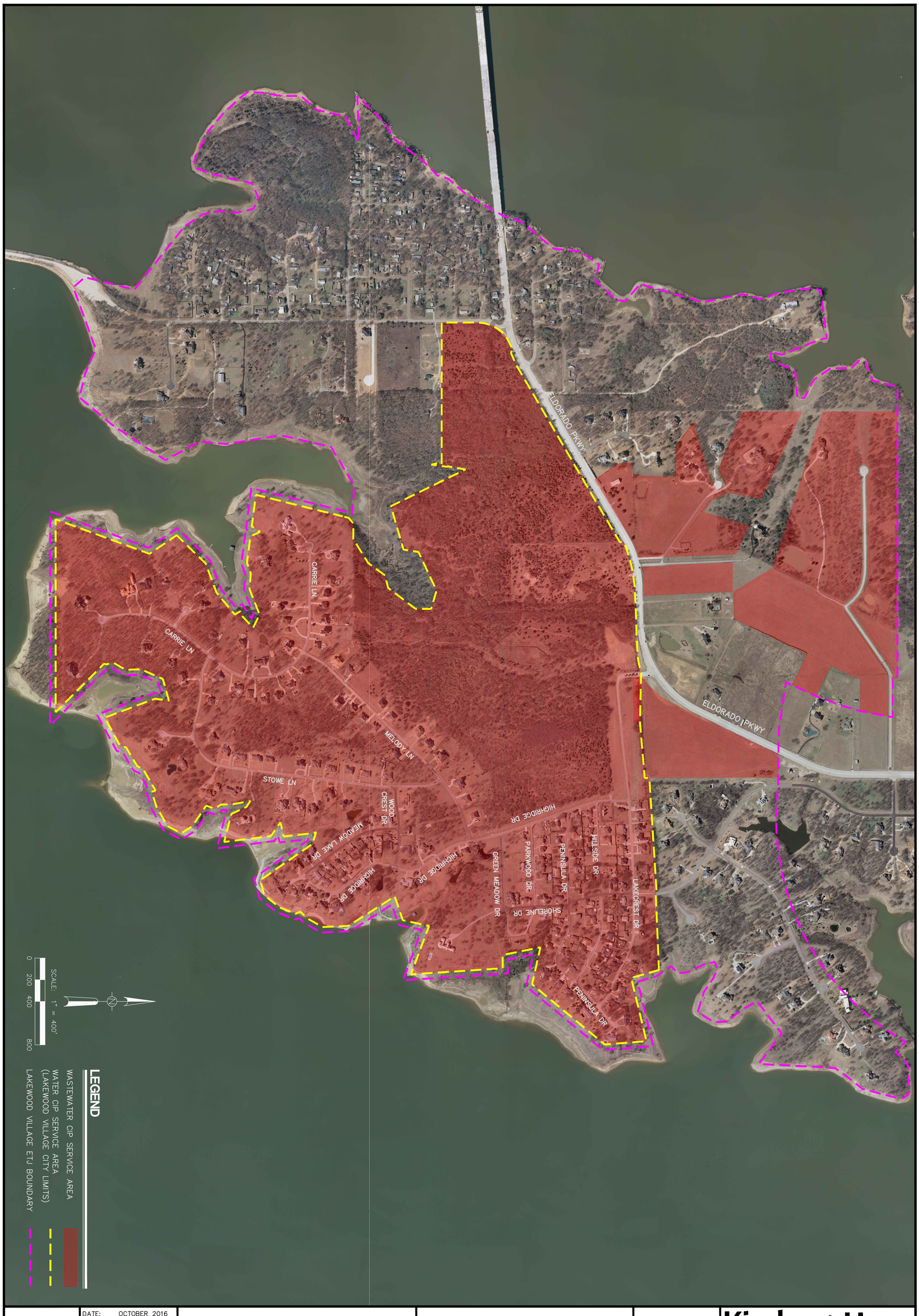

FIGURE 1.1

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WATER & WASTEWATER SERVICE AREA MAP

Town of Lakewood Village Water Impact Fee Update

THIS DOCUMENT IS INCOMPLETE AND IS RELEASED TEMPORARILY FOR INTERIM REVIEW ONLY. IT IS NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES.

STUART A. WILLIAMS P.E.
SERIAL NO. 121537
DATE: OCTOBER 2016

Kimley»Horn
Texas Board Of Professional Engineers Firm Registration Number: F-928
12750 Merit Drive, Suite 1000, Dallas, TX 75251 972-770-1300

No.	Revision	By	Date

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2.0 Water

Water lines identified for the Impact Fee Capital Improvements plan meet or exceed the criteria outlined by chapter 290 of the Texas Administrative Code (Public Drinking Water) and the American Water Works Association (AWWA) requirements for the design and operation of potable water utility systems. The design criteria used to plan for water infrastructure needs are discussed in the following subsection. While the design criteria above and explained in further detail below govern the design of the Town's water system, for the purposes of this report, the water demands were based on current and projected future residential dwelling units. Existing water demands were used in conjunction with projected future dwelling units to determine future infrastructure needs.

A. Design Criteria

Water Transmission Lines

Water transmission lines shall be sized to maintain the following pressure requirements:

- Peak hour demand with a minimum pressure of 35 psi;
- Max day demand plus 1,500 gpm fire flow with a minimum pressure of 20 psi

Storage Tanks

The Texas Commission on Environmental Quality (TCEQ) has established criteria for ground and pressure tank water storage. These criteria address volume requirements only. The layout of the distribution system, location of the storage facilities, and the interaction with the high service pumps and booster pumps affect the amount of storage necessary for the most efficient and reliable operation of the system.

Ground storage serves two functions:

- Equalization for differing feed rates between water supply and pumping output to the system; and
- Emergency capacity in the event of temporary loss of water supply.

Generally, ground storage facilities are located at water supply points or at each pump station within the water distribution system. Suggested storage capacities are established based on several criteria. There are specific requirements of the TCEQ. These criteria are detailed later in this section. Although ground and pressure storage facilities perform separate functions within the system, both are aimed at decreasing the impact of demand fluctuations. Their capacities are established based on knowledge of how demand varies seasonally and daily.

Pressure tank storage serves the purpose of providing pressure maintenance and protection against surges created by instantaneous demand, such as fire flow and main breaks, and instantaneous change in supply, such as pumps turning on and off.

Suggested storage capacities are established by the TCEQ. Adequate operational storage is established by determining the required volume to equalize the daily fluctuations in flow during the maximum day demand, plus the reserve volume required for fire protection.

The minimum requirements for storage, according to Chapter 290 of the Texas Administrative Code, are as follows:

- Total Storage: equal to 200 gallons per connection.
- Pressure Tank Storage: equal to 20 gallons per connection

Pump Stations

Pumping capacity should supply the peak hour demand with sufficient redundancy to allow for the largest pump at the pump station to be out of service. This is known as firm pumping capacity.

Each pump station or pressure plane must have two or more pumps that have a total capacity of 2.0 gpm per connection or have a total capacity of at least 1,000 gpm and the ability to meet peak hour demand with the largest pump out of service, whichever is less. If the system provides elevated storage capacity of 200 gallons per connection, two service pumps with a minimum combined capacity of 0.6 gpm per connection are required.

Water Demand

Water usage data was provided to Kimley-Horn by the Town for 2014 and 2015. The Town was only able to confidently provide historical data for 2014 and 2015. Records prior to 2014 were incomplete and The Town was not comfortable with this data being used for demand projections. Therefore, demand for 2014, the largest of the average day demand, was used to project demand over the next 10 years. Single family residential is the only land use currently planned for the Town. The demand used to project total average demand in the future is 368 gallons per day per dwelling unit.

B. Impact Fee Capital Improvements Plan

Kimley-Horn evaluated the existing water system and developed a list of projects that will be a part of the water Capital Improvements Plan for the Town of Lakewood Village. Each of these projects will be necessary to support the water demands of additional development in the Town. State law only allows cost recovery associated with eligible projects in a 10-year planning window from the time of the impact fee study.

Eight (8) projects have been determined to be eligible for recoverable cost through impact fees over the next 10 years. The total of these projects is $4,291,250. The projected total recoverable amount through impact fees is $2,869,640. After the credit calculation is completed, $1,434,820 is recoverable through impact fees serving the 10-year system needs. These impact fee improvements are listed in Table 2.1 and illustrated in Figure 2.1.

Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Proj. #	Description	2016 Required Capacity (Percent Utilization)	2026 Required Capacity (Percent Utilization)	2016-2026 Required Capacity (Percent Utilization)	2026 Projected Recoverable Cost	Total Project Cost
1	Project 1 - Western Development 8" Water Line #1	0%	100%	100%	$599,000	$599,000
2	Project 2 - Western Development 8" Water Line #2	0%	100%	100%	$678,000	$678,000
3	Project 3 - Western Development 8" Water Line #3	0%	100%	100%	$280,000	$280,000
4	Project 4 - Western Development 8" Water Line #4	0%	100%	100%	$110,000	$110,000
5	Project 5 - (2) 150,000 Gallon Ground Storage Tanks	67%	100%	33%	$295,020	$894,000
6	Project 6 - Water Well - 400 gpm Capacity and 8" Supply Line to Pump Station	0%	49%	49%	$790,370	$1,613,000
7	Project 7 - Pump Station Upgrade	0%	100%	100%	$74,000	$74,000
8	Project 8 - Engineering Services to Adopt Impact Fees	0%	100%	100%	$43,250	$43,250
	Total				$2,869,640	$4,291,250

PROPOSED PUMP STATION

(2)–150,000 GAL ⑤

(1)–750 GPM ⑦

ELDORADO PKWY

LAKECREST DR

HILLSIDE DR

PENINSULA DR

PARKWOOD DR

SHORELINE DR

GREEN MEADOW DR

HIGHRIDGE DR

MELODY LN

WOOD CREST DR

MEADOW LAKE DR

STOWE LN

CARRIE LN

CIP PROJECT LIST

1. WESTERN DEVELOPMENT 8" WATER LINE #1 (4,450 LF)
2. WESTERN DEVELOPMENT 8" WATER LINE #2 (4,950 LF)
3. WESTERN DEVELOPMENT 8" WATER LINE #3 (1,860 LF)
4. WESTERN DEVELOPMENT 8" WATER LINE #4 (580 LF)
5. (2) 150,000 GALLON GROUND STORAGE TANKS
6. WATER WELL – 400 GPM CAPACITY AND 8" SUPPLY LINE TO PUMP STATION
7. PUMP STATION UPGRADE:
   (1) – 750 GPM PUMP
   12" DUCTILE IRON DISCHARGE HEADER FROM PUMP STATION TO EXISTING 8" MAIN IN HIGHRIDGE DRIVE

LEGEND

- EXISTING WATER LINE
- PROPOSED WATER LINE
- LAKEWOOD VILLAGE CITY LIMITS
- LAKEWOOD VILLAGE ETJ BOUNDARY
- LAKEWOOD VILLAGE WATER CCN BOUNDARY
- CIP PROJECT NUMBER ②
- PROPOSED GROUND STORAGE TANK
- PROPOSED PUMP
- PROPOSED WELL

N

SCALE: 1" = 400'

0 200 400 800

Kimley»Horn

Texas Board Of Professional Engineers Firm Registration Number: F-928
12750 Merit Drive, Suite 1000, Dallas, TX 75251 972-770-1300

No.	Revision	By	Date

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STUART A. WILLIAMS P.E.
SERIAL NO. 121537
DATE: OCTOBER 2016

Town of Lakewood Village Water Impact Fee Update

WATER IMPACT FEE CIP MAP

DATE:	OCTOBER 2016
DESIGN:	SAW
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KHA NO.:	064487100

FIGURE

2.1

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C. Project Descriptions

1. Western Development 8-inch Water Line #1
   Approximately 4,450 LF of 8-inch water line is proposed to serve future developments on the west side of Town.

Project Cost	$599,000
Recoverable Cost	$599,000

2. Western Development 8-inch Water Line #2
   Approximately 4,950 LF of 8-inch water line is proposed to serve future developments on the west side of Town.

Project Cost	$678,000
Recoverable Cost	$678,000

3. Western Development 8-inch Water Line #3
   Approximately 1,860 LF of 8-inch water line is proposed to serve future developments on the west side of Town.

Project Cost	$280,000
Recoverable Cost	$280,000

4. Western Development 8-inch Water Line #4
   Approximately 580 LF of 8-inch water line is proposed to serve future developments on the west side of Town.

Project Cost	$110,000
Recoverable Cost	$110,000

5. (2) – 150,000 Gallon Ground Storage Tanks
   This project will include installation of (2) 150,000 gallon ground storage tanks at the Current Lakewood Village pump station and well area located adjacent to Town Hall. The two existing tanks will be taken out of service and disposed of or sold by the Town.

Project Cost	$894,000
Recoverable Cost	$295,020

6. Water Well – 400 gpm Capacity and 8" Supply Line to Pump Station
   This project includes completing a well feasibility study to evaluate the potential groundwater sources, quantities, and regulatory requirements necessary to complete a well capable of providing 400 gpm supply to the Town. This project also includes the drilling, casing, and pump to construct the well. An 8" PVC water line is also included in this project to bring water from the proposed well to the existing ground storage tanks at the pump station.

Project Cost	$1,613,000
Recoverable Cost	$790,370

7. Pump Station Upgrade
   This project will include installation of (1) 750 gallon per minute pump in the existing Lakewood Village pump station. Also included in this project will be an upgrade to the existing pump discharge header to 12" from the pumps to the existing 8" water line on the west side of Highridge Drive.

Project Cost	$74,000
Recoverable Cost	$74,000

8. Engineering Services to Adopt Impact Fees
   This project includes the professional services fees to generate a CIP list for the Town of Lakewood Village and to determine the maximum allowable impact fee that the Town can charge its citizens by law.

Project Cost	$43,250
Recoverable Cost	$43,250

D. Water Impact Fee Calculation

Chapter 395 of the Local Government Code defines a service unit as follows: "'Service Unit' means a standardized measure of consumption attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards and based on historical data and trends applicable to the political subdivision in which the individual unit of development is located during the previous 10 years." The Town of Lakewood Village is only confident in the flow metering data for water consumption for the years 2014 and 2015 due to inaccuracy in prior year's numbers. Therefore, the Town of Lakewood Village defines a service unit based on historical water usage over the past 2 years as compared to the number of residential units. The residential unit is the development type that predominately uses a 5/8"x3/4" meter. The measure of consumption per service unit is based on a 5/8"x3/4" meter and the data is shown in Table 2.2.

Table 2.2 Water Service Unit Consumption Calculation

Year	Residential Units	Water Usage Average Day Demand (gal)	Consumption per Service Unit (gpd)
2014	215	79,147	368
2015	219	72,179	330
Average Consumption per Service Unit			349

Because of limited historical data, per capita demand was increased to 130 gpd based on Kimley-Horn's experience in this area. Assuming 3 people per service unit, the consumption per service unit used for projections was 390 gpd.

Additional Service Units and Water Impact Fee Calculation

Based on the Town's 10-year growth projections and the resulting water demand projections, water service will be required for an additional 148 service units. The calculation is as follows:

- A service unit, which is a unit of development that consumes approximately 390 gallons per day (gpd), is a typical residential connection that uses a 5/8"x3/4" meter. Table 2.3 outlines the future water demand projections and their relationships to the additional service units projected for the next ten years.

Table 2.3 Water 10-year Additional Service Units Calculation

Year	Average Day Demand (gal)	Service Unit Demand (gpd)	Service Units
2016	85,410	390	219
2026	143,130	390	367
10-year Additional Service Units			148

Impact fee law allows for a credit calculation to credit back the development community based on the utility revenues or ad valorem taxes that are allocated to pay for a portion of future capital improvements. The intent of this credit is to prevent the Town from double charging development for future capital improvements via impact fees and utility rates. If the Town chooses not to do a financial analysis to determine the credit value, they are required by law to reduce the recoverable cost by 50 percent. The Town has chosen not to perform a financial analysis. The maximum recoverable cost for impact fee is shown below.

A breakdown of the 10-year recoverable costs and the associated impact fee per service unit is as follows:

Table 2.4 Water 10-year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	$2,869,640
50% Reduction in Recoverable Costs	($1,434,820)
Maximum Recoverable Cost for Impact Fee	$1,434,820

$$\text{Impact fee per service unit} = \frac{\text{10-year recoverable costs}}{\text{10-year additional service units}}$$

$$\text{Impact fee per service unit} = \frac{\$1,434,820}{148}$$

$$\text{Impact fee per service unit} = \$9,695$$

Therefore, the maximum assessable water impact fee for the Town per service unit is $9,695.

For a development that requires a different size meter, a service unit equivalent is established at a multiplier based on its capacity with respect to the 5/8"x3/4" meter. The maximum impact fee that could be assessed for other meter sizes is based on the value shown in Table 2.5 below.

Table 2.5 Water Service Unit Equivalency Table for Commonly Used Meters

Meter Size	Maximum Continuous Operating Capacity (gpm)**	Service Unit Equivalent	Maximum Assessable Fee Water
5/8"x 3/4" PD	10	1	$9,695
3/4" PD	15	1.5	$14,543
1" PD	25	2.5	$24,238
1 1/2" PD	50	5	$48,475
2" PD	80	8	$77,560
2" Compound	80	8	$77,560
2" Turbine	160	16	$155,120
3" Compound	175	17.5	$169,663
3" Turbine	350	35	$339,325
4" Compound	300	30	$290,850
4" Turbine	650	65	$630,175
6" Compound	675	67.5	$654,413
6" Turbine	1,400	140	$1,357,300
8" Compound	900	90	$872,550
8" Turbine	2,400	240	$2,326,800
10" Turbine	3,500	350	$3,393,250

* PD = Positive Displacement Meter (typical residential meter)
** Operating capacities obtained from American Water Works Associate (AWWA) C700-15, C701-15, and C702-15. Turbine and Compound meter flows are based on Class II (in-line) meters.

3.0 Wastewater

Development of the Impact Fee Capital Improvements Plan meet or exceed the criteria outlined by Chapter 217 of the Texas Administrative Code (Design Criteria for Domestic Wastewater Systems). The design criteria used to plan for the wastewater infrastructure needs are discussed in the following subsection. While the design criteria listed above and explained in further detail below govern the design of the Town's wastewater system, for the purposes of this report, the wastewater demands were calculated based on current numbers of connections and assumed GPCD flow rates.

A. Design Criteria

Sewer Lines

The design criteria for sizing sanitary sewer trunk lines or interceptors is based on the TCEQ requirements to contain wet weather design flows with no overflows while maintaining a minimum of 2 feet per second pipe flow velocity and not exceeding a maximum of 8 feet per second pipe flow velocity.

Lift Stations

Pumping Capacity

The design criteria for lift station pumps is based on providing pumping capacity to meet peak wet weather design flows. The firm pumping capacity is defined as the available total pumping capacity with the largest lift station pump out of service.

Wet Well Capacity

The design criteria for lift station wet wells is based on providing adequate volumes to limit pump cycling to once every 10 minutes. Based on this criterion, the required operating volume for each pump can be calculated as follows:

$V = tQ/4$ where,

t = Maximum pump cycling time = 10 minutes
Q = Lead pump discharge rate in gallons per minute (gpm)
V = Required wet well volume between pump start and stop elevation

Force Mains

The design criteria recommended for force mains is based on providing the required pumping capacity of the lift station at a discharge velocity less than 6 feet per second and a maximum discharge pressure of 100 psi and to allow a minimum of 2 feet per second scouring velocity during a single pump operation.

B. Impact Fee Capital Improvements Plan

As part of the Impact Fee Update Project, Kimley-Horn worked with the Town to develop a CIP project list to provide a logical strategy for upgrading and expanding its wastewater collection system to accommodate future growth, and for addressing existing system deficiencies. State law only allows cost recovery associated with eligible projects in a 10-year planning window from the time of the impact fee study. The following details the projects and the eligible recoverable cost.

Eight (8) projects are determined to eligible for recoverable cost through impact fee over the next 10 years. The Town of Lakewood Village's Impact Fee Capital Improvements Plan recoverable cost total is $3,837,990. After the 50%

reduction is completed, $1,918,995 is recoverable through impact fees serving the 10-year system needs. These impact fee improvements are listed in Table 3.1 and illustrated in Figure 3.1.

Table 3.1 Wastewater Impact Fee Capital Improvements Plan Costs

Proj. #	Description	2016 Required Capacity (Percent Utilization)	2026 Required Capacity (Percent Utilization)	2016-2026 Required Capacity (Percent Utilization)	2026 Projected Recoverable Cost	Total Project Cost
1	Project 1 - Western Development #1 - 8-Inch Gravity Sewer, Lift Station, and 8-inch Force Main	0%	100%	100%	$1,509,000	$1,509,000
2	Project 2 - Existing Wastewater Treatment Plant Expansion to 0.2 MGD Capacity	0%	100%	100%	$795,000	$795,000
3	Project 3 - Lift Station at Wastewater Treatment Plant Upgrade to 0.2 MGD Capacity	41%	100%	59%	$168,740	$286,000
4	Project 4 - Western Development #2 - 8-inch Gravity Sewer	0%	100%	100%	$349,000	$349,000
5	Project 5 - Western Development #3 - 8-inch Gravity Sewer, Lift Station, and 4-inch Force Main	0%	100%	100%	$378,000	$378,000
6	Project 6 - Little Elm ISD Property 8-inch Gravity Sewer	0%	100%	100%	$156,000	$156,000
7	Project 7 - Steve Harvey Property 8-Inch Gravity Sewer	0%	100%	100%	$452,000	$452,000
8	Project 8 - Engineering Services to Update Impact Fees	0%	100%	100%	$30,250	$30,250
	Total				$3,837,990	$3,955,250

CIP PROJECT LIST

1. WESTERN DEVELOPMENT #1 – 8-INCH GRAVITY SEWER, LIFT STATION, AND 8-INCH FORCE MAIN
2. EXISTING WASTEWATER TREATMENT PLANT EXPANSION TO 0.2 MGD CAPACITY
3. LIFT STATION AT WASTEWATER TREATMENT PLANT UPGRADE TO 0.2 MGD CAPACITY
4. WESTERN DEVELOPMENT #2 – 8-INCH GRAVITY SEWER
5. WESTERN DEVELOPMENT #3 – 8-INCH GRAVITY SEWER, LIFT STATION, AND 4-INCH FORCE MAIN
6. LITTLE ELM ISD PROPERTY 8-INCH GRAVITY SEWER
7. STEVE HARVEY PROPERTY 8-INCH GRAVITY SEWER

LEGEND

- EXISTING FORCE MAIN
- EXISTING SEWER LINE
- PROPOSED SEWER LINE
- PROPOSED FORCE MAIN
- LAKEWOOD VILLAGE CITY LIMITS
- LAKEWOOD VILLAGE ETJ BOUNDARY
- LAKEWOOD VILLAGE SEWER CCN BOUNDARY
- PROPERTY OUTSIDE CITY LIMITS INCLUDED IN IMPACT FEE CALCULATION
- CIP PROJECT NUMBER
- EXISTING LIFT STATION
- PROPOSED LIFT STATION
- EXISTING TREATMENT PLANT
- EXISTING MANHOLE

Kimley»Horn

Texas Board Of Professional Engineers Firm Registration Number: F-928
12750 Merit Drive, Suite 1000, Dallas, TX 75251 972-770-1300

No.	Revision	By	Date

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STUART A. WILLIAMS P.E.
SERIAL NO. 121537
DATE: AUGUST 2016

Town of Lakewood Village Waste Water Impact Fee

WASTEWATER IMPACT FEE CIP MAP

DATE: AUGUST 2016
DESIGN: SAW
DRAWN: DGD
CHECKED: TLS
KHA NO.: 064487100

FIGURE
3.1

K:\DAL_Civil\064487102 - Lakewood Village WW Impact Fee Dwg Exhibits\Exhibit 1 - Waste Water CIP Map.dwg

C. Project Descriptions

1. Western Development #1 – 8-Inch Gravity Sewer, Lift Station, and Force Main
   Approximately 2,676 LF of 8" gravity sewer, 3,685 LF of 4" force main, and a 0.4 MGD lift station is proposed to serve future developments on the west side of Town.

Project Cost	$1,509,000
Recoverable Cost	$1,509,000

2. Existing Wastewater Treatment Plant Expansion to 0.2 MGD Capacity
   A parallel treatment train similar to the existing treatment plant is proposed to bring the capacity of the plant from 0.1 MGD to 0.2 MGD.

Project Cost	$795,000
Recoverable Cost	$795,000

3. Lift Station at Wastewater Treatment Plant Upgrade to 0.2 MGD Capacity
   All flow from the Town currently goes to a lift station on the wastewater treatment plant lot, and is then pumped up into the wastewater treatment system. This projects includes upgrading the capacity of this lift station from 0.1 MGD to 0.2 MGD

Project Cost	$286,000
Recoverable Cost	$168,740

4. Western Development #2 – 8-inch Gravity Sewer
   This project includes approximately 1,933 LF of 8-inch gravity sewer that will serve a portion of the western portion of the Town. This line will tie into the gravity sewer that is part of Project #1.

Project Cost	$349,000
Recoverable Cost	$349,000

5. Western Development #3 – 8-inch Gravity Sewer, Lift Station, and 4-inch Force Main
   This project includes approximately 900 LF of 8-inch gravity sewer, 260 LF of 4 inch force main, and a 120 GPM lift station that will serve the western-most portion of the Town limits. The proposed force main will tie into Project #4.

Project Cost	$378,000
Recoverable Cost	$378,000

6. Little Elm ISD Property 8-inch Gravity Sewer
   This project includes approximately 760 LF of 8-inch gravity sewer that will tie into an existing sewer on the northwest side of town and will serve future development on approximately 16 acres currently owned by Little Elm ISD.

Project Cost	$156,000
Recoverable Cost	$156,000

7. Steve Harvey Property 8-inch Gravity Sewer
   This project includes approximately 2,235 LF of 8-inch gravity sewer that will tie into Project #1 and #4

sewer lines. This line will serve approximately 94 acres of property currently owned by Mr. Steve Harvey that is outside current Town Limits but inside the Town ETJ.

Project Cost	$452,000
Recoverable Cost	$452,000

8. Engineering Services to Update Impact Fees
This project includes engineering fees incurred by the Town to develop wastewater impact fees.

Project Cost	$30,250
Recoverable Cost	$30,250

D. Wastewater Impact Fee Calculation

Chapter 395 of the Local Government Code defines a service unit as "…a standardized measure of consumption attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards and based on historical data and trends applicable to the political subdivision in which the individual unit of development is located during the previous 10 years." For the purpose of this study, a service unit is based on assumed wastewater discharge based on the land use and the number of wastewater connections since no flow monitoring data is available. The residential unit is the development type that predominately uses a 3/4-inch water meter, which directly correlates to the representative return flow as wastewater from the same residential unit.

Table 3.2 Wastewater Service Unit Consumption Calculation

Year	Residential Units	Water Usage Average Day Demand (gal)	Consumption per Service Unit (gpd)
2012	198	35,000	177
2013	206	42,000	204
2014	215	54,000	251
2015	219	57,000	260
Average Consumption per Service Unit			223

Because of limited historical data, an industry standard of 100 gallons per capita day and 3 persons / single family dwelling unit was assumed to project future wastewater flow rates.

Additional Service Units and Water Impact Fee Calculation

Based on the City's 10-year growth projections and the resulting wastewater flow projections, wastewater service will be required for an additional 324 service units. The calculation is as follows:

- A service unit, which is a unit of development that discharges approximately 300 gallons per day (GPD), is a typical residential connection that uses a 3/4-inch meter. Table 3.3
- outlines the future wastewater discharge projections and its relationship to the additional service units projected for the next 10-years.

Table 3.3 Wastewater 10-year Additional Service Unit Calculation

Year	Average Day Flow (MGD)	Service Unit Demand (GPD)	Service Units
2016	0.07	300	219
2026	0.16	300	543
10-year Additional Service Units			324

Impact fee law allows for a credit calculation to credit back the development community based on the utility revenues or ad valorem taxes that are allocated for paying a portion of future capital improvements. The intent of this credit is to prevent the Town from double charging development for future capital improvements via impact fees and utility rates. If the Town chooses not to pursue a financial analysis to determine the credit value, to the Chapter 395 law requires that they reduce the recoverable cost by 50 percent. The Town has chosen not to calculate the credit value. Therefore, the maximum recoverable cost for impact fee shown below is 50 percent of the recoverable cost for impact fee CIP with debt service.

A breakdown of the 10-year recoverable costs and the associated impact fee per service unit is as follows:

Table 3.4 Wastewater 10-year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	$ 3,837,990
50 Percent Reduction	$ (1,918,995)
Maximum Recoverable Cost for Impact Fee	$ 1,918,995

$$\text{Impact fee per service unit} = \frac{\text{10-year recoverable costs}}{\text{10-year additional service units}}$$

$$\text{Impact fee per service unit} = \frac{\$1,918,995}{324}$$

$$\text{Impact fee per service unit} = \$5,923$$

Therefore, the maximum assessable impact fee per service unit is $5,923.

For a development that requires a different size meter, a service unit equivalent is established at a multiplier based on its capacity with respect to the 5/8" x 3/4-inch meter. The maximum impact fee that could be assessed for other meter sizes is based on the value shown on Table 3.5, Service Unit Equivalency Table for Commonly Used Meters.

Table 3.5 Wastewater Service Unit Equivalency Table for Commonly Used Meters

Meter Size	Maximum Continuous Operating Capacity (gpm)**	Service Unit Equivalent	Maximum Assessable Fee Wastewater
5/8"x 3/4" PD	10	1	$5,923
3/4" PD	15	1.5	$8,885
1" PD	25	2.5	$14,808
1 1/2" PD	50	5	$29,615
2" PD	80	8	$47,384
2" Compound	80	8	$47,384
2" Turbine	160	16	$94,768
3" Compound	175	17.5	$103,653
3" Turbine	350	35	$207,305
4" Compound	300	30	$177,690
4" Turbine	650	65	$384,995
6" Compound	675	67.5	$399,803
6" Turbine	1,400	140	$829,220
8" Compound	900	90	$533,070
8" Turbine	2,400	240	$1,421,520
10" Turbine	3,500	350	$2,073,050

Appendix A: Construction Cost Projections

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487100**	**Checked By:**	**TLS**

Title:	**Project 1 - Western Development 8" Water Line #1**	**Sheet:**	**1**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$40,000.00	$40,000
2	8" Water Line	4,450	LF	$75.00	$333,750
3	8" Gate Valve	4	EA	$4,000.00	$16,000
4	Fire Hydrant Assembly	8	EA	$6,500.00	$52,000
5	Connect to Existing Water Line	1	EA	$5,000.00	$5,000
6	Trench Safety	4,450	LF	$2.00	$8,900
7	Testing	1	LS	$5,000.00	$5,000

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:		$460,650
Engineering/Surveying/CCA	15	$69,098
Conting. (%,+/-)	15	$69,098
Total:		**$599,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487100**	**Checked By:**	**TLS**

Title:	**Project 2 - Western Development 8" Water Line #2**	**Sheet:**	**2**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$40,000.00	$40,000
2	8" Water Line	4,950	LF	$75.00	$371,250
3	8" Gate Valve	5	EA	$4,000.00	$20,000
4	Fire Hydrant Assembly	10	EA	$6,500.00	$65,000
5	Connect to Existing Water Line	2	EA	$5,000.00	$10,000
6	Trench Safety	4,950	LF	$2.00	$9,900
7	Testing	1	LS	$5,000.00	$5,000

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:		$521,150
Engineering/Surveying/CCA	15	$78,173
Conting. (%,+/-)	15	$78,173
Total:		**$678,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487100**	**Checked By:**	**TLS**

Title:	**Project 3 - Western Development 8" Water Line #3**	**Sheet:**	**3**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$20,000.00	$20,000
2	8" Water Line	1,860	LF	$75.00	$139,500
3	8" Gate Valve	3	EA	$4,000.00	$12,000
4	Fire Hydrant Assembly	3	EA	$6,500.00	$19,500
5	Connect to Existing Water Line	3	EA	$5,000.00	$15,000
6	Trench Safety	1,860	LF	$2.00	$3,720
7	Testing	1	LS	$5,000.00	$5,000

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:		$214,720
Engineering/Surveying/CCA	15	$32,208
Conting. (%,+/-)	15	$32,208
Total:		**$280,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487100**	**Checked By:**	**TLS**

Title:	**Project 4 - Western Development 8" Water Line #4**	**Sheet:**	**4**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$20,000.00	$10,000
2	8" Water Line	580	LF	$75.00	$43,500
3	8" Gate Valve	2	EA	$4,000.00	$8,000
4	Fire Hydrant Assembly	1	EA	$6,500.00	$6,500
5	Connect to Existing Water Line	2	EA	$5,000.00	$10,000
6	Trench Safety	580	LF	$2.00	$1,160
7	Testing	1	LS	$5,000.00	$5,000

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:		$84,160
Engineering/Surveying/CCA	15	$12,624
Conting. (%,+/-)	15	$12,624
Total:		**$110,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487100**	**Checked By:**	**TLS**

Title:	**Project 5 - (2) 150,000 Gallon Ground Storage Tanks**	**Sheet:**	**5**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$20,000.00	$60,000
2	6" Water Line	200	LF	$75.00	$15,000
3	6" Gate Valve	4	EA	$3,000.00	$12,000
4	150,000 Gallon AWWA D100 Welded Steel Ground Storage Tank	2	EA	$210,000.00	$420,000
5	Foundation	2	EA	$90,000.00	$180,000

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:		$687,000
Engineering/Surveying/CCA	15	$103,050
Conting. (%,+/-)	15	$103,050
Total:		**$894,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487100**	**Checked By:**	**TLS**

Title:	**Project 6 - Water Well - 400 gpm Capacity and 8" Supply Line to Pump Station**	**Sheet:**	**6**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$250,000.00	$250,000
2	Well Feasibility Study	1	LS	$23,000.00	$23,000
3	400 GPM Water Well	1	LS	$780,000.00	$780,000
4	Land Acquisition	1	LS	$40,000.00	$40,000
5	8" PVC Water Line	2,600	LF	$75.00	$195,000
6	8" Gate Valve	2	EA	$4,000.00	$8,000
7	Concrete Repair	70	SY	$80.00	$5,600
8	Trench Safety	2,600	LF	$2.00	$5,200
9	Testing	1	LS	$5,000.00	$5,000

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:		$1,311,800
Engineering/Surveying/CCA		$107,000
Conting. (%,+/-)	15	$194,000
Total:		**$1,613,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487100**	**Checked By:**	**TLS**

Title:	**Project 7 - Pump Station Upgrade**	**Sheet:**	**7**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$5,000.00	$5,000
2	750 GPM Pump & 40 HP Motor	1	LS	$20,000.00	$20,000
3	12" Ductile Iron Water Line	90	LF	$130.00	$11,700
4	12" Gate Valve	1	EA	$7,000.00	$7,000
5	Couplings and Fittings	1	LS	$5,000.00	$5,000
6	Connect to Existing Water Line	1	EA	$5,000.00	$5,000
7	Concrete Pavement Repair	12	SY	$80.00	$978
8	Misc. Electrical	1	LS	$5,000.00	$5,000

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:			$59,678
Engineering/Surveying/CCA		15	$5,000
Conting. (%,+/-)		15	$8,952
Total:			**$74,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487100**	**Checked By:**	**TLS**

Title:	**Project 8 - Engineering Services to Adopt Impact Fees**	**Sheet:**	**8**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Engineering Services to Update Impact Fees	1	LS	$43,250.00	$43,250

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:	$43,250
Total:	**$43,250**

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487102**	**Checked By:**	**TLS**

Title:	**Project 1 - Western Development #1 - 8-Inch Gravity Sewer, Lift Station, and 8-inch Force Main**	**Sheet:**	**1**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$106,000	$106,000
2	8" Wastewater Main	2,676	LF	$100	$267,600
3	4' Diameter Manhole	6	EA	$9,000	$54,000
4	8" Force Main	3,685	LF	$100	$368,500
5	0.4 MGD Lift Station	1	LS	$300,000	$300,000
6	2" Air Release Valve and Vault	1	EA	$20,000.00	$20,000
7	Seeding, Fertilizer, and Erosion Control	6,361	LF	$5.00	$31,805
8	Trench Safety	6,361	LF	$2.00	$12,722

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:			$1,160,627
Engineering/Surveying/CCA	15		$174,095
Conting. (%,+/-)	15		$174,095
Total:			**$1,509,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487102**	**Checked By:**	**TLS**

Title:	**Project 2 - Existing Wastewater Treatment Plant Expansion to 0.2 MGD Capacity**	**Sheet:**	**2**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$56,000	$56,000
2	0.1 MGD Package Wastewater Treatment Plant	1	LS	$400,000	$400,000
3	Site Work (Yard Piping, Plumbing, Commission, etc.)	1	LS	$155,000	$155,000

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:		$611,000
Engineering/Surveying/CCA	15	$91,650
Conting. (%,+/-)	15	$91,650
Total:		**$795,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487102**	**Checked By:**	**TLS**

Title:	**Project 3 - Lift Station at Wastewater Treatment Plant Upgrade to 0.2 MGD Capacity**	**Sheet:**	**3**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$20,000	$20,000
2	0.2 MGD Lift Station	1	LS	$200,000	$200,000

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:		$220,000
Engineering/Surveying/CCA	15	$33,000
Conting. (%,+/-)	15	$33,000
Total:		**$286,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487102**	**Checked By:**	**TLS**

Title:	**Project 4 - Western Development #2 - 8-inch Gravity Sewer**	**Sheet:**	**4**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$25,000	$25,000
2	8" Wastewater Main	1,933	LF	$100	$193,300
3	4' Diameter Manhole	4	EA	$9,000	$36,000
4	Seeding, Fertilizer, and Erosion Control	1,933	LF	$5.00	$9,665
5	Trench Safety	1,933	LF	$2.00	$3,866

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:			$268,000
Engineering/Surveying/CCA	15		$40,200
Conting. (%,+/-)	15		$40,200
Total:			**$349,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487102**	**Checked By:**	**TLS**

Title:	**Project 5 - Western Development #3 - 8-inch Gravity Sewer, Lift Station, and 4-inch Force Main**	**Sheet:**	**5**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$27,000	$27,000
2	8" Wastewater Main	900	LF	$100	$90,000
3	4' Diameter Manhole	3	EA	$9,000	$27,000
4	4" Force Main	260	LF	$70	$18,200
5	120 GPM Lift Station	1	LS	$100,000	$100,000
6	2" Air Release Valve and Vault	1	EA	$20,000	$20,000
7	Seeding, Fertilizer, and Erosion Control	1,160	LF	$5.00	$5,800
8	Trench Safety	1,160	LF	$2.00	$2,320

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:		$290,320
Engineering/Surveying/CCA	15	$43,548
Conting. (%,+/-)	15	$43,548
Total:		**$378,000**

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable construction costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487102**	**Checked By:**	**TLS**

Title:	**Project 6 - Little Elm ISD Property 8-inch Gravity Sewer**	**Sheet:**	**6**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$11,000.00	$11,000
2	8" Wastewater Main	760	LF	$100	$76,000
3	4' Diameter Manhole	3	EA	$9,000	$27,000
4	Seeding, Fertilizer, and Erosion Control	760	LF	$5.00	$3,800
5	Trench Safety	760	LF	$2.00	$1,520

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:			$119,320
Engineering/Surveying/CCA		15	$17,898
Conting. (%,+/-)		15	$17,898
Total:			**$156,000**

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Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487102**	**Checked By:**	**TLS**

Title:	**Project 7 - Steve Harvey Property 8-Inch Gravity Sewer**	**Sheet:**	**7**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	$32,000.00	$32,000
2	8" Wastewater Main	2,235	LF	$100	$223,500
3	Bore and 15" Steel Casing	100	LF	$225	$22,500
4	4' Diameter Manhole	6	EA	$9,000	$54,000
5	Seeding, Fertilizer, and Erosion Control	2,135	LF	$5.00	$10,675
6	Trench Safety	2,135	LF	$2.00	$4,270

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Subtotal:			$346,945
Engineering/Surveying/CCA	15		$52,042
Conting. (%,+/-)	15		$52,042
Total:			**$452,000**

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Kimley-Horn & Associates, Inc. **Opinion of Probable Construction Cost**

Client:	**Town of Lakewood Village**	**Date:**	**10/5/2016**
Project:	**Impact Fee Updates**	**Prepared By:**	**SAW**
KHA No.:	**064487102**	**Checked By:**	**TLS**

Title:	**Project 8 - Engineering Services to Update Impact Fees**	**Sheet:**	**8**

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Engineering Services to Update Impact Fees	1	LS	$30,250.00	$30,250
				Subtotal:	$30,250
				Total:	**$30,250**

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary
- [ ] Final Design

Kimley»Horn

MEMORANDUM

To: Town of Lakewood Village

From: Todd Strouse, P.E.

Kimley-Horn and Associates, Inc.

Date: 6 September 2016

Subject: IPO 064487103 – Well Feasibility Study

INTRODUCTION

The Town of Lakewood Village (Town) currently operates 3 groundwater wells; two in the Paluxy aquifer and one in the shallower, less productive Woodbine aquifer. These existing wells have a total combined capacity of 190 gallons per minute (gpm) or 273,600 gallons per day. As the area within current Town limits continues to develop, water demands will grow larger than current production capacity. The Town hired Kimley-Horn to complete a well feasibility study to evaluate proposed well locations and aquifers to supply the Town with enough water to meet its future demand. This study includes data analysis of surrounding well sites and an opinion of probable construction cost for the proposed well and associated infrastructure.

FUTURE WATER DEMAND

The Town of Lakewood Village currently has 219 existing single family water connections. Historic well production log data for 2014 and 2015 provided by the Town indicates a maximum day current water demand of 162 gpm. Since actual pumping records from the pump station and historic tank level records are not available, the actual demand may be slightly different than what was calculated due to storage in the existing ground tanks. There are currently 75 lots that are platted but undeveloped in the Town limits. It was assumed that 13 acres of undeveloped land located at Green Meadow Drive and Shoreline Drive will be subdivided into 20 lots. In addition, using an expected density of 1 lot/acre and assuming that 20% of the undeveloped land would be used for public space, the 160 acres of undeveloped land in the northwest part of the Town will add a potential 128 connections. Table 1 below summarizes the current and future demands projected for Lakewood Village.

Table 1: Demand Summary

Year	Connections	Average Demand (gpm)	Maximum Day Demand (gpm)
2016	219	56	162
Buildout	442	113	327

The three current wells operated by the Town have a total combined capacity of 190 gpm. To meet the projected future maximum day buildout demand, the Town needs a new well that is able to produce approximately 137 gpm.

WELL OPTIONS

Kimley-Horn, with the assistance of our subconsultant R.W. Harden & Associates Inc. (RWH&A), compiled and reviewed available well records, reports, maps, databases, geophysical logs, and other applicable information for existing wells in the surrounding areas. See RWH&A's report in the Appendix for a more detailed explanation of the data to follow. Two aquifer zones, the Paluxy and the deeper Twin Mountains, were identified with the potential to sustain long-term production of the Town's fourth water well. RWH&A modeled both aquifer's potential production rates and concluded that the Paluxy and Twin Mountain Aquifers have a maximum continuous production rate of 125 gpm and 800 gpm respectively. It should be noted that peak pumping rates of an additional 25% to 75% of this long-term capacity can likely be sustained for short periods of time from a proposed well in either aquifer. However, the water production can also be limited by the capacity of the aquifer.

The 3 existing wells for the town (2 Paluxy and 1 Woodbine) are located at the pump station and ground storage tank facility (Location "A"). The Town has directed Kimley-Horn to explore locating the new well either at Location "A" or at a lot located on Woodcrest Drive (Location "B"). Exhibit 1 shows the current well locations and the proposed well site on Woodcrest Drive. It should be noted that the Woodcrest Drive location, Location "B", will have to include an 8" water supply line to bring the produced water to the pump station and ground storage tanks. Location "A" has the advantage of being located on the lot with the Town's pump station and ground storage tanks so a lengthy supply water line will not be needed. Proposed water piping placement is shown in Exhibit 1.

Modeling, conducted by RWH&A, suggests that multiple producing wells in the same aquifer will have an impact on one another and this induced interference drawdown is greater the closer the wells are to each other. Constructing another Paluxy well at Location "A" could require deeper pump settings and possibly reduce maximum production rates for all Paluxy wells. Constructing a Twin Mountain well at Location "A", will not interfere with the existing wells but is recommended to be located at least 50 feet away from the other wells. Exhibit 2 shows the existing well sites and potential proposed well location. Constructing a Paluxy well on the southern, Woodcrest Drive location, Location "B", will interfere less with existing wells but will need additional infrastructure to deliver the water to the pump and ground storage tank site.

WATER QUALITY

Water quality data was obtained from the Texas Water Development Board on wells in the surrounding areas. Water quality of both aquifers, on average, have reported TDS levels below secondary contaminate levels. They are not considered a public health hazard and do not exceed levels for aesthetic considerations. Some water tested from the Twin Mountain aquifer wells exceeded the aesthetic considerations but still is not considered a public health hazard. Blending or treatment of water from a Twin Mountain well may be required to ensure drinking water standards are met if this well is chosen. See Table 4 of RWH&A's report in the Appendix for a complete listing of available water quality test results in the surrounding area.

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT & TCEQ

North Texas Groundwater Conservation District (NTGCD) regulates groundwater production in Denton County. NTGCD is currently operating under temporary rules with plans to adopt permanent rules within a year. Temporary rules require a $100 registration fee for a new well and a fee of $0.10 / 1,000 gallons produced to be paid to NTGCD. Approval of new wells is typically granted within a few days of submittal of the registration forms. The adoption of permanent rules may make the well approval process more difficult with the possibility of increased hindrances such as mandatory well setbacks from property boundaries and regulated groundwater production based on acreage owned.

Approval by Texas Commission on Environmental Quality (TCEQ) is also necessary before constructing a well. Typically, approval of initial plans and specifications takes approximately 90 days to obtain. Once the well is constructed, various submittals are required to be sent to TCEQ in order to receive approval to use the well as a public water supply.

CONCLUSIONS

Analysis of hydrogeologic data indicates that Paluxy and Twin Mountain aquifers are the best candidates for groundwater production. Modeling by RWH&A estimated a maximum continuous production rate of 125 gpm for a Paluxy well and 800 gpm for a deeper Twin Mountain well. Construction costs will be less with the Paluxy well since the aquifer is shallower. Two locations were identified as possible well sites, Location “A”, the existing pump station, or Location “B”, a lot off Woodcrest Drive. The 8” diameter water line needed for Location “B” will be approximately 2,600 linear feet and have a capital cost approximately $219,000. The existing pump station location has added convenience of being positioned near existing water infrastructure but well placement may be difficult if NTGCD adopts stricter rules in the next year.

Production rate and water levels of existing Paluxy wells could be reduced with the addition of a new Paluxy well. The interference between the potential new Paluxy well and existing Paluxy wells will be greatly increased if the new well is placed on Location “A”. If a Paluxy well is chosen, it should be constructed on the Woodcrest Drive lot, Location “B”, based on drawdown and increased pumping costs. The opinion of probable construction cost for a 125 gpm Paluxy well at Location “B” is $1,225,000 including the 8” waterline needed to deliver water to the pump station.

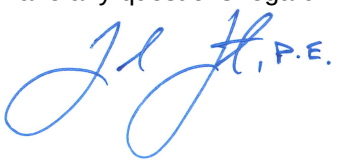
A well in the Twin Mountain aquifer may be placed at either location with little to no interference on existing wells. The opinion of probable construction cost for a 350 gpm Twin Mountain well is $1,544,000 if placed in Location “B” and $1,292,000 if placed at Location “A”. If a Twin Mountain well is chosen, water produced may require blending or treatment to keep water quality constituents below maximum drinking water standards.

Table 2: Opinion of Probable Construction Cost

Paluxy		
Well Construction Cost	$	740,000
Additional Water Line	$	219,000
15% Contingency	$	144,000
Engineering Costs	$	94,000
Well Testing (per existing well)	$	14,000
Location "B" Total	$	1,225,000
Twin Mountain		
Well Construction Cost	$	1,030,000
Additional Water Line	$	219,000
15% Contingency (Location "A")	$	155,000
15% Contingency (Location "B")	$	188,000
Engineering Costs	$	107,000
Location "A" Total	$	1,292,000
Location "B" Total	$	1,544,000

As mentioned previously, the projected maximum day buildout demand based on projected densities for new development is approximately 327 gpm for the Town, and an additional 137 gpm production capacity will be necessary to provide maximum day demands in the future. Initial modeling indicates only 125 gpm as a maximum sustained production value for a new Paluxy well. If a Paluxy well is chosen to meet the future needs of Lakewood Village, it is recommended that aquifer testing be completed by RWH&A on the two existing Paluxy wells. Conducting aquifer tests will allow for more accurate estimates of long-term production, water quality, and interference drawdown in a relatively inexpensive way for a proposed new well. Aquifer testing of the 2 existing wells is expected to cost $14,000 for each well and will also verify reported production capacities of the existing wells.

Thank you for the opportunity to provide the Town of Lakewood Village with this information. If you have any questions regarding this memo, please feel free to contact us.



Todd Strouse, P.E.

Kimley-Horn & Associates, Inc.
106 West Louisiana Street
McKinney, Texas 75069
(469) 301-2592

Attachments

R.W. Harden & Associates, Inc. Report

Exhibit 1 – Potential Well Sites

Exhibit 2 – Existing Well Site (Location “A”)

Groundwater Availability Evaluation

Prepared for:
The Town of Lakewood Village

Prepared By:

R W HARDEN &ASSOCIATES INC
HYDROLOGISTS GEOLOGISTS ENGINEERS

August 2016

The seal appearing on this document was authorized by Michael Rubinov, P.G. 11429 on August 24th, 2016.
TBPG Firm Registration Number: 50033

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Plates

Evaluation of Potential Groundwater Supplies
Town of Lakewood Village, Denton County, Texas

Introduction

The Town of Lakewood Village (Town) wishes to investigate new water sources to augment existing supplies in order to accommodate expected growth. One potential solution is to construct a new groundwater well at a Town-owned location that will be connected to the existing transmission infrastructure. The Town estimates that the proposed well will need to provide approximately 120 to 330 gallons per minute (gpm) in order to satisfy average and peak daily water demands within the foreseeable future. The Town wishes to determine the feasibility of developing additional groundwater supplies from hydrogeological, regulatory, scheduling, and cost standpoints.

To this end, R.W. Harden & Associates, Inc. (RWH&A) has performed an initial evaluation of the available groundwater resources in the Lakewood Village area. For this evaluation, RWH&A compiled and reviewed available geologic and hydrologic data including published and unpublished groundwater and geologic maps and reports, well completion records, well testing records, water quality analyses, and other applicable information from various public entities and RWH&A files. Using this data, each aquifer was assessed for production potential, water quality, and future impacts from other users. In addition, groundwater modeling was performed to estimate potential maximum well yields and pumping levels. Costs associated with aquifer testing, permitting, construction, and operation of a new public supply well in each aquifer were compiled. RWH&A has reviewed the regulatory requirements associated with construction and use of a potential new well for public supplies.

The Town has indicated two potential sites for well construction. Plate 1 shows the location of these proposed well sites and the Town's existing wells. The existing pump station (North Location) provides a convenient well location because of the existing storage facilities and water transmission infrastructure at the site. The area next to the original Town Well #2, now unused, is the second potential site (South Location) that may also provide a convenient, suitable well site.

Local Geology

Three regionally productive aquifers exist beneath the Town; the Woodbine Formation, Paluxy Formation, and the lower member of the Trinity Group of formations. Plate 2 is a map of regional surface geology and the location of the geologic cross section (Plate 3) that depicts the generalized structure of the aquifers beneath the Town. The Eagle Ford Formation is the surface geologic unit throughout the Town. The Woodbine Group, directly underlying the Eagle Ford, is the uppermost aquifer within the Town and consists of sand, sandstone, and clay and outcrops in a northwest to southeast trending band immediately west of the Town. The underlying Washita and Fredericks Groups, consisting of relatively-impermeable interbedded limestone, shale, marl, clay, and shale, act as an aquiclude in the region. The Trinity Group below consists of the Paluxy Formation, the Glen Rose limestone and the Twin Mountains Formation. The Twin Mountains Formation is

further subdivided into the uppermost Hensell sand and lowermost Hosston sand members separated by limestone and shale formations. It should be noted that, because of the long history of well drilling in the Trinity Group and the regional variations in its structure and composition, the names assigned to the formations in this group vary throughout Texas. The most commonly used alternative names for the Trinity Group or its subdivisions include the Travis Peak, Antlers, Hosston, and Hensell. In this report, the Paluxy is considered the uppermost formation of the Trinity Group, while the label Twin Mountains is applied the sand-rich, productive layers of the lower Trinity.

Existing Infrastructure

As shown in Plate 1, the Town currently operates three groundwater wells. Two wells are completed in the Paluxy aquifer and one is completed in the Woodbine aquifer. Table 1 summarizes available information on the existing wells. It should be noted that there is a discrepancy between Well #1 as reported by the TWDB, and Town records. According to TWDB records, Old Well #1 is mapped at the North Location and Well #1 (Old Well #2) is mapped at the South Location, whereas Town records show Well # 1 (Old Well #2) in the North Location. Plate 1 shows the well locations as interpreted predominantly from Town records.

Table 1. Existing Well Information

Town Well Number	State Well Number	Status	Aquifer	Well Depth (ft bgl)	Casing Diameter (in)	Top of Screened Interval (ft bgl)	Bottom of Screened Interval (ft bgl)	Screen Diameter (in)	Most Recent Water Level (ft bgl)	Water Level Date
Well #1 (Old Well #2)	1849704	Active	Woodbine	365	5.25	316	365	Unknown	94.8	1/22/1976
Old Well #1	1849703	Inactive	Woodbine	372	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown
Well #2	1849707	Active	Paluxy	1082	7	922	1082	3	360	8/12/1979
Well #3	1849713	Active	Paluxy	1223	10	894	1215	6	598	7/24/2003

bgl - below ground level

Aquifer Evaluation

While some groundwater can be produced from many of the geologic formations underlying the Town, the Paluxy and the Twin Mountain Formations provide the most likely sources for long-term groundwater development. Although the Woodbine aquifer is a major source of groundwater locally and regionally, the aquifer is relatively shallow within the Town. Preliminary calculations and modeling indicate this aquifer will not be able to sustain the desired production rates over the long-term, with current water levels already at approximately 150 feet bgl and levels continuing to decline due to heavy usage in the region. Consequently, this report will focus on the Paluxy and the Twin Mountain aquifers.

Aquifer Characteristics

The Paluxy and Twin Mountains aquifers are primarily composed of layers of sand, silt, and clay that underlie much of Central Texas. These aquifer layers outcrop to the west of the Town (Plates 2 and 3) and dip toward the Gulf of Mexico at about 60 feet per mile. Infiltration of precipitation in outcrop zones provides groundwater recharge, which then travels downdip in the pore spaces between the sand grains that comprise the more productive zones of these aquifers.

Table 2 summarizes the general aquifer characteristics of the Paluxy and the Twin Mountains aquifers in the study area. The term "transmissivity" is often used as a measure of the productivity of an aquifer. All other aspects of the groundwater system being equal, an aquifer with twice the transmissivity of another aquifer can sustain about twice as much production. As shown in Table 2, the Paluxy is likely about half as transmissive as the Twin Mountain aquifer within the Town. Please note that no aquifer test data is publically available within the Town boundaries, the data in Table 2 reflects approximations made from Texas Water Development Board (TWDB) well records, the regional groundwater availability model (GAM) of the Trinity aquifer, and interpolations from well tests in the region.

Table 2. Estimated Aquifer Characteristics

	Paluxy Aquifer	Twin Mountains Aquifer
Depth to Top of Aquifer (ft)	910	1,350
Depth to Bottom of Aquifer (ft)	1,200	1,850
Aqufier Transmissivity (gpd/ft)	5,000	10,000
Static Water Level (ft)	620	590
Average TDS Concentration (mg/L)	640	940
Projected Water Level Decline (ft)	98	197

The Town operates two wells in the Paluxy aquifer. Properly conducted pump tests of these wells would give a much clearer picture of the hydraulic characteristics of the Paluxy aquifer within the Town and, additionally, provide hydraulic information on the existing wells. It is recommended that testing of an existing well be performed prior to constructing a new well in the Paluxy. Completing a testing program in the Twin Mountains aquifer is also recommended to provide surety of aquifer characteristics and water quality prior to full-scale well construction. Testing options and procedures are discussed below.

Water Levels

As listed in Table 2, water levels are similar in the Twin Mountains and Paluxy aquifers in the region. These water levels are an average of measurements recorded since the year 2000 in wells within five miles of the Town for the Paluxy and wells seven miles of the Town for the Twin Mountains (Plates 4 and 5). Due to a lack of data closer to the Town, the Twin Mountains aquifer data was collected from more distant well locations. Artesian pressure levels are approximately 300 feet above the top of the aquifer in the Paluxy and 750 feet above the top of the Twin Mountains.

Future well production rates are largely dependent on aquifer water levels. Because both target aquifers are a major source of groundwater, significant declines in artesian pressure levels are likely in the future, which will affect the availability of groundwater. In order to estimate future declines, RWH&A reviewed models and reports generated by Groundwater Management Area No. 8 (GMA-8), which is a regulatory body tasked with future planning of groundwater in northern Central Texas. GMA-8 has adopted "desired future conditions" (DFCs) for the aquifers in its borders. Specifically, the DFCs define acceptable future water level declines in the Paluxy and Twin

Mountains. According to modeling conducted by GMA-8 and the TWDB, the Paluxy aquifer is predicted to see an average of 98 feet of water level decline, while the Twin Mountains aquifer may experience about 197 feet of decline in Denton County over the next 50 years (Table 2). It is important to note that these predicted declines are derived from regional-scale planning models and DFCs, and that water level declines in the Lakewood area will be heavily dependent on the impacts associated with local users. Consequently, the estimates of decline should be considered approximations based on available information.

Site Specific Aquifer Productivity

An analytical groundwater model developed by RWH&A was used to estimate maximum potential future productivity and water level declines in the aquifers. The maximum well productivity is a function of transmissivity, well efficiency, and available drawdown. Well efficiency defines how efficiently a well transmits water from an aquifer to the surface. The model for this study assumes a 70% well efficiency, which is considered to be the minimum acceptable limit for a properly constructed public supply well. Available drawdown is the vertical distance between the static (non-pumping) water level and the deepest pumping water level desired in the well. The maximum pumping level is often limited to the top of the uppermost aquifer production zone that is screened by a well.

The Paluxy well was modeled at the South Location (Plate 1) to maximize distance from the existing Paluxy wells at the pump station. Typically, the closer a well is to another well producing from the same aquifer, the more each well induces "interference drawdown" on the other. Modeling suggests that about 60 feet of water level decline will be imposed on the existing Paluxy wells by a new well at the South Location. For comparison, if a new Paluxy well was constructed at the North Location, within 50 feet of the existing wells, the interference effects from the new well would equate to about 100 feet of water level decline in both existing wells, possibly requiring deeper pump settings and significantly reducing the maximum production rates of the wells.

A Twin Mountain well can be located at the North Location (Plate 1) without interfering with the existing wells. However, because boreholes can deviate from the original center in the subsurface during drilling, this well should be spaced at least 50 feet from the other wells. Typically, a maximum of 1.5 feet of deviation from center per 100 foot of hole drilled is allowable, however, without drilling records it is not possible to know how far an existing well bore may have diverged from center in the subsurface.

Table 3. Modeling Parameters and Results

	Paluxy Aquifer	Twin Mountains Aquifer
Aqufier Transmissivity (gal/day/ft)	5,000	10,000
Well Efficiency	70%	70%
Pumping Duration (yr)	50	50
Depth to Static Water Level (ft)	620	590
Assumed Regional Decline (ft)	98	197
Depth to Top of Aquifer (ft bgl)	910	1,350
Available Drawdown (ft)	192	563
Maximum Continous Production Rate (gpm)	125	800
Depth to Pumping Level (ft at 50 years)	814	1,080

Table 3 shows parameters applied to the model and estimates of short and long-term maximum production from a well completed in each aquifer. Production from the Paluxy is limited by the relatively small amount of available drawdown. The future average water level declines in the region, as reported by the DFCs, further reduce the available drawdown. Declines from usage of the existing wells, extrapolated using 2015 production data provided by the Town, were also included in the model to assess impacts from those wells on a new Paluxy well. Using the parameters in the Table 3, modeling suggests a new Paluxy well could sustain a long-term rate of production of approximately 125 gpm over a period of 50 years. Peak pumping rates of an additional 25% to 75% of the long-term capacity can likely be sustained for short periods of time, depending on drawdown from the other Town owned Paluxy wells and other users in the region. It should be noted that a safety factor using a maximum of 50% of the available drawdown was applied to this model. This factor is typically included to account for unforeseen hydraulic boundary conditions and/or increased drawdown due to other users in the region.

The Twin Mountains is several hundred feet deeper than the Paluxy, but groundwater levels are similar. Consequently, the amount of available drawdown is much greater in a Twin Mountains well. This larger amount of available drawdown in combination with the Twin Mountains' greater transmissivity allows for much larger sustained pumpage rates for wells completed in this aquifer as compared to the Paluxy, regardless of the larger predicted regional water level declines. Using 50% of the available drawdown, modeling suggests a Twin Mountains well could sustain a long-term rate of 800 gpm.

It should be noted that the reported maximum production rates are highly dependent on site-specific transmissivity and future water level declines. A change to either assumption will decrease or increase possible maximum production rates accordingly.

Water Quality

Table 4 lists the concentrations for some of the commonly reported chemical constituents and parameters from both aquifers in wells within the region. Total dissolved solid (TDS) is commonly used to delineate fresh, brackish, and saline waters; water with TDS concentration below 1,000 milligrams per liter (mg/L) is considered fresh. The Texas Commission of Environmental Quality (TCEQ) regulates public supply water quality using a defined set of primary and secondary maximum contaminant limits (MCLs) for certain water quality constituents. Water with constituent concentrations above primary MCLs is considered a hazard and must be treated to bring the levels below MCLs prior to distribution. Secondary contaminant limits are not considered a public hazard but represent aesthetic considerations. If not treated, approval from TCEQ must be granted before water with elevated secondary MCL's can be used for public supplies. As discussed below, some wells in the Lakewood area produce groundwater that exceeds secondary MCLs for TDS, sulfate, chloride, and fluoride.

Plates 4 and 5 depict Paluxy and Twin Mountains well locations in the region with measured TDS concentrations, where available. Water quality in the Paluxy is fresh throughout the region, with other reported major constituents below secondary MCLs. On average, water in the Twin Mountains is just below allowed TDS limits (Table 4) and is therefore considered fresh. However, of the 15 wells sampled, 5 wells reported TDS concentrations above secondary MCL's. Although average values for other reported constitutes are below secondary MCL's, sulfate and chloride concentrations were greater than the standard of 300 mg/L in several wells, while fluoride is slightly above the secondary limit of 2.0 mg/L in one well.

Although water from both aquifers is of acceptable quality for potable supply it may not be appropriate for irrigation use because of the relatively high concentrations of sodium and bicarbonate. Excess sodium can be toxic to many plant species, and both bicarbonate and sodium can negatively impact soil permeability over time. As shown in Table 4, the average values of the Sodium Adsorption Ratio (SAR) and the Residual Sodium Carbonate (RSC) are 46 and 7.5 milliequivalents per liter (meq/l), respectively in the Paluxy, and 45 and 6.4 meq/L in the Twin Mountains. While different species of plants can tolerate a wide range of sodium and bicarbonate, the SAR and RSC values shown here are generally considered high for sustained, long-term irrigation. If the Town intends to use unblended water from the well as a source of irrigation water, it is recommended that they consult with a qualified agronomist before doing so.

Table 4. Regional Water Quality

Paluxy Water Quality												
State Well Number	**Calcium (mg/L)**	**Bicarbonate (mg/L)**	**Magnesium (mg/L)**	**Sodium (mg/L)**	**Sulfate (mg/L)**	**Chloride (mg/L)**	**Fluoride (mg/L)**	**Nitrate (mg/L)**	**pH**	**TDS (mg/L)**	**SAR**	**RSC (meq/L)**
1849401	1.1	461	<0.5	259	95	17	1.2	<0.44	9.0	650	51	6.4
1849705	1	510	1	258	81	18	1.2	3	8.9	653	44	7.5
1849712	1.06	497	0.32	249	93.8	14.8	1.2	<0.02	9.0	653	54	7.0
1857306	1.6	566	0.4	271.5	100.9	19.2	1.3	0	8.7	673	50	9.3
1956502	0.8	494	0.37	249	91	18	0.8	2.4	8.7	633	42	7.7
1956601	1.4	531	0.25	269	84	19	1.4	2	8.9	677	46	7.9
1956901	1.4	466	0.5	250	92	17	0.9	2.3	9.0	634	42	6.7
1956903	1	526	0.5	266	83	17	1.2	<0.4	8.9	661	45	8.0
1964207	1	425	1	240	90	16	0.7	<0.4	9.1	589	41	5.9
1964301	1	456	0	240	83	15	0.6	0.8	8.5	602	66	6.7
1964304	1	497	2	235	79	15	0.9	<0.4	9.0	591	31	7.6
1964307	1.6	604	0.75	280	77	15	1.9	<0.04	8.6	701	46	9.4
Average	1.2	503	0.6	250	88	17	1.04	1.11	8.9	643	46	7.5
Maximum	1.6	604	2.0	280	101	19	1.90	3.00	9.1	701	66	9.4
Twin Mountains Water Quality												
State Well Number	**Calcium (mg/L)**	**Bicarbonate (mg/L)**	**Magnesium (mg/L)**	**Sodium (mg/L)**	**Sulfate (mg/L)**	**Chloride (mg/L)**	**Fluoride (mg/L)**	**Nitrate (mg/L)**	**pH**	**TDS (mg/L)**	**SAR**	**RSC (meq/L)**
1857305	3.4	381	0.85	344	98	247	0.6	1.02	8.5	908	44	6.3
1857401	6	388	1	405	125	325	0.8	2.7	8.3	1056	40	6.0
1857403	4	367	1	361	93	300	0.5	2.9	8.3	943	42	5.7
1857404	4	358	1	390	95	346	0.7	3.3	8.3	1015	45	5.6
1857602	4	351	0.7	398	89	343	0.5	0.22	8.5	1031	48	5.7
1858103	3.5	358	0.89	374	96	267	0.6	<0.04	8.5	947	46	6.0
1956802	4.1	337	1	484	80	532	0.32	0.08	8.4	1291	56	5.5
1964201	2	395	0.5	311	93	169	0.5	<0.04	8.7	800	45	6.9
1964211	1.5	355	0.36	283	81.8	174	0.37	0.56	8.9	755	54	6.5
1964305	1.4	537	<0.2	277	92	24	1.7	<0.4	8.9	700	47	9.6
1964308	2	337	1	308	91	170	0.3	0	8.7	778	44	6.7
1964316	10	552	3.3	336	326	25	2.2	0.04	8.0	990	24	8.3
1964505	2.04	348	0.57	337	88	201	0.6	0.04	8.6	833	54	6.1
1964506	2.76	361	0.87	320	79.1	255	0.53	<0.2	8.6	866	43	6.2
1964903	5	347	1	466	93	469	0.8	3.7	8.3	1208	50	5.4
Average	3.7	385	0.9	360	108	256	0.73	1.00	8.5	941	45	6.4
Maximum	10.0	552	3.3	484	326	532	2.20	3.70	8.9	1291	56	9.6
TCEQ Secondary Maximum Contaminant Limits (mg/L)	*NA*	*N/A*	*N/A*	*N/A*	*300*	*300*	*4*/2*	*10*	*>7.0*	*1,000*	*N/A*	*N/A*

meq/L - milliequivalents per liter
**** - Indicates Primary Contaminant Limits***

Groundwater District Regulation and Permitting

Groundwater production in Denton County is regulated by the North Texas Groundwater Conservation District (District or NTGCD). Created in 2009, the NTGCD is a relatively new entity and does not have complex permitting requirements as is the case with many other groundwater conservation districts in Texas. The District requires the submittal of a registration form for each new boring or production well. A $100 fee is imposed by the district for the registration, and an additional $100 driller's log deposit is required, which is refunded if the drillers log is submitted to the District within 60 days of well or boring completion. After a well is put into service, produced water is to be metered and a fee of $0.10 per 1,000 gallons is required to be paid to the District, per the 2016 fee schedule. A registration form with basic information and signatures of associated parties is required to be submitted before drilling begins and is typically approved with a few days of submittal.

Presently, the District is operating under temporary rules which will remain in effect until permanent rules are enacted. From conversations with the District it is likely that permanent rules will be adopted within the next 12 months. GMA-8 is presently reviewing the rules of the districts within its jurisdiction and will be disseminating new guidelines within the next year. As is the case in other Districts, these new rules may require mandatory well setbacks from property boundaries and regulate groundwater production based on acreage owned. The process for borehole drilling and well construction approval may also become longer and more complex. It is difficult to predict what changes will take effect, however, it may be worth-while to construct a well before new rules requiring more testing, longer approval wait times, or well setbacks are in effect.

TCEQ Approvals for Public Supply Wells

It is necessary to obtain TCEQ approval to construct and use public supply wells. Prior to well construction, a packet containing technical specifications detailing the construction of the proposed well and potential pollution hazards near the well site is submitted. Typically, about 90 days is needed for TCEQ review and approval of the submittals. Once the well is constructed, various documents are submitted in order to obtain "interim approval" to use the well as a public supply. These submittals include: 1) an executed deed and/or sanitary control easement for the area around the well, 2) a map of the final well site, 3) documentation of the methods and materials used to construct the well, 4) pump test results, 5) water chemistry analyses, and 6) bacteriological sampling results. Once submitted, a TCEQ review period of approximately 60 days is required to receive approval to use the well.

Aquifer Testing

As noted above, there is some regional variability in the hydraulic properties and chemical constituents associated with the target aquifers in the Lakewood area. Consequently, there is some uncertainty regarding the maximum yield and quality of the water produced by a well constructed in the future. Aquifer testing and sampling may be performed if the Town requires greater surety in the characteristics of a new well than can be provided by the available data. Construction and

testing of relatively-inexpensive temporary wells can be performed to document aquifer properties prior to construction of a full-scale production well. In general, there are two approaches to implementing a testing program:

1) ***Stand-Alone Test Drilling and Aquifer Testing Program*** – A relatively small drilling rig is used to complete a test hole through the target aquifer(s). During test drilling, drill cuttings samples are collected and geophysical logging of the borehole is performed to assess sand thickness and character. Subsequently, a desired test zone depth is chosen and temporary casing and screen is installed in the well. The well is then tested using temporarily installed pumping equipment, stressing the aquifer to evaluate aquifer properties, and water quality samples are collected for laboratory analysis. Multiple zones can be tested by plugging off the deepest zone and installing the casing and screen in successively shallower zones. At the conclusion of the testing program, the temporary pumping equipment and well materials are removed and the borehole is plugged.
2) ***Conduct Aquifer Testing with Production Well Rig*** – In this approach, test drilling and aquifer testing using a temporary well are performed as described above, but by larger drilling equipment capable of constructing a production well. If the testing indicates acceptable aquifer properties, the test well equipment is removed and a permanent well is immediately constructed in the borehole.

The stand-alone test drilling and aquifer testing approach is generally preferred where significant variations in site-specific aquifer properties exist. In general, testing is performed at two or more locations being considered for permanent well location. The testing results are then evaluated and modeled to identify optimal well sites. Using this approach, productive capability and water quality are fully documented prior to well construction, and the Town is assured that the best well site was selected.

The second approach allows for a continuous process from well testing to well construction, and is likely the less expensive of the two approaches. However, there are limitations/drawbacks associated with it. First, because the drilling rig is on standby once testing is complete, the time available for data analysis and subsequent decision-making regarding whether to construct a permanent well is very limited. In addition, this approach does not allow for comparison of the hydraulic properties at various sites before well construction begins. Consequently, the primary benefit to this approach is to identify "fatal flaws" in the aquifer (insufficient saturated thickness, poor water quality) immediately prior to construction of a relatively-expensive permanent well.

If the Town wishes to construct a new Paluxy well, testing of the existing Paluxy wells is highly recommended as a relatively inexpensive way to document local aquifer characteristics and to determine the production potential of the existing wells. Using this information, more accurate estimates of the long-term productivity and interference drawdown resulting from a new well can be generated without incurring the cost of a full temporary well testing program.

Project Costs

General estimates of potential project costs are outlined in Tables 5 and 6. These tables show

testing and well construction in the Paluxy and Twin Mountains aquifers. On the lower end of possible production, the total capital cost for constructing a new Paluxy well yielding a long-term rate of 125 gpm is approximately $740,000 and the estimated annual operations and maintenance cost is $61,000 for continuous operation at 125 gpm. Engineering, permitting, and well construction observation for a Paluxy production well is approximately $94,000. On the high end of the production scale desired by the Town, the total capital cost for constructing a new Twin Mountains well capable of producing a long-term rate of 350 gpm, is approximately $1,030,000 and the estimated annual operations and maintenance cost is $129,000. Engineering, permitting, and well construction observation for a Twin Mountains production well is approximately $107,000. Costs for pilot hole drilling, presented in Table 5, assume a 1,200 foot depth for the Paluxy and an 1,800 foot depth for the Twin Mountains, and include geophysical logging (natural gamma, spontaneous potential, resistivity, and caliper), sand sampling, and sieve analyses. Well construction costs assume a 14-inch diameter carbon steel casing and 8-inch diameter stainless steel screen assembly for the Paluxy well, and a 16-inch carbon steel casing and 10-inch screen assembly for the Twin Mountains well. Permanent pumping equipment costs include submersible pump and motor, concrete well foundation, well head infrastructure, and simple above ground electrical controls. It should be noted that these costs pertain to the underground portions of the well and for the pumping equipment and wellhead infrastructure up to the discharge flange. The values listed do not include costs associated with design and construction of above-ground infrastructure including electrical service, piping, roads, fencing, etc. that may be needed to integrate the well into the Town's water system.

Twin Mountains testing costs shown in Table 5 include costs for constructing a stand-alone test well, and constructing a test well immediately prior to permanent well construction. If conducting stand-alone aquifer testing, it is recommended that testing be conducted in least at two locations to determine the most beneficial site for a production well. The total cost of drilling a test hole and testing temporary wells at two sites for a stand-alone testing program is approximately 1,018,000 dollars, including engineering. Costs associated with constructing a stand-alone temporary well assume a test hole depth to 1,800 feet and include geophysical logging, sand sampling and sieve analyses, temporary well construction, 48 hours of well testing, water quality testing, and plugging of the test well upon completion. Engineering for the stand-alone testing includes specification preparation, contract management, test hole and test well construction observation, data collection, and reporting.

The cost for constructing a Twin Mountains temporary well immediately prior to permanent well construction is approximately 387,000 dollars, including engineering, and is an addition to the well construction costs. Costs associated with constructing a Twin Mountains temporary well during well construction includes the cost of installing and removal of temporary well materials, and aquifer testing. Engineering includes test hole and test well construction observation, data collection, and reporting.

Estimated costs for testing of one existing Paluxy well are presented in Table 5, and include disconnecting the well from permanent piping, installation of a temporary flowmeter, temporary discharge piping, temporary measuring tube installed to 900 feet, and 12 hours of pump testing. Engineering costs associated with the testing include planning, contractor management, data collection and reporting.

The potential electrical and maintenance costs associated with well operation were calculated using the following estimates and assumptions:

- Potential wellbore pumping levels were estimated through analytical flow modeling employing hydraulic parameters obtained from TWDB records and the regional groundwater availability model used by GMA-8.

- Future water level declines stemming from further development in the region were not included, but it should be noted that the cost to pump water from below ground to the surface will increase in the future as the aquifers are further developed.

- An assumed 41 feet of additional head for a Paluxy well constructed at the southern location and 69 feet for a Twin Mountains well constructed at the Pump Station were included to account for above-ground lift and pumping equipment friction losses.

- A raw power cost of $0.10 per kilowatt-hour.

- The Paluxy well was assumed to provide 125 gpm continuously, and the Twin Mountains well was assumed to provide 350 gpm, continuously.

- Pumping equipment must be replaced every 5 years.

The capital cost estimates herein are based on information provided by contractors and RWH&A experience; however, costs have recently begun to vary widely, with up to 30% variations in price from bidder to bidder. Therefore, these costs should be viewed as a general guideline and could change based on competitive projects in the area and economic conditions.

Table 5: Estimated Capital Costs

Capital Costs - Paluxy Aquifer		
Item	***Units***	***Cost***
Testing*		
Well Testing of Existing Well (One Well)	1	$14,000
Well Construction - 125 gpm Well		
Mobilization	1	$150,000
Pilot Hole - 1200 ft	1	$55,000
Well Construction - 8" Screen x 14" Casing	1	$400,000
Permanent Pumping Equipment - 125 gpm	1	$135,000
Total Capital Cost		**$740,000**
Capital Costs - Twin Mountains Aquifer		
Testing*		
Mobilization	1	$50,000
Stand Alone Test Well (One Well) - 1800 ft	1	$484,000
Well Construction - 350 gpm Well		
Mobilization	1	$250,000
Pilot Hole - 1800 ft	1	$70,000
Well Construction - 10" Screen x 16" Casing	1	$500,000
Permanent Pumping Equipment - 350 gpm	1	$210,000
Total Capital Cost		**$1,030,000**
Additional Items*		
Test Well (One Well) - 1800 feet	1	$387,000
Engineering Capital Costs		
Production Well Technical Specifications and Bidding	1	$20,000
TCEQ Submittal - Well Construction	1	$5,000
TCEQ Submittal - Interim Use	1	$5,000
Well Construction Observation - Paluxy Well	1	$64,000
Well Construction Observation - Twin Mountains Well	1	$77,000
Total Well Construction and Engineering Cost - Paluxy Well		**$834,000**
Total Well Construction and Engineering Cost - Twin Mountains Well		**$1,137,000**

*Includes engineering, construction observation, and testing oversight

Table 6: Estimated Operational Costs

Annual O&M Costs				
Item	***Quantity***	***Unit***	***Unit Price***	***Cost***
Well Energy Cost - 125 gpm - Paluxy Well	65,700	Thousand gallons per Yr	$0.39	$25,623
Groundwater District Water Use Fee* - Paluxy Well	65,700	Thousand gallons per Yr	$0.10	$6,570
Well Energy Cost - 350 - Twin Mountains Well	183,960	Thousand gallons per Yr	$0.43	$79,103
Groundwater District Water Use Fee* - Twin Mountains Well	183,960	Thousand gallons per Yr	$0.10	$18,396
Well Maintenance - Paluxy/Twin Mountains	1	Lump Sum	$10,000	$10,000
Well Pump Replacement (5 year life) - 125 gpm - Paluxy Well	1	Lump Sum	$25,000	$25,000
Well Pump Replacement (5 year life) - 350 gpm - Twin Mountains Well	1	Lump Sum	$40,000	$40,000
Total Annual Cost - 125 gpm - Paluxy Well				**$67,000**
Total Annual Cost - 350 gpm - Twin Mountains Well				**$147,000**

*Per North Texas Groundwater Conservation District 2017 Fee Schedule

Summary and Conclusions

The findings of this evaluation are as follows:

- The available hydrogeologic information suggests that the Paluxy and Twin Mountains aquifers are the best candidates for groundwater production within the Town. A Paluxy well is likely capable of yielding average, long term production rates of 125 gallons per minute with short term rates approximately 25% to 75% higher, while a Twin Mountains well may be capable of producing an average, long term production rate of up to 800 gallons per minute.

- There are relative advantages and disadvantages associated with developing the Paluxy or the Twin Mountains aquifers. The Paluxy is the shallower aquifer, which typically results in lower well construction costs. However, the Paluxy is thinner and less permeable than the Twin Mountains. Consequently, for a given rate of production, significantly greater well bore water level declines may be expected for a Paluxy well. In addition, interference effects from the existing Paluxy wells within and surrounding the Town will result in deeper pumping water levels (and increased electrical lift costs) for both a new and the existing wells.

- Although fresh in both aquifers, water of the Twin Mountains is more mineralized than the water of the Paluxy and regional averages indicate the Twin Mountains water quality is only slightly below maximum public supply standard limits. Water from the Twin Mountains may require blending or treatment if water quality constituents are locally found to be above drinking water standards. Common water quality indicators of both aquifers suggest the groundwater may not be appropriate for irrigation applications, however, the suitability of the water depends on the type of plant and soil being irrigated.

- The North Texas Groundwater Conservation District (NTGCD) presently requires a short registration form to be submitted before well construction begins. A $100 fee is required for well registration and an additional refundable $100 driller's log fee is required, refunded if a log is provided to the District within 60 days of well completion. Once water is produced from the well it is required to be metered and a fee of $0.10 per 1,000 gallons produced is to be paid to the District. Typical time required to obtain permission for drilling is one week. However, RWH&A communications with NTGCD staff indicates that more stringent rules on well placement, construction and water production may be implemented within the next year.

- Estimates of the general costs for engineering, permitting, aquifer testing, and well construction and operation were compiled for this study. Using various assumptions and limitations discussed herein, the total capital costs of a 125 gpm Paluxy well with 14-inch carbon steel casing and 8-inch stainless steel screen is approximately 834,000 dollars, including engineering. Annual operation and maintenance costs are projected to be approximately 61,000 dollars. The total capital cost of a 350 gpm Twin Mountains well with 16-inch carbon steel casing and 10-inch screen is approximately 1,137,000 dollars, including engineering. Annual operation and maintenance costs of a 350 gpm Twin Mountains well are projected to be approximately 129,000 dollars.

- According to regional data and modeling conducted by RWH&A, the Twin Mountains aquifer can sustain long term, continuous well rates of up to 800 gpm. If the Town anticipates greater demand in the future and prefers the option of producing up to 800 gpm without constructing additional wells, a larger diameter Twin Mountains well would allow for installation of larger pumping equipment as demand increases. A larger diameter Twin Mountains well, constructed of 18-inch carbon steel casing and 12-inch stainless steel screen, with 350 gpm pumping equipment will cost approximately 1,187,000 dollars, including engineering.

- There is some regional variability in the hydraulic properties and chemical constituents of the target aquifers in the Lakewood area. Consequently, there is some uncertainty regarding the maximum yield and quality of the water produced by a well constructed in the future. If the Town requires increased surety with regard to the productivity and/or chemical quality of groundwater within the target aquifers, test drilling and aquifer testing may be performed prior to production well construction. A stand-alone test drilling and aquifer testing program of the Twin Mountains aquifer is recommended in at least two sites to determine the most advantageous location for a production well. The cost for conducting this work is approximately 1,018,000 dollars, including engineering. If a less costly approach is desired, constructing and testing a temporary well immediately prior to permanent well construction will provide a simple "fatal flaws" analysis of the aquifer, identifying insufficient saturated thickness or poor water quality. If a fatal flaw is identified, the well construction process can be halted, ultimately saving the costs for installing the relatively-expensive permanent well materials. Testing immediately prior to permanent well material installation would cost approximately 387,000 dollars, including engineering, and would be an addition to the well construction cost. Testing of the existing Paluxy wells may be sufficient to prove up aquifer characteristics and would cost approximately 14,000 dollars for one well, including pump test oversight conducted by RWH&A.

Plates

Plate 1. Proposed Well Locations and Existing Town Wells

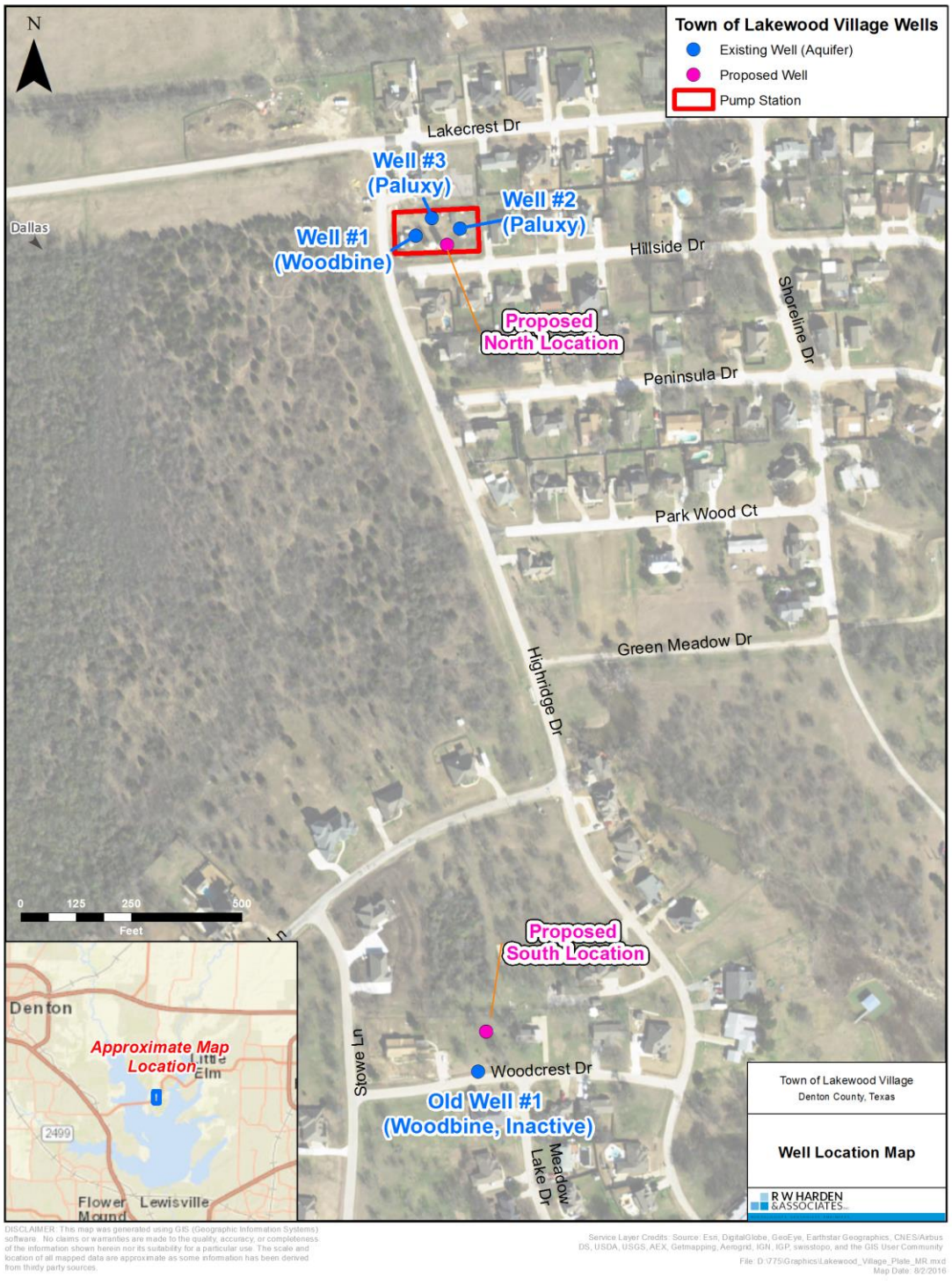


Plate 2. Surface Geology Map

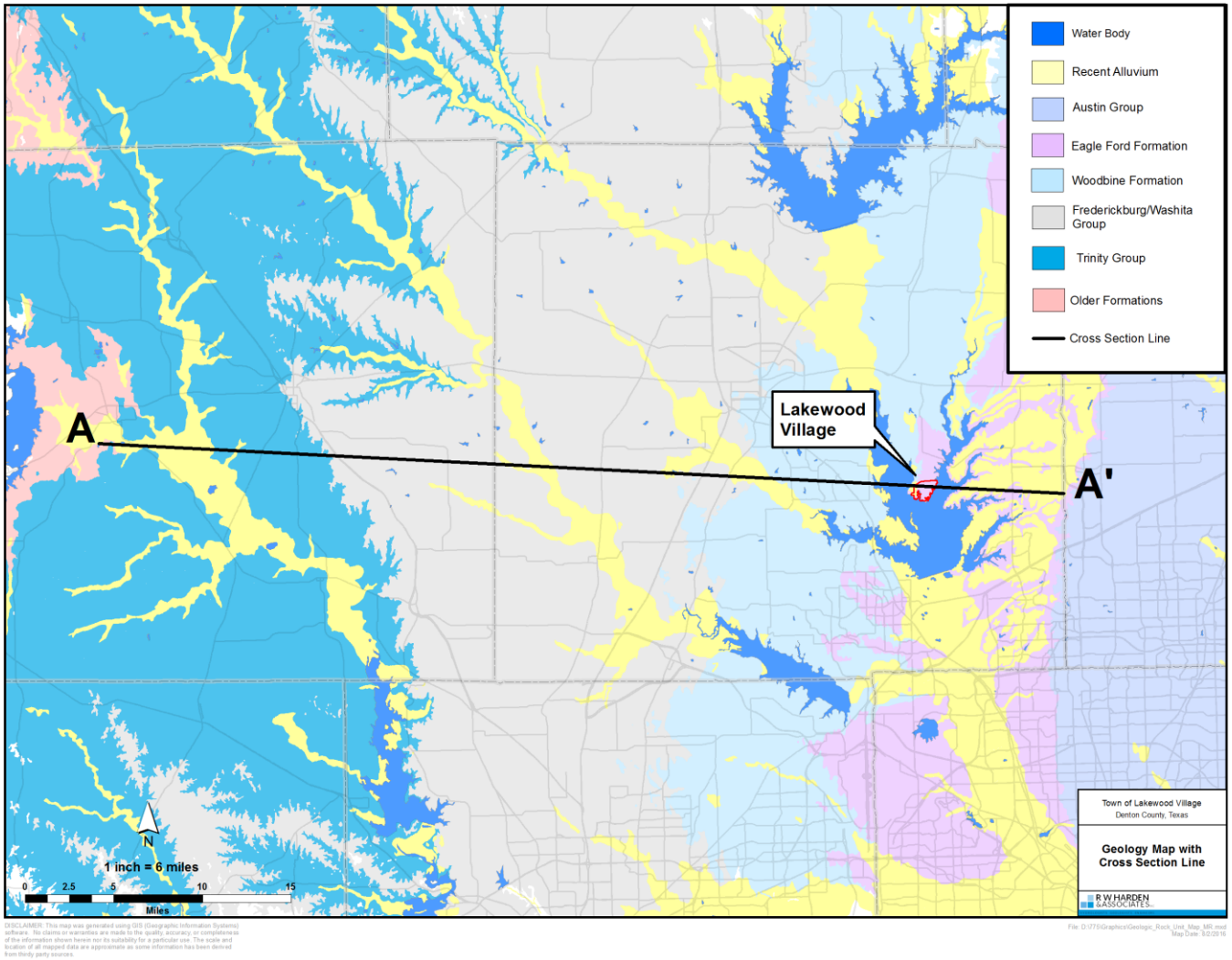


Plate 3. Geologic Cross Section

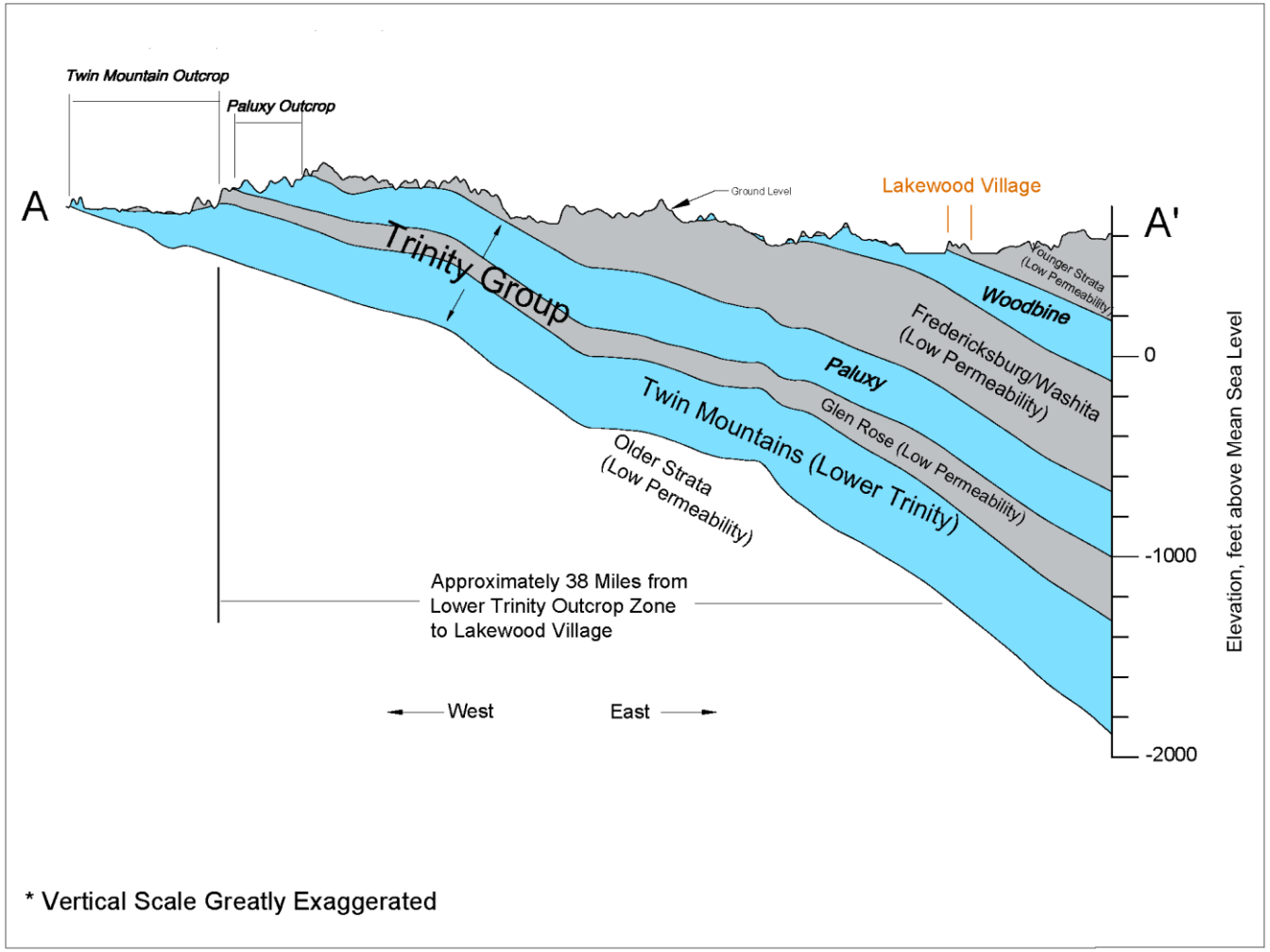


Plate 4. Paluxy Aquifer Wells

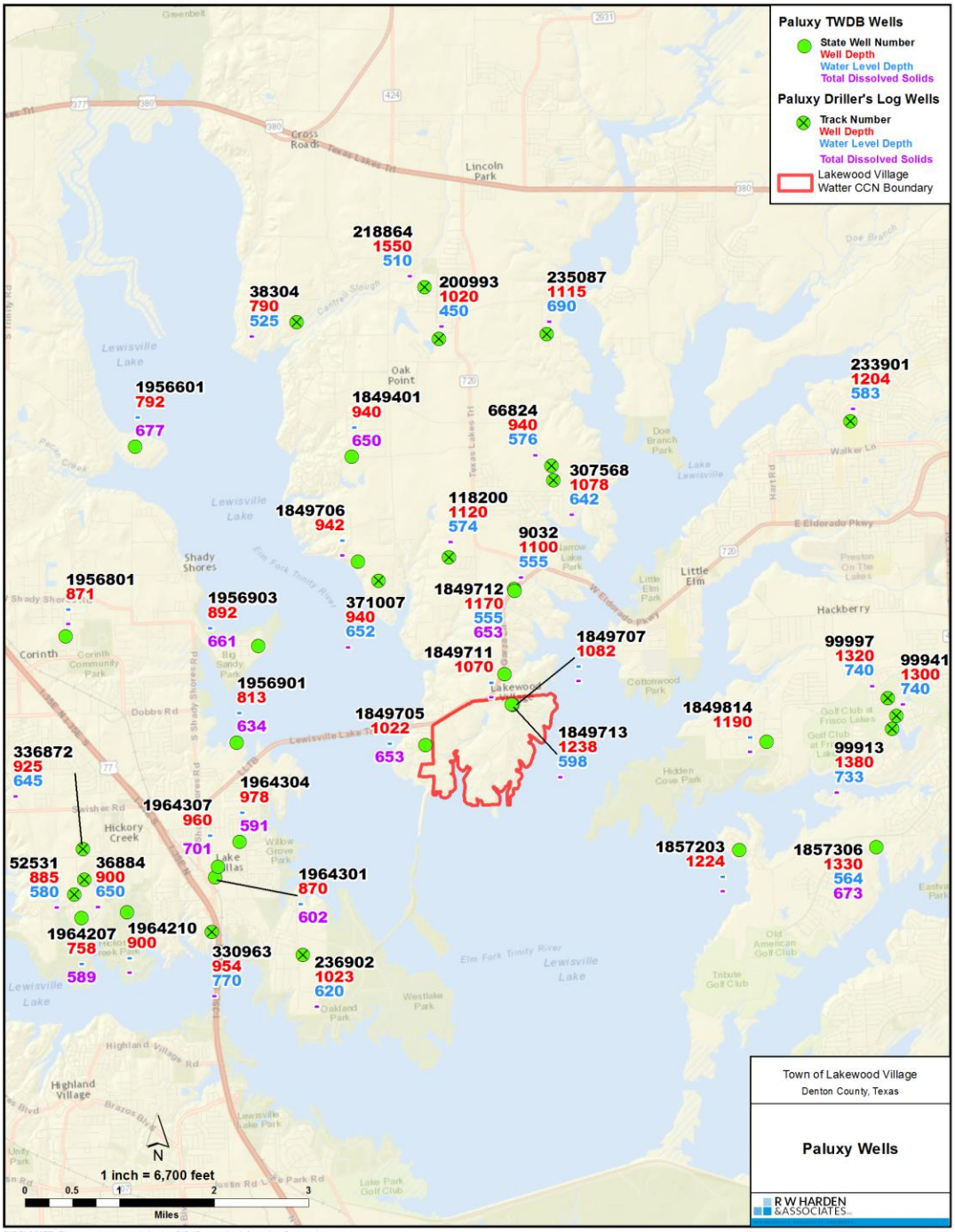
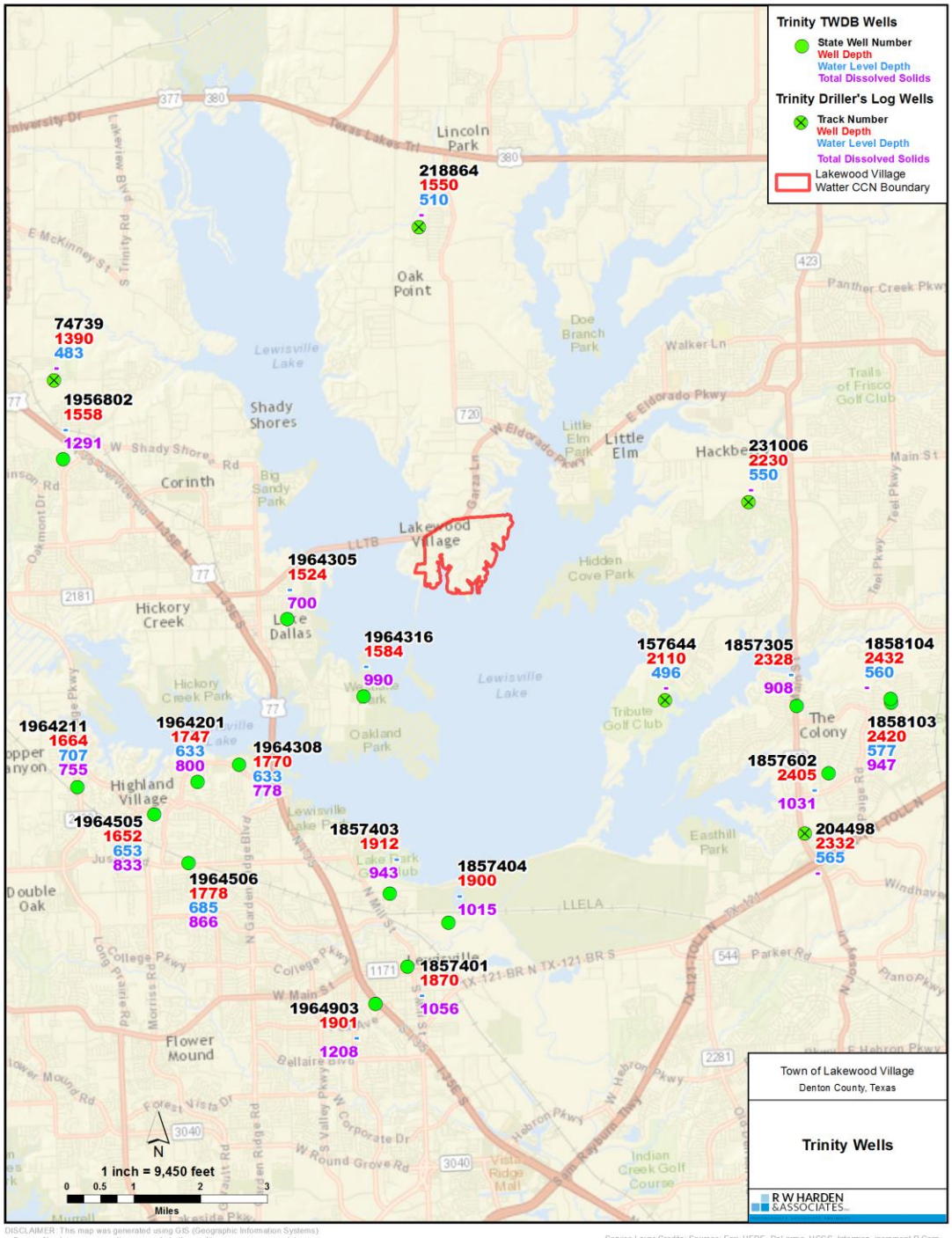


Plate 5. Twin Mountains Aquifer Wells



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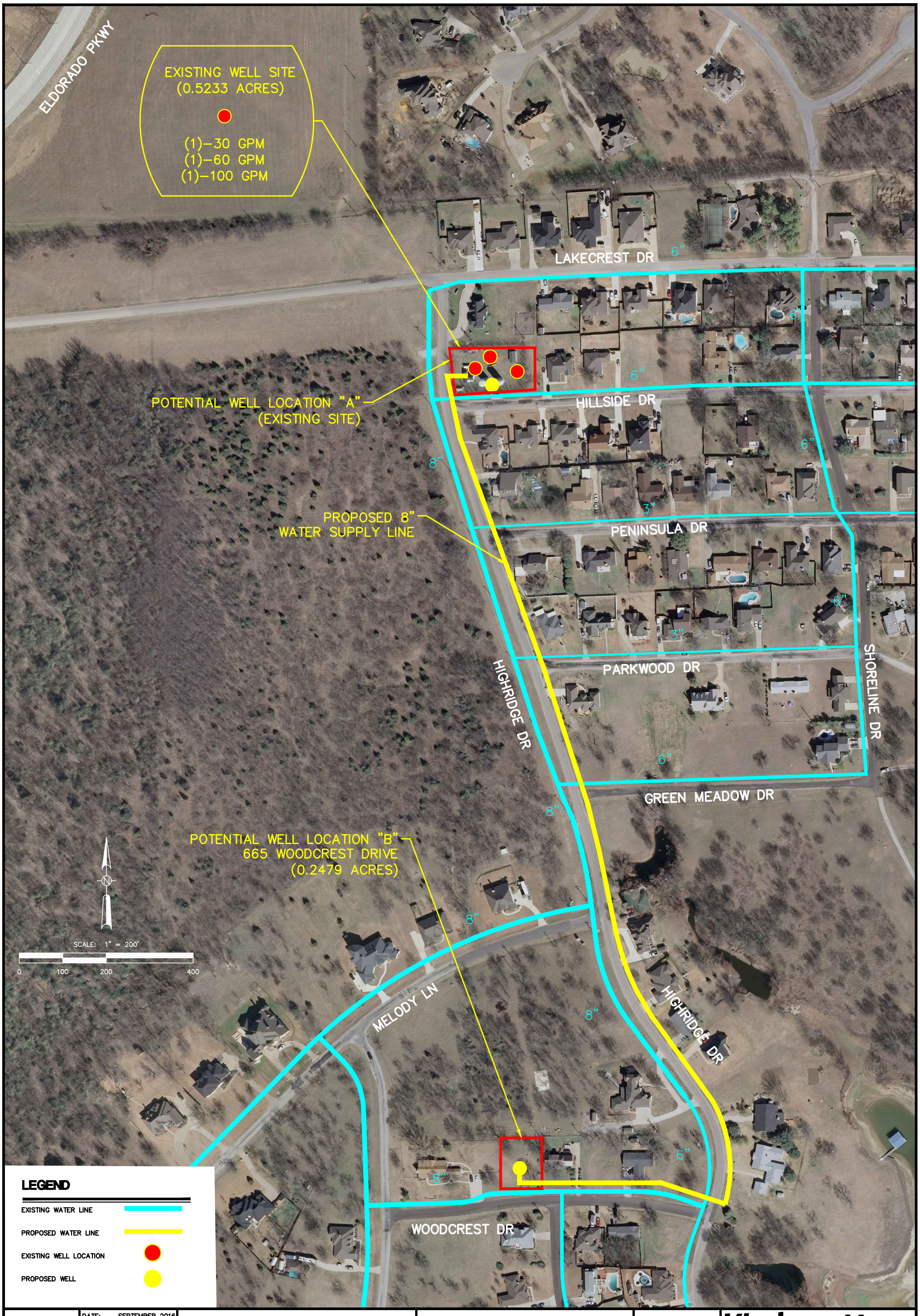


EXHIBIT	DATE:	SEPTEMBER 2016
1	DESIGN:	SAW
	DRAWN:	DGD
	CHECKED:	TLS
	KHA NO.:	064487103

EXHIBIT 1
POTENTIAL WELL SITES

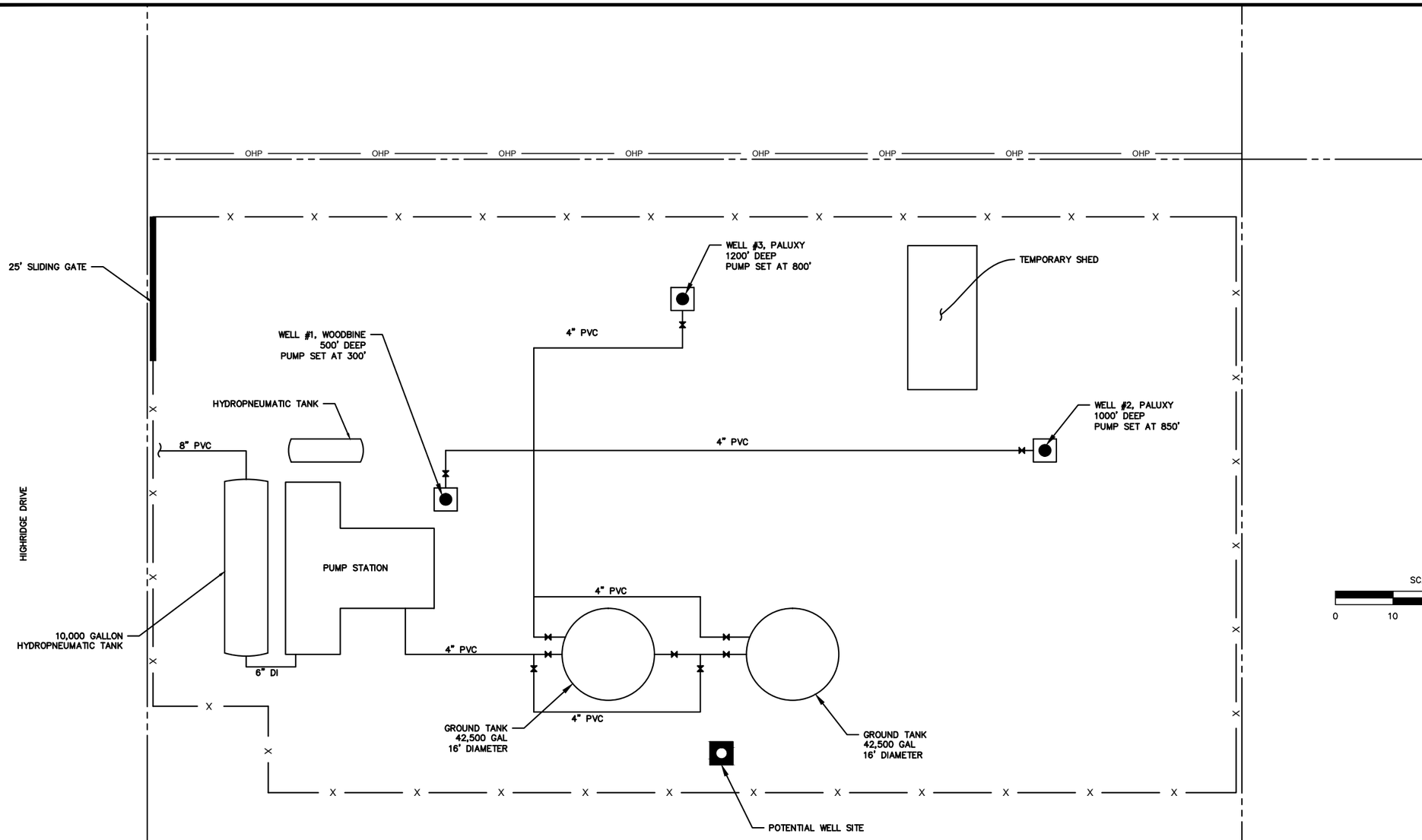
Town of Lakewood Village
Well Feasibility Study

Kimley»Horn

Texas Board Of Professional Engineers Firm Registration Number: F-928
12750 Merit Drive, Suite 1000, Dallas, TX 75251 972-770-1300

No.	Revision	By	Date

K: \MKN_Civil\064487100 – Lakewood Village Water Impact Fees\Dwg\Exhibits\Memo_Exhibit 1 – Potential Well Locations.dwg



LEGEND

- EXISTING WATER LINE
- PROPERTY LINE
- EXISTING FENCE — X —
- OVERHEAD POWER LINES — OHP —
- EXISTING WELL LOCATION
- PROPOSED WELL

Kimley»Horn

Texas Board Of Professional Engineers Firm Registration Number: F-928
12700 Park Drive, Suite 1000, Dallas, TX 75251 972-770-1300

No.	Revision	By	Date

Town of Lakewood Village
Well Feasibility Study

EXHIBIT 2 - EXISTING WELL SITE
(LOCATION "A")

DATE: SEPTEMBER 2016
DESIGN: SAW
DRAWN: DGD
CHECKED: TLS
KHA NO.: 064487103

EXHIBIT
2

K:\MKN_Conf\064487103 - Lakewood Village Water Impact Fees\Dwg Exhibits\Memo_Exhibit 2 - Existing Well Sites_Location A.dwg

TOWN OF LAKEWOOD VILLAGE
RESIDENTIAL CODE 16-xx

AN ORDINANCE TO ADOPT THE 2012 INTERNATIONAL RESIDENTIAL CODE, WITHIN THE TOWN OF LAKEWOOD VILLAGE ~~AND THE TOWN OF LAKEWOOD VILLAGE EXTRATERRITORIAL JURISDICTION~~; PROVIDING A SAVINGS/REPEALING CLAUSE, PROVIDING A PENALTY CLAUSE, PROVIDING A SEVERABILTY CLAUSE, PROVIDING AN EFFECTIVE DATE.

WHERAS, the Town Council of the Town of Lakewood Village, Texas ("Town Council") has investigated and determined that it would be advantageous and beneficial to the citizens of the Town of Lakewood Village, Texas ~~and the citizens inside the Town of Lakewood village Extraterritorial Jurisdiction (collectively "Lakewood Village")~~ to adopt the 2012 Edition of the International Residential Code, save and except the deletions and amendments set forth below.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF LAKEWOOD VILLAGE, TEXAS, THAT:

Section 1: Findings

The findings set forth above are incorporated into the body of this Ordinance as if fully set forth herein.

Section 2: Adoption of the 2012 International Residential Code

The International Residential Code, 2012 Edition, copyrighted by the International Code Council, Inc., including Appendix G, J, and K, save and except the deletions and amendments set forth in Exhibit "A", attached hereto and incorporated herein for all purposes, is hereby adopted as the Residential code for Lakewood Village, regulating the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal, and demolition of detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height with a separate means of egress and related accessory structures in Lakewood Village (the "2012 International Residential Code"). The 2012 International Residential Code is made a part of this Ordinance as if fully set forth herein.

Section 3: Repeal

Residential Code 15-04~~14-07~~ ordinance is hereby repealed in its entirety.

Section 4: Penalty Clause

A. Violation

A person who knowingly violates any provision of this chapter is guilty of separate offenses for each day during which the violation is continued after notification. Neither allegation nor evidence of a culpable mental state is required for the proof of an offense defined by this ordinance.

B. Fine

Each offense is punishable by a fine of not more than two-thousand ($2,000) nor less than two-hundred ($200). The minimum fine established in this paragraph shall be doubled for the second conviction of the same offense within any 24-month period and tripled for the third and subsequent convictions of the same offense within any 24-month period. At no time shall the minimum fine exceed the maximum fine established in this paragraph.

Section 5: Legal Rights

The penal provision imposed under this Ordinance shall not preclude the Town of Lakewood Village from filing suit to enjoin the violation. The Town of Lakewood Village retains all legal rights and remedies available to it pursuant to local, state, and federal law.

Section 6: Severability

A. Unconstitutional or Invalid Section

Should any section, subsection, sentence, clause or phrase of this Ordinance be declared unconstitutional or invalid by a court of competent jurisdiction, it is expressly provided that any and all remaining portions of this Ordinance shall remain in full force and effect.

B. Independent Sections

The Town hereby declares that it would have passed this Ordinance, and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses and/or phrases be declared unconstitutional or invalid.

Section 7: Estoppel / Waiver

The failure of the Town to enforce any term or condition of this Ordinance shall not constitute a waiver or estoppel or any subsequent violation of this Ordinance.

Section 8: Effective Date

The amendments to this Ordinance shall become effective from and after its date of passage and publication as provided by law.

PASSED AND APPROVED by the Town Council of the Town of Lakewood Village, Texas this the 1314th day of OctoberMay, 201615.

Mark Vargus
Mayor

ATTEST:

Linda Asbell
Town Secretary, TRMC

Exhibit A

Town of Lakewood Village Amendments

2012 International Residential Code

RESIDENTIAL CODE

Adopted: October 13th, 2016~~May 14, 2015~~

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CHAPTER 1. ADMINISTRATION

The following additions, deletions and amendments to the 2012 International Residential Code adopted herein and herby approved and adopted.

R101 General

General of the 2012 International Residential Code is amended as follows:

R101.1 Title

These regulations shall be known as the *International Residential Code* of The Town of Lakewood Village hereinafter referred to as "this code."

R102 Applicability

Applicability of the 2012 International Residential Code is amended as follows:

R102.4 Referenced Codes and Standards

The codes, when specifically adopted by the Town of Lakewood Village, and standards referenced in this code shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections R102.4.1 and R102.4.2. Whenever amendments have been adopted to the referenced codes and standards, each reference to said code and standard shall be considered to reference the amendments as well. Where differences occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply. Any reference made to NFPA 70 or the ICC Electrical Code shall mean the Electrical Code as adopted. Where requirements in this code conflict with any requirements of other adopted codes by the Town of Lakewood Village the most stringent requirements shall apply.

Exception

Where enforcement of a code provision would violate the conditions of the *listing* of the *equipment* or *appliance,* the conditions of the *listing* and manufacturer's instructions shall apply.

R103 Department of Building Safety

R103.2 Appointment

The building official shall be appointed by the ~~chief appoint authority of the jurisdiction~~ Town Council of the Town of Lakewood Village, TX.

Building Application Handbook

The Town Council may from time to time amend, supplement or change the text of the Building Application Handbook.

R105 Permits

Permits of the 2012 International Residential Code is amended as follows:

R105.1 Required

Any owner or authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical or plumbing system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the *building official* and obtain the required *permit.*

R105.2 Work Exempt from Permit

Permits shall not be required for the following. Exemption from *permit* requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this *jurisdiction.*

Building

1) One-story detached accessory structures used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed ~~200~~ 250 square feet ~~(18.8m²)~~ (23.23 m^2).

~~2) Fences not over 7 feet (2134 mm) high.~~

3) Retaining walls that are not over 4 feet (1219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.

4) Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons (19 927 L) and the ratio of height to diameter or width does not exceed 2 to 1.

~~5) Sidewalks and driveways.~~

6) Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work.

7) Prefabricated swimming pools installed entirely above ground that are less than 24 inches (610 mm) deep and do not exceed 5,000 gallons.

8) Swings and other playground equipment.

9) Window awnings supported by an exterior wall which do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support.

10) Decks not exceeding 200 square feet (18.58 m^2) in area, that are not more than 30 inches (762 mm) above *grade* at any point, are not attached to a *dwelling* and do not serve the exit door required by Section R311.4.

11) Temporary motion picture, television and theater stage sets and scenery.

12) Shade cloth structures not exceeding 250 square feet.

13) Non-fixed and moveable fixtures, cases, racks, counters and partitions not over 5 feet 9 inches (1753 mm) in height.

14) Repairs to existing flatwork or new flatwork of area less than 50 square feet (23.23 m^2).

R105.3 Application for Permit

To obtain a permit, the applicant shall first file an application therefor in writing on a form furnished by the department of building safety for that purpose. Such application shall:

1) Identify and describe the work to be covered by the permit for which application is made.
2) Describe the land on which the proposed work is to be done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work.
3) Indicate the use and occupancy for which the proposed work is intended.
4) Be accompanied by construction documents and other information as require in Section R106.1.
~~5) State the valuation of the proposed work.~~
6) Be signed by the applicant or the applicant's authorized agent.
7) Give such other data and information as required by the building official.

Expiration of Application

An application for a permit for any proposed work shall be deemed to have been abandoned 90 days after the date of filing unless such application has been pursued in good faith or a permit has been issued; except that the building official is authorized to grant one or more extensions of time for additional periods not exceeding 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

R105.5 Expiration

Every permit issued shall become invalid unless the work authorized by such permit is not commenced and received a minimum of one approved inspection within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. The building official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated. Before such work recommences, a new permit shall be first obtained and the fee, therefore, shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded one year.

R105.8 Responsibility

It shall be the duty of every person who performs work for the installation or repair of building, structure, electrical, gas, mechanical or plumbing systems, for which this code is applicable, to comply with this code.

Licensing and Registration Requirements

1) No person shall engage in the business of construction of new buildings or structures, or make any repairs, alterations, or changes to an existing building or structure, unless that person is registered as a contractor by the Town. Provided however that:

   a. No license shall be required for work on any building or structure for which a building permit is not required by this code; and

   b. Persons who occupy and reside within any property as their home shall not be required to obtain a license or register with the Town when performing work on their home. Section R105 remains applicable.

2) All contractors shall register with the Town in accordance with Contractor Registration requirements, as provided in the Building Application Handbook, before applying for permits or performing any work.

R106 Construction Documents

Construction Documents of the 2012 International Residential Code is amended as follows:

R106.1 Submittal Documents

Construction documents, special inspection and structural observation programs and other data shall be submitted in one or more sets with each application for a permit. The construction documents shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. Where special conditions exist, the building official is authorized to require additional construction documents to be prepared by a registered design professional. Foundation plans shall be submitted with each application and shall be sight specific. These plans shall be designed by an engineer licensed by the State of Texas and shall bear that engineers seal. Structural framing plans shall be submitted with each new construction or addition application. Structural framing plans shall be designed by a registered design professional licensed by the State of Texas and shall bear that design professionals seal.

Exception

The building official is authorized to waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that reviewing of construction documents is not necessary to obtain compliance with this code.

Construction Plan Packet Submission and General Requirements

Plans shall be submitted in accordance with Building Inspection requirements, as provided in the Building Application Handbook. Incomplete plans shall not be accepted and such plans shall be returned to the applicant.

R108 Fees

Fees of the 2012 International Residential Code are amended as follows:

R108.3 Building Permit Valuations

~~Building *permit* valuation shall include total value of the work for which a *permit* is being issued, such as electrical, gas, mechanical, plumbing equipment and other permanent systems, including materials and labor.~~

R108.6 Work Commencing Before Permit Issuance

Any person who commences work requiring a *permit* on a building, structure, electrical, gas, mechanical or plumbing system before obtaining the necessary permits shall be subject to a penalty of 100 percent of the usual permit fee ~~established by the applicable governing authority that shall be~~ in addition to the required *permit* fees.

R109 Inspections

Inspections of the 2012 International Residential Code are amended as follows:

R109.1 Types of Inspections

For onsite construction, from time to time the building official, upon notification from the permit holder or his agent, shall make or cause to be made any necessary inspections and shall either approve that portion of the construction as completed or shall notify the permit holder or his or her agent wherein the same fails to comply with this code.

Inspections shall be in accordance with Building Inspection requirements, as provided in the Building Application Handbook.

Inspection Protocol

Members of the Board of Appeals shall not be involved in or interfere with any aspect of an active inspection.

R109.1.1 Foundation Inspection

Inspection of the foundation shall be made after poles or piers are set or trenches or *basement* areas are excavated and any required forms erected and any required reinforcing steel is in place and supported prior to the placing of concrete. The foundation inspection shall include excavations for thickened slabs intended for the support of bearing walls, partitions, structural supports, or *equipment* and special requirements for wood foundations. A registered design professional, or their designated representative, must perform a pre-pour inspection and provide the Building Official with a signed and sealed document stating that the foundation has been inspected and approved. The inspection must take place prior to requesting a foundation inspection from the Building Official.

R109.4 Approval Required

Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as

completed, or shall notify the permit holder or an agent of the permit holder wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the building official.

Re-Inspections

The costs of inspections are included with the issuance of a permit(s). Upon the failure of an inspection, the contractor shall be subject to the cost of a re-inspection as defined in the Town's Fee Ordinance. The payment for the re-inspection shall be paid in full prior to scheduling the subsequent inspection.

R110 Certificate of Occupancy

Certificates of Occupancy of the 2012 International Residential Code are amended as follows:

R110.1 Use and Occupancy

No building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until the building official has issued a certificate of occupancy therefor as provided herein. Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Certificates presuming to give authority to violate or cancel the provisions of this code or other ordinances of the jurisdiction shall not be valid. Violation of this requirement will result in all utilities being disconnected until such time as a Certificate of Occupancy has been issued after all the proper inspections has been performed.

Exceptions to Certificate of Occupancy

1) Certificates of occupancies are not required for work exempt from permits under R105.2.
2) Accessory buildings or structures.

R111 Service Utilities Requirements

Service utilities requirements of the 2012 International Residential Code are amended as follows:

R111.1 Connection of Service Utilities

No person shall make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a permit is required, until approved by the building official.

Water and/or Sewer Taps

A licensed plumber that is registered with the Town shall perform all work connecting to the Town utilities.

R112 Board of Appeals

Board of Appeals of the 2012 International Residential Code is amended as follows:

R112.1 General

In order to hear and decide appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of this code, there shall be and is hereby created a board of appeals. The building official shall be an ex officio member of said board but shall have no vote on any matter before the board. The board of appeals shall be appointed by the governing body and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business, and shall render all decisions and findings in writing to the appellant with a duplicate copy to the building official.

The Town Council shall act as the Board of Appeals. The powers of the Board shall be as follows:

1) To hear appeals from decisions of the building official;
2) To hear requests for the use of a material or method of construction not prescribed or authorized by this code, and to authorize the use when, in the Board's judgment, the material or method of construction is at least equivalent to that prescribed; and
3) To grant or deny variance requests.

Variance Requests

1) Variances will be considered only when, because of special circumstances applicable to the property, including size, shape, topography, location or surroundings, the strict application of the building and zoning ordinances would cause an undue hardship. Financial considerations are not relevant and shall not be considered in the request;
2) A variance which would have a detrimental effect on public health and/or safety shall not be considered;
3) Variances for self-imposed hardships shall not be considered;
4) Approved variances shall expire if the project is not completed;
5) A site plan and/or construction plans shall be submitted with each variance request; and
6) The applicant shall site the paragraph in the code for which the variance is requested.

CHAPTER 2. DEFINITIONS

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

R202 Definitions

Definitions of the 2012 International Residential Code

Building Official: the officer or other designated authority charged with the administration and enforcement of this Code.

Construction Site Refuse Control: the containment of and weekly or monthly removal of both construction and laborer refuse to prevent said materials from encroaching onto adjacent homeowner

properties, town easements, drainage ditches and culverts, and should be in compliance with OSHA and local codes.

Contractor: any person, firm, corporation, or other entity that is hired by a homeowner or landowner to perform any new construction, remodel, or repair on said homeowner or landowner's real property.

Dwelling Area: the area devoted to the living area in a residence or dwelling and is exclusive of porches, enclosed or open breezeways or other non-living space.

~~ETJ: the Extraterritorial Jurisdiction of the Town of Lakewood Village.~~

Erosion control: the containment of all dirt, soils, sand, fill or grass, in such a manner, to prevent said materials from encroaching onto adjacent properties, town easements, drainage culverts, or utility placements.

Glazing Area: ~~The interior surface area of all glazed fenestration, including the area of sash, curbing or other framing elements, that enclose conditioned space. Includes the area of glazed fenestration assemblies in walls bounding conditioned basements.~~ Total area of the glazed fenestration measured using the rough opening and including sash, curbing or other framing elements that enclose conditioned space. Glazing area includes the area of glazed fenestration assemblies in walls bounding conditioned basements. For doors where the daylight opening area is less that 50 percent of the door area, the glazing area is the daylight opening area. For all other doors, the glazing area is the rough opening area for the door including the door and the frame.

Masonry: brick, concrete hollow clay tile, concrete block, natural stone, or any combination of these materials that are laid up by unit and set in mortar.

Town: the Town of Lakewood Village

CHAPTER 3. BUILDING PLANNING

The following additions and amendments to the 2012 International Residential Code adopted herein and herby approved and adopted.

R301 Building Planning

Building Planning of the 2012 International Residential Code is amended as follows:

Work Hours

Construction work times shall be 7:00 a.m. to 7:00 p.m., Monday through Saturday.

Electrical Service

The Town shall grant approval to initiate electrical service for permanent or temporary use.

Reinforced Concrete Driveways & Flat Work

Reinforced concrete driveway requirements are as follows:

1) Sub Grade shall be free of debris, roots and grass and compacted in areas where trees or shrubs were removed. Spray with water to dampen prior to pouring.

2) Reinforcement shall be three eights (3/8) inch rebar on 16 inch centers in both directions and tied at every intersection. The chair height must place the rebar in middle of nominal thickness and spaced a maximum of 36 inches apart.

3) Strength shall be a minimum of 3,000 psi after 28 days.

4) Thickness shall be a minimum of 4 inches and uniform throughout.

5) Mixer delivery trucks are prohibited from driving on top of reinforcement rebar.

6) Connection to Asphalt Street:

Saw cut the street and remove edge to allow for concrete forms. An asphalt patch must be installed upon removal of forms.

7) Connection to Concrete Street

Saw cuts are prohibited. Dowels may be placed on 18" centers at an elevation that is the middle of the nominal thickness of the driveway.

The compacted rock base that extends 1 foot beyond the street paving shall not be altered or removed.

Concrete Paver Driveways

Concrete paver driveway requirements are as follows:

1) Sub grade shall be a minimum of 6 inches of base and 1 inch of bedding. Install sub base compacting in 3 inch lifts and dampen with water as required to aid the compaction process.

2) Edge restraints must be installed.

3) Pavers to be installed per manufacturer's specifications.

4) Connection to Asphalt Street:

Saw cuts are permissible.

5) Connection to Concrete Street

Saw cuts are prohibited.

The compacted rock base that extends 1 foot beyond the street paving shall not be disturbed.

Table R301.2(1) Climate and Geographic Design Criteria

Ground Snow Load	Wind Design		Seismic Design Category[f]	Subject to Damage from		
	Speed (mph)	Topographic effects[k]		Weathering[a]	Frost Line Depth[b]	Termite[c]
5 lb/ft^2	90 (3 sec gust / 76 fastest mile	No	A	Moderate	6"	Very Heavy

Winter Design Temp[e]	Ice Barrier Underlayment	Flood Hazards[g]	Air Freezing	Mean Annual Temp[j]

	Required[h]		Index[i]	
22 °F	No	Local Code	150	64.9 °F

CHAPTER 4. FOUNDATIONS

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

R401 General

General of the 2012 International Residential Code is amended as follows:

R401.3 Drainage

Surface drainage shall be diverted to a storm sewer conveyance or other *approved* point of collection that does not create a hazard. *Lots* shall be graded to drain surface water away from foundation walls and adjacent lots. Lot to lot drainage shall not be permitted. The *grade* at the foundation wall shall fall a minimum of 6 inches (152 mm) within the first 10 feet (3048 mm).

R403 Footings

Footings of the 2012 International Residential Code is amended as follows:

R403.1.8 Foundations on Expansive Soils

Foundation and floor slabs for buildings located on expansive soils shall be designed in accordance with R1808.6 of the International Building Code, the American Society of Civil Engineers Texas Recommended Practice for the Design of Residential Foundations Version 1 as it currently exists or may be amended, or other accepted industry standards that are acceptable to the Building Official. All foundations shall be designed by a registered Professional Engineer in the State of Texas and all drawings and documentation shall be signed and sealed. Documentation shall include:

1) Design letter referencing soils report number, date of report, soils, and engineer name; specific location including lot, block, and subdivision; specific design criteria including soil bearing capacity, plasticity index, and potential vertical rise. The Engineer shall approve a concrete mix design with performance criteria based on soils and seasonal conditions.

2) Signed and sealed drawings indicating strand and reinforcement placement, pier size, depth, location, and reinforcing, beam size and location, and special details. Design calculations shall be included. One 11" X 17" (B size) copy of plans and calculations shall be included in the permanent permit file for each project.

3) Design engineer shall perform a pre-pour inspection and provide the Building Official with signed and sealed document stating that the foundation has been inspected and approved. This inspection shall occur prior to requesting a foundation inspection from the Building Official. The engineer shall be present during placement of concrete to verify concrete mix and seasonal conditions during placement, and verify tensioning and elongation of cables.

4) Rough grading of lot after form removal to maintain drainage away from foundation during the construction process.

5) Prior to receiving a Certificate of Occupancy, a final survey indicating final grade elevations and verifying positive drainage away from the foundation, and evidence from the homeowner that they have received a copy of foundation maintenance instructions must be submitted to the Building Official.

6) The Engineer must provide to the Building Official a letter of Final Acceptance stating that the foundation has been placed in compliance with the design prior to the issuance of a Certificate of Occupancy.

7) Anchorage shall be installed before foundation is approved for pouring, per R403.1.6.

CHAPTER 11. ENERGY EFFICIENCY

The following adoptions to the 2012 International Residential Code adopted herein and herby approved and adopted.

N1102 Building Thermal Envelope

Building Thermal Envelope of the 2012 International Residential Code is amended as follows:

Table N1102.1.1 (R402.1.1) Insulation and Fenestration Requirements by Component[a]

WOOD FRAME WALL R-VALUE for CLIMATE ZONE 3 = 13

Table N1102.1.3 (R402.1.3) Equivalent U-Factors

WOOD FRAME WALL U-FACTOR for CLIMATE ZONE 3 = 0.082

CHAPTER 13. GENERAL MECHANICAL SYSTEM REQUIREMENTS

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

M1305 Appliance Access

Appliance Access of the 2012 International Residential Code is amended as follows:

M1305.1.3 Appliances in Attics

Attics containing *appliances* shall be provided with an opening and a clear and unobstructed passageway large enough to allow removal of the largest *appliance,* but not less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) long measured along the centerline of the passageway from the opening to the *appliance.* The passageway shall have continuous solid flooring in accordance with Chapter 5 not less than 24 inches (610 mm) wide. A level service space at least 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present along all sides of the *appliance* where access is required. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), or larger and large enough to allow removal of the largest appliance. A walkway to an appliance shall be rated as a floor approved by the Building Official. As a minimum, access to the attic space shall be provided by one of the following:

1) A permanent stair.

2) A pull down stair with a minimum 300 lb. (136 kg) capacity.
3) An access door from an upper floor level.

Exceptions:

1) The passageway and level service space are not required where the appliance can be serviced and removed through the required opening.
2) Where the passageway is unobstructed and not less than 6 feet (1829 mm) high and 22 inches (559 mm) wide for its entire length, the passageway shall be not more than 50 feet (15 250 mm) long.

CHAPTER 24. FUEL GAS

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

G2415 (404) Piping System Installation

Piping System and Installation of the 2012 International Residential Code is amended as follows:

G2415.12 (404.12) Minimum Burial Depth

Underground *piping systems* shall be installed a minimum depth of ~~12~~ 18 inches ~~(305 mm)~~ (457 mm) below grade, except as provided for in Section G2415.12.1.

G2415.12.1 (404.12.1) Individual Outside Appliances

Individual lines to outside lights, grills or other *appliances* shall be installed a minimum of ~~8~~ 12 inches ~~(203 mm)~~ (305 mm) below finished grade, provided that such installation is *approved* and is installed in locations not susceptible to physical damage.

CHAPTER 25. PLUMBING ADMINISTRATION

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

P2503 Inspection and Tests

Inspection and tests of the 2012 International Residential Code is amended as follows:

P2503.8 Inspection and Testing of Backflow Prevention Devices

Inspection and testing of backflow prevention devices shall comply with Sections P2503.8.1 and P2503.8.2.

P2503.8.2 Testing

Reduced pressure principle, double check, double check detector and pressure vacuum breaker backflow preventer assemblies shall be tested at the time of installation, immediately after repairs or relocation and at ~~least annually~~ regular intervals as required by the Town.

CHAPTER 26. GENERAL PLUMBING REQUIREMENTS

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

P2603 Structural and Piping Protection

Structural and Piping Protection of the 2012 International Residential Code is amended as follows:

P2603.5 Freezing

Freezing of the 2012 International Residential Code is amended as follows:

P2503.5.1 Sewer Depth

Building sewers that connect to private sewage disposal systems shall be a not less than 12 inches (305 mm) below finished *grade* at the point of septic tank connection. *Building sewers* shall be not less than 12 inches (305 mm) below *grade*.

CHAPTER 28. WATER HEATERS

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

P2803 Relief Valves

Relief Valves of the 2012 International Residential Code is amended as follows:

P2803.6 Installation of Relief Valves

Installation of Relief Valves of the 2012 International Residential Code is amended as follows:

P2803.6.1 Requirements for Discharge Pipe

10. Not terminate ~~more~~ less than 6 inches (152 mm) or more than 24 inches (610 mm) above the grade ~~floor or~~ nor more than 6 inches (152 mm) above the waste receptor.

CHAPTER 29. WATER SUPPLY AND DISTRIBUTION

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

P2902 Protection of Potable Water Supply

Protection of Potable Water Supply of the 2012 International Residential Code is amended as follows:

P2902.5 Protection of Potable Water Connections

Protection of Potable Water Connections of the 2012 International Residential Code is amended as follows:

P2902.5.3 Lawn Irrigation Systems

The potable water supply to lawn irrigation systems shall be protected against backflow by an atmospheric-type vacuum breaker, a pressure-type vacuum breaker assembly, a double-check

assembly or a reduced pressure principle backflow prevention assembly. Valves shall not be installed downstream from an atmospheric vacuum breaker. Where chemicals are introduced into the system, the potable water supply shall be protected against backflow by a reduced pressure principle backflow prevention assembly.

P2903 Water-Supply System

Water-Supply System of the 2012 International Residential Code is amended as follows:

P2903.7 Size of Water-Service Mains, Branch Mains and Risers

The internal diameter ~~size~~ of the water service line, including fittings, ~~pipe~~ shall not be less than 1 ~~3~~/4 inch (25.4 ~~19~~ mm) ~~diameter~~. The size of water service mains, branch mains and risers shall be determined according to water supply demand [gpm (L/m)], available water pressure [psi (kPa)] and friction loss caused by the water meter and *developed length* of pipe [feet (m)], including *equivalent length* of fittings. The size of each water distribution system shall be determined according to design methods conforming to acceptable engineering practice, such as those methods in Appendix P and shall be *approved* by the code official.

CHAPTER 31. VENTS

The following additions to the 2006 International Residential Code adopted herein and herby approved and adopted.

P3114 Air Admittance Valves

Air Admittance Valves of the 2006 International Residential Code is amended as follows:

P3114.3 Where Permitted

Individual vents, branch vents, circuit vents, and stack vents may ~~shall~~ be permitted to terminate with a connection to an air admittance valve. Air admittance valves shall only be installed with the prior written approval of the Building inspector.

CHAPTER 34. GENERAL REQUIREMENTS

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

E3406 Electrical Conductors and Connections

Electrical Conductors and Connections of the 2012 International Residential Code is amended as follows:

E3406.2 Conductor Material

Conductors used to conduct current shall be of copper ~~except~~ as ~~otherwise~~ provided in Chapters 34 through 43. Where the conductor material is not specified, the material and the sizes given in these chapters shall apply to copper conductors. Where other materials are used, the conductor sizes shall be changed accordingly.

E3406.3 Minimum Size of Conductors

The minimum size of conductors for feeders and branch circuits shall be 12 ~~14~~ AWG copper ~~and 12 AWG aluminum~~. The minimum size of service conductors shall be as specified in Chapter 36. The minimum size of class 2 remote control, signaling and power-limited circuits conductors shall be as specified in Chapter 43.

CHAPTER 36. SERVICES

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

E3601 General Services

General Services Ratings of the 2012 International Residential Code is amended as follows:

E3601.2 Number of Services

Property zoned one- and two-family dwellings shall be supplied by only one service. Additional service for an accessory use(s) shall only be installed with the prior approval of the Town.

CHAPTER 37. BRANCH CIRCUIT FEEDER REQUIREMENTS

The following additions to the 2012 International Residential Code adopted herein and herby approved and adopted.

E3702 Branch Circuit Ratings

Branch Circuit Ratings of the 2012 International Residential Code is amended as follows:

E3702.5 Branch Circuits Serving Multiple Loads or Outlets

General-purpose branch circuits shall supply lighting outlets, appliances, equipment or receptacle outlets, and combinations of such. Multi-outlet branch circuits serving lighting or receptacles shall be limited to a maximum branch-circuit rating of 20 amperes. The maximum number of outlets connected to general purpose branch circuits shall be ten (10) for 15-amp circuits, and thirteen (13) for 20-amp circuits.

End of Exhibit A

ADOPTION AND SUMMARY OF AMENDMENTS

Ordinance Number	Date	Summary
16-xx	October 13, 2016	• Removed ETJ
15-04	May 14, 1015	• Added amendments to R191.1.1, R191.1.4, R301.2, R313.2, Chapter 11, Chapter 25, Chapter 26 and Chapter 28. • Removed amendments to Chapter 15. • Revised amendments to Chapter 24 and Chapter 29. • Chapter 34 was 33. • Chapter 36 was 35. • Chapter 37 was 36.
14-07	June 26, 2014	• Added Building Official Appointment • Added Inspection Protocol • Added authority to amend Building Application Handbook • Removed garage requirement. • Removed roof pitch requirement. • Removed driveway width requirement. • Updated driveway construction requirements. • Removed contractor registration; moved to handbook. • Removed construction guidelines; moved to handbook. • Removed building packet submission; moved to handbook.
11-16	September 8, 2011	REPEALED
10-01	January 14, 2010	REPEALED

TOWN OF LAKEWOOD VILLAGE
PLUMBING CODE 16-xx

AN ORDINANCE TO ADOPT THE 2012 INTERNATIONAL PLUMBING CODE, WITHIN THE TOWN OF LAKEWOOD VILLAGE ~~AND THE TOWN OF LAKEWOOD VILLAGE EXTRATERRITORIAL JURISDICTION~~; PROVIDING A SAVINGS/REPEALING CLAUSE, PROVIDING A PENALTY CLAUSE, PROVIDING A SEVERABILTY CLAUSE, PROVIDING AN EFFECTIVE DATE.

WHERAS, the Town Council of the Town of Lakewood Village, Texas ("Town Council") has investigated and determined that it would be advantageous and beneficial to the citizens of the Town of Lakewood Village, Texas ~~and the citizens inside the Town of Lakewood village Extraterritorial Jurisdiction (collectively "Lakewood Village")~~ to adopt the 2012 Edition of the International Plumbing Code, save and except the deletions and amendments set forth below.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF LAKEWOOD VILLAGE, TEXAS, THAT:

Section 1: Findings

The findings set forth above are incorporated into the body of this Ordinance as if fully set forth herein.

Section 2: Adoption of the 2012 International Plumbing Code

The International Plumbing Code, 2012 Edition, copyrighted by the International Code Council, Inc., save and except the deletions and amendments set forth in Exhibit "A", attached hereto and incorporated herein for all purposes, is hereby adopted as the Plumbing code for Lakewood Village, regulating the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of plumbing systems within Lakewood Village (the "2012 International Plumbing Code"). The 2012 International Plumbing Code is made a part of this Ordinance as if fully set forth herein.

Section 3: Repeal

Plumbing Code 15-06~~11-09~~ ordinance is hereby repealed in its entirety.

Section 4: Penalty Clause

A. Violation

A person who knowingly violates any provision of this chapter is guilty of separate offenses for each day during which the violation is continued after notification. Neither allegation nor evidence of a culpable mental state is required for the proof of an offense defined by this ordinance.

B. Fine

Each offense is punishable by a fine of not more than two-thousand ($2,000) nor less than two-hundred ($200). The minimum fine established in this paragraph shall be doubled for the second conviction of the same offense within any 24-month period and tripled for the third and subsequent convictions of the same offense within any 24-month period. At no time shall the minimum fine exceed the maximum fine established in this paragraph.

Section 5: Legal Rights

The penal provision imposed under this Ordinance shall not preclude the Town of Lakewood Village from filing suit to enjoin the violation. The Town of Lakewood Village retains all legal rights and remedies available to it pursuant to local, state, and federal law.

Section 6: Severability

A. Unconstitutional or Invalid Section

Should any section, subsection, sentence, clause or phrase of this Ordinance be declared unconstitutional or invalid by a court of competent jurisdiction, it is expressly provided that any and all remaining portions of this Ordinance shall remain in full force and effect.

B. Independent Sections

The Town hereby declares that it would have passed this Ordinance, and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses and/or phrases be declared unconstitutional or invalid.

Section 7: Estoppel / Waiver

The failure of the Town to enforce any term or condition of this Ordinance shall not constitute a waiver or estoppel or any subsequent violation of this Ordinance.

Section 8: Effective Date

The amendments to this Ordinance shall become effective from and after its date of passage and publication as provided by law.

PASSED AND APPROVED by the Town Council of the Town of Lakewood Village, Texas this the 13~~14~~th day of October~~May~~, 2016~~2015~~.

Mark Vargus
Mayor

ATTEST:

Linda Asbell
Town Secretary, TRMC

Exhibit A

Town of Lakewood Village Amendments

2012 International Plumbing Code

PLUMBING CODE

Adopted: October 13th, 2016~~May 14, 2015~~

TABLE OF CONTENTS

CHAPTER 1. SCOPE AND APPLICATION

The following additions, deletions and amendments to the 2012 International Plumbing Code adopted herein and herby approved and adopted.

[A] 101 General

General of the 2012 International Plumbing Code is amended as follows:

[A] 101.1 Title

These regulations shall be known as the *International Plumbing Code* of The Town of Lakewood Village hereinafter referred to as "this code."

[A] 102 Applicability

Applicability of the 2012 International Plumbing Code is amended as follows:

[A] 102.8 Referenced Codes and Standards

The codes and standards referenced in this code shall be those that are listed in Chapter 14 and such codes, when specifically adopted, and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference. ~~and as further regulated in Sections 102.8.1 and 102.8.2.~~ Where the differences occur between provisions of this code and the referenced standards, the provisions of this code shall be the minimum requirements. Whenever amendments have been adopted to the referenced codes and standards, each reference to said code and standard shall be considered to reference the amendments as well. Any reference to NFPA 70 or the ICC Electrical Code shall mean the Electrical Code as adopted.

Exception

Where enforcement of a code provision would violate the conditions of the *listing* of the *equipment* or *appliance,* the conditions of the *listing* and manufacturer's instructions shall apply.

[A] 106 Permits

Permits of the 2012 International Plumbing Code is amended as follows:

[A] 106.3 Application for Permit

Application for Permit of the 2012 International Plumbing Code is amended as follows:

[A] 106.3.3 Time Limitation of Application

An application for a permit for any proposed work shall be deemed to have been abandoned ~~180~~ 90 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued; except that the code official shall have the authority to grant one or more extensions of time for additional periods not exceeding ~~180~~ 90 days each. The extension shall be requested in writing and justifiable cause demonstrated.

[A] 106.5 Permit Issuance

Permit Issuance of the 2012 International Plumbing Code is amended as follows:

[A] 106.5.3 Expiration

Every permit issued ~~by the code official under the provisions of this code shall expire by limitation and~~ shall become ~~null and void if~~ invalid unless the work authorized by such permit is ~~not~~ commenced within 180 days ~~from the date of such permit~~ after the issuance, or if the work authorized by such permit is suspended, ~~or~~ abandoned or ~~at any time after the work is commenced~~ lacks any required inspection for a period of 180 days after the time the work is commenced. ~~Before such work can be recommenced, a new permit shall be first obtained and the fee therefor shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded 1 year.~~ The Code Official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

[A] 106.6 Fees

Fees Issuance of the 2012 International Plumbing Code is amended as follows:

[A] 106.6.2 Fee Schedule

The fees for all plumbing work shall be as indicated in the Consolidated Fee Ordinance for the Town of Lakewood Village.

[A] 106.6.3 Fee Refunds

The code official shall authorize the refunding of fees as follows:

1. The full amount of any fee paid hereunder that was erroneously paid or collected.
2. Not more than 80 percent of the permit fee paid when no work has been done under a permit issued in accordance with this code.
3. Not more than 50 percent of the plan review fee paid when an application for a permit for which a plan review fee has been paid is withdrawn or canceled before any plan review effort has been expended.

The code official shall not authorize the refunding of any fee paid except upon written application filed by the original permittee not later than 180 days after the date of fee payment.

[A] 108 Violations

Violations of the 2012 International Plumbing Code is amended as follows:

[A] 108.4 Violation Penalties

Any person who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter or repair plumbing work in violation of the

approved construction documents or directive of the code official, or of a permit or certificate issued under the provisions of this code, shall be guilty of separate offenses for each day during which the violation is continued after notification. ~~of a [SPECIFY OFFENSE], punishable by a fine of not more than [AMOUNT] dollars or by imprisonment not exceeding [NUMBER OF DAYS], or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense.~~

[A] 108.5 Stop Work Orders

Upon notice from the code official, work on any plumbing system that is being done contrary to the provisions of this code or in a dangerous or unsafe manner shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, or to the owner's agent, or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the code official shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine as required herein by this code. ~~of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.~~

CHAPTER 3. GENERAL REGULATIONS

The following additions, deletions and amendments to the 2012 International Plumbing Code adopted herein and herby approved and adopted.

305 Protection of Pipes and Plumbing System Components

Protection of Pipes and Plumbing System Components of the 2012 International Plumbing Code is amended as follows:

305.4 Freezing

Freezing of the 2012 International Plumbing Code is amended as follows:

305.4.1 Sewer Depth

Building sewers that connect to private sewage disposal systems shall be installed not less than 12 inches (305 mm) below finished grade at the point of septic tank connection. Building sewers shall be installed not less than 12 inches (305 mm) below grade.

312 Tests and Inspections

Tests and Inspections of the 2012 International Plumbing Code is amended as follows:

312.10 Inspection and Testing of Backflow Prevention Assemblies

Inspection and Testing of Backflow Prevention Assemblies of the 2012 International Plumbing Code is amended as follows:

312.10.1 Inspections

~~Annual~~ Inspections shall be made of all backflow prevention assemblies and air gaps, as required by the Town, to determine whether they are operable.

312.10.2 Testing

Reduced pressure principle, double check-valve, pressure vacuum breaker, reduced pressure detector fire protection, double check detector fire protection, and spill-resistant vacuum breaker backflow preventer assemblies and hose connection backflow preventers shall be tested at the time of installation, immediately after repairs or relocation as required by the Town. ~~and at least annually~~. The testing procedure shall be performed in accordance with one of the following standards: ASSE 5013, ASSE 5015, ASSE 5020, ASSE 5047, ASSE 5048, ASSE 5052, ASSE 5056, CSA B64.10 or CSA B64.10.1.

CHAPTER 5. WATER HEATERS

The following additions, deletions and amendments to the 2012 International Plumbing Code adopted herein and herby approved and adopted.

502 Installation

Installation of the 2012 International Plumbing Code is amended as follows:

502.3 Water Heaters Installed in Attics

Attics containing a water heater shall be provided with an opening and unobstructed passageway large enough to allow removal of the water heater. The passageway shall be not less than 30 inches (762 mm) in height and 22 inches (559 mm) in width and not more than 20 feet (6096 mm) in length when measured along the centerline of the passageway from the opening to the water heater. The passageway shall have continuous unobstructed solid flooring not less than 24 inches (610 mm) in width. A level service space not less than 30 inches (762 mm) in length and 30 inches (762 mm) in width shall be present at the front or service side of the water heater. The clear *access* opening dimensions shall be not less than 20 inches by 30 inches (508 mm by 762 mm) where such dimensions are large enough to allow removal of the water heater. As a minimum, access to the attic space shall be provided by one of the following:

1. Permanent stairs or ladder fastened to the building
2. A pull down stair with a 300 lb. rating
3. An access door from an upper floor.

504 Safety Devices

Safety Devices of the 2012 International Plumbing Code is amended as follows:

504.6 Requirements for Discharge Piping

Item number 10 of the International Plumbing Code is amended as follows:

10. Not terminate more than 6 inches (152 mm) or more than 24 inches (610 mm) above grade nor more than 6 inches (152 mm) above the ~~floor or~~ waste receptor.

CHAPTER 6. WATER SUPPLY AND DISTRIBUTION

The following additions, deletions and amendments to the 2012 International Plumbing Code adopted herein and herby approved and adopted.

603 Water Service

Installation of the 2012 International Plumbing Code is amended as follows:

603.1 Size of Water Service Pipe

The water service line ~~pipe~~ shall be sized to supply water to the structure in the quantities and at the pressures required in this code. The internal diameter of the water service line, including fittings, ~~pipe~~ shall not be less than 1 ~~3/4~~ inch (25.4 ~~19.1~~ mm). ~~in diameter.~~

CHAPTER 9. VENTS

The following additions, deletions and amendments to the 2012 International Plumbing Code adopted herein and herby approved and adopted.

903 Vent Terminals

Vent Terminals of the 2012 International Plumbing Code is amended as follows:

903.1 Roof Extension

Open vent pipes that extend through a roof shall be terminated not less than 6 inches (152 mm) above the roof, except that where a roof is to be used for any purpose other than weather protection, the vent extensions shall terminate not less than 7 feet (2134 mm) above the roof.

918 Air Admittance Valves

Air Admittance Valves of the 2006 International Residential Code is amended as follows:

918.3 Where Permitted

Individual, *branch* and circuit vents may ~~shall~~ be permitted to terminate with a connection to an individual or branch-type air admittance valve in accordance with Section 918.3.1. *Stack vents* and vent *stacks* shall be permitted to terminate to stack-type air admittance valves in accordance with Section 918.3.2. Air admittance valves shall only be installed with the prior written approval of the Building inspector.

End of Exhibit A

ADOPTION AND SUMMARY OF AMENDMENTS

Ordinance Number	Date	Summary
16-xx	October 13, 2016	• Removed ETJ
15-06	May 14, 2015	• Added amendments to R108.4 and R108.5 • Added amendments to Chapter 3 • Added amendments to Chapter 6 • Added amendments to Chapter 5 • Added amendments to 903.1 • Amendments to 918.3 was 917.3
11-09	May 12, 2011	REPEALED

TOWN OF LAKEWOOD VILLAGE
MECHANICAL CODE 16-xx

AN ORDINANCE TO ADOPT THE 2012 INTERNATIONAL MECHANICAL CODE, WITHIN THE TOWN OF LAKEWOOD VILLAGE ~~AND THE TOWN OF LAKEWOOD VILLAGE EXTRATERRITORIAL JURISDICTION~~; PROVIDING A SAVINGS/REPEALING CLAUSE, PROVIDING A PENALTY CLAUSE, PROVIDING A SEVERABILTY CLAUSE, PROVIDING AN EFFECTIVE DATE.

WHERAS, the Town Council of the Town of Lakewood Village, Texas ("Town Council") has investigated and determined that it would be advantageous and beneficial to the citizens of the Town of Lakewood Village, Texas ~~and the citizens inside the Town of Lakewood village Extraterritorial Jurisdiction (collectively "Lakewood Village")~~ to adopt the 2012 Edition of the International Mechanical Code, save and except the deletions and amendments set forth below.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF LAKEWOOD VILLAGE, TEXAS, THAT:

Section 1: Findings

The findings set forth above are incorporated into the body of this Ordinance as if fully set forth herein.

Section 2: Adoption of the 2012 International Mechanical Code

The International Mechanical Code, 2012 Edition, copyrighted by the International Code Council, Inc., save and except the deletions and amendments set forth in Exhibit "A", attached hereto and incorporated herein for all purposes, is hereby adopted as the Mechanical code for Lakewood Village, regulating the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of mechanical systems within Lakewood Village (the "2012 International Mechanical Code"). The 2012 International Mechanical Code is made a part of this Ordinance as if fully set forth herein.

Section 3: Repeal

Mechanical Code 15-05~~11-04~~ ordinance is hereby repealed in its entirety.

Section 4: Penalty Clause

A. Violation

A person who knowingly violates any provision of this chapter is guilty of separate offenses for each day during which the violation is continued after notification. Neither allegation nor evidence of a culpable mental state is required for the proof of an offense defined by this ordinance.

B. Fine

Each offense is punishable by a fine of not more than two-thousand ($2,000) nor less than two-hundred ($200). The minimum fine established in this paragraph shall be doubled for the second conviction of the same offense within any 24-month period and tripled for the third and subsequent convictions of the same offense within any 24-month period. At no time shall the minimum fine exceed the maximum fine established in this paragraph.

Section 5: Legal Rights

The penal provision imposed under this Ordinance shall not preclude the Town of Lakewood Village from filing suit to enjoin the violation. The Town of Lakewood Village retains all legal rights and remedies available to it pursuant to local, state, and federal law.

Section 6: Severability

A. Unconstitutional or Invalid Section

Should any section, subsection, sentence, clause or phrase of this Ordinance be declared unconstitutional or invalid by a court of competent jurisdiction, it is expressly provided that any and all remaining portions of this Ordinance shall remain in full force and effect.

B. Independent Sections

The Town hereby declares that it would have passed this Ordinance, and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses and/or phrases be declared unconstitutional or invalid.

Section 7: Estoppel / Waiver

The failure of the Town to enforce any term or condition of this Ordinance shall not constitute a waiver or estoppel or any subsequent violation of this Ordinance.

Section 8: Effective Date

The amendments to this Ordinance shall become effective from and after its date of passage and publication as provided by law.

PASSED AND APPROVED by the Town Council of the Town of Lakewood Village, Texas this the 1314th day of OctoberMay, 20162015.

Mark Vargus
Mayor

ATTEST:

Linda Asbell
Town Secretary, TRMC

Exhibit A

Town of Lakewood Village Amendments

2012 International Mechanical Code

MECHANICAL CODE

Adopted: October 13th, 2016~~May 14, 2015~~

TABLE OF CONTENTS

CHAPTER 1. SCOPE AND APPLICATION

The following additions, deletions and amendments to the 2012 International Mechanical Code adopted herein and herby approved and adopted.

[A] 101 General

General of the 2012 International Mechanical Code is amended as follows:

[A] 101.1 Title

These regulations shall be known as the *International Mechanical Code* of The Town of Lakewood Village hereinafter referred to as "this code."

[A] 102 Applicability

Applicability of the 2012 International Mechanical Code is amended as follows:

[A] 102.8 Referenced Codes and Standards

The codes and standards referenced in this code shall be those that are listed in Chapter 8 and such codes, when specifically adopted, and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference. ~~and as further regulated in Sections 102.8.1 and 102.8.2.~~ Where the differences occur between provisions of this code and the referenced standards, the provisions of this code shall be the minimum requirements. Whenever amendments have been adopted to the referenced codes and standards, each reference to said code and standard shall be considered to reference the amendments as well. Any reference to NFPA 70 or the ICC Electrical Code shall mean the Electrical Code as adopted.

Exception

Where enforcement of a code provision would violate the conditions of the *listing* of the *equipment* or *appliance,* the conditions of the *listing* and manufacturer's instructions shall apply.

[A] 106 Permits

Permits of the 2012 International Mechanical Code is amended as follows:

[A] 106.3 Application for Permit

Application for Permit of the 2012 International Mechanical Code is amended as follows:

[A] 106.3.2 Time Limitation of Application

An application for a permit for any proposed work shall be deemed to have been abandoned ~~180~~ 90 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued; except that the code official shall have the authority to grant one or more extensions of time for additional periods not exceeding ~~180~~ 90 days each. The extension shall be requested in writing and justifiable cause demonstrated.

[A] 106.5 Permit Issuance

Permit Issuance of the 2012 International Mechanical Code is amended as follows:

[A] 106.5.3 Expiration

Every permit issued ~~by the code official under the provisions of this code shall expire by limitation and~~ shall become ~~null and void if~~ invalid unless the work authorized by such permit is ~~not~~ commenced within 180 days ~~from the date of such permit~~ after the issuance, or if the work authorized by such permit is suspended, ~~or~~ abandoned or ~~at any time after the work is commenced~~ lacks any required inspection for a period of 180 days after the time the work is commenced. ~~Before such work can be recommenced, a new permit shall be first obtained and the fee therefor shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded 1 year.~~ The Code Official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

[A] 106.6 Fees

Fees Issuance of the 2012 International Mechanical Code is amended as follows:

[A] 106.6.2 Fee Schedule

The fees for all mechanical work shall be as indicated in the Consolidated Fee Ordinance for the Town of Lakewood Village.

[A] 106.6.3 Fee Refunds

The code official shall authorize the refunding of fees as follows:

1. The full amount of any fee paid hereunder that was erroneously paid or collected.
2. Not more than 80 percent of the permit fee paid when no work has been done under a permit issued in accordance with this code.
3. Not more than 50 percent of the plan review fee paid when an application for a permit for which a plan review fee has been paid is withdrawn or canceled before any plan review effort has been expended.

The code official shall not authorize the refunding of any fee paid except upon written application filed by the original permittee not later than 180 days after the date of fee payment.

[A] 108 Violations

Violations of the 2012 International Mechanical Code is amended as follows:

[A] 108.4 Violation Penalties

Any person who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter or repair plumbing work in violation of the

approved construction documents or directive of the code official, or of a permit or certificate issued under the provisions of this code, shall be guilty of separate offenses for each day during which the violation is continued after notification. ~~of a [SPECIFY OFFENSE], punishable by a fine of not more than [AMOUNT] dollars or by imprisonment not exceeding [NUMBER OF DAYS], or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense.~~

[A] 108.5 Stop Work Orders

Upon notice from the code official, work on any mechanical system that is being done contrary to the provisions of this code or in a dangerous or unsafe manner shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, or to the owner's agent, or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the code official shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine as required herein by this code. ~~of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.~~

CHAPTER 3. GENERAL REGULATIONS

The following additions, deletions and amendments to the 2012 International Mechanical Code adopted herein and herby approved and adopted.

306 Access and Service Space

Appliances in Attics of the 2012 International Mechanical Code is amended as follows:

306.3 Appliances in the Attic

Attics containing appliances shall be provided with an opening and unobstructed passageway large enough to allow removal of the largest *appliance.* The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) in length measured along the centerline of the passageway from the opening to the *appliance.* The passageway shall have continuous unobstructed solid flooring not less than 24 inches (610 mm) wide. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the *appliance.* The clear *access* opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), or larger and large enough to allow removal of the largest *appliance.* As a minimum, access to the attic spaces shall be provided by one of the following:

1. Permanent stairs or ladder fastened to the building
2. A pull down stair with a 300 lb. rating
3. An access door from an upper floor.

Exceptions:

1. The passageway and level service space are not required where the *appliance* is capable of being serviced and removed through the required opening.

2. Where the passageway is unobstructed and not less than 6 feet (1829 mm) high and 22 inches (559 mm) wide for its entire length, the passageway shall be not greater than 50 feet (15 250 mm) in length.

End of Exhibit A

ADOPTION AND SUMMARY OF AMENDMENTS

Ordinance Number	Date	Summary
16.xx	October 13, 2016	• Removed ETJ
15-05	May 14, 2015	• Removed amendments to [A] 304 • Removed amendments to Chapter 5 • Removed amendments to Chapter 6
11-04	May 12, 2011	REPEALED

TOWN OF LAKEWOOD VILLAGE
FUEL GAS CODE 16-xx

AN ORDINANCE TO ADOPT THE 2012 INTERNATIONAL FUEL GAS CODE, WITHIN THE TOWN OF LAKEWOOD VILLAGE ~~AND THE TOWN OF LAKEWOOD VILLAGE EXTRATERRITORIAL JURISDICTION~~; PROVIDING A SAVINGS/REPEALING CLAUSE, PROVIDING A PENALTY CLAUSE, PROVIDING A SEVERABILITY CLAUSE, PROVIDING AN EFFECTIVE DATE.

WHERAS, the Town Council of the Town of Lakewood Village, Texas ("Town Council") has investigated and determined that it would be advantageous and beneficial to the citizens of the Town of Lakewood Village, Texas ~~and the citizens inside the Town of Lakewood village Extraterritorial Jurisdiction (collectively "Lakewood Village")~~ to adopt the 2012 Edition of the International Fuel Gas Code, save and except the deletions and amendments set forth below.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF LAKEWOOD VILLAGE, TEXAS, THAT:

Section 1: Findings

The findings set forth above are incorporated into the body of this Ordinance as if fully set forth herein.

Section 2: Adoption of the 2012 International Fuel Gas Code

The International Fuel Gas Code, 2012 Edition, copyrighted by the International Code Council, Inc., save and except the deletions and amendments set forth in Exhibit "A", attached hereto and incorporated herein for all purposes, is hereby adopted as the Fuel Gas code for Lakewood Village, regulating the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of fuel gas systems within Lakewood Village (the "2012 International Fuel Gas Code"). The 2012 International Fuel Gas Code is made a part of this Ordinance as if fully set forth herein.

Section 3: Repeal

Fuel Gas Code 15-07~~11-13~~ ordinance is hereby repealed in its entirety.

Section 4: Penalty Clause

A. Violation

A person who knowingly violates any provision of this chapter is guilty of separate offenses for each day during which the violation is continued after notification. Neither allegation nor evidence of a culpable mental state is required for the proof of an offense defined by this ordinance.

B. Fine

Each offense is punishable by a fine of not more than two-thousand ($2,000) nor less than two-hundred ($200). The minimum fine established in this paragraph shall be doubled for the second conviction of the same offense within any 24-month period and tripled for the third and subsequent convictions of the same offense within any 24-month period. At no time shall the minimum fine exceed the maximum fine established in this paragraph.

Section 5: Legal Rights

The penal provision imposed under this Ordinance shall not preclude the Town of Lakewood Village from filing suit to enjoin the violation. The Town of Lakewood Village retains all legal rights and remedies available to it pursuant to local, state, and federal law.

Section 6: Severability

A. Unconstitutional or Invalid Section

Should any section, subsection, sentence, clause or phrase of this Ordinance be declared unconstitutional or invalid by a court of competent jurisdiction, it is expressly provided that any and all remaining portions of this Ordinance shall remain in full force and effect.

B. Independent Sections

The Town hereby declares that it would have passed this Ordinance, and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses and/or phrases be declared unconstitutional or invalid.

Section 7: Estoppel / Waiver

The failure of the Town to enforce any term or condition of this Ordinance shall not constitute a waiver or estoppel or any subsequent violation of this Ordinance.

Section 8: Effective Date

The amendments to this Ordinance shall become effective from and after its date of passage and publication as provided by law.

PASSED AND APPROVED by the Town Council of the Town of Lakewood Village, Texas this the 1314th day of OctoberMay, 20162015.

Mark Vargus
Mayor

ATTEST:

Linda Asbell
Town Secretary, TRMC

Exhibit A

Town of Lakewood Village Amendments

2012 International Fuel Gas Code

FUEL GAS CODE

Adopted: October 13th, 2016~~May 14, 2015~~

TABLE OF CONTENTS

CHAPTER 1. SCOPE AND APPLICATION

The following additions, deletions and amendments to the 2012 International Fuel Gas Code adopted herein and herby approved and adopted.

[A] 101 General

General of the 2012 International Fuel Gas Code is amended as follows:

[A] 101.1 Title

These regulations shall be known as the *International Fuel Gas Code* of The Town of Lakewood Village hereinafter referred to as "this code."

[A] 102 Applicability

Applicability of the 2012 International Fuel Gas Code is amended as follows:

[A] 102.8 Referenced Codes and Standards

The codes and standards referenced in this code shall be those that are listed in Chapter 8 and such codes, when specifically adopted, and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference. ~~and as further regulated in Sections 102.8.1 and 102.8.2.~~ Where the differences occur between provisions of this code and the referenced standards, the provisions of this code shall be the minimum requirements. Whenever amendments have been adopted to the referenced codes and standards, each reference to said code and standard shall be considered to reference the amendments as well. Any reference to NFPA 70 or the ICC Electrical Code shall mean the Electrical Code as adopted.

Exception

Where enforcement of a code provision would violate the conditions of the *listing* of the *equipment* or *appliance,* the conditions of the *listing* and manufacturer's instructions shall apply.

[A] 106 Permits

Permits of the 2012 International Fuel Gas Code is amended as follows:

[A] 106.3 Application for Permit

Application for Permit of the 2012 International Fuel Gas Code is amended as follows:

[A] 106.3.2 Time Limitation of Application

An application for a permit for any proposed work shall be deemed to have been abandoned ~~180~~ 90 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued; except that the code official shall have the authority to grant one or more extensions of time for additional periods not exceeding ~~180~~ 90 days each. The extension shall be requested in writing and justifiable cause demonstrated.

[A] 106.5 Permit Issuance

Permit Issuance of the 2012 International Fuel Gas Code is amended as follows:

[A] 106.5.3 Expiration

Every permit issued ~~by the code official under the provisions of this code shall expire by limitation and~~ shall become ~~null and void if~~ invalid unless the work authorized by such permit is ~~not~~ commenced within 180 days ~~from the date of such permit~~ after the issuance, or if the work authorized by such permit is suspended, ~~or~~ abandoned or ~~at any time after the work is commenced~~ lacks any required inspection for a period of 180 days after the time the work is commenced. ~~Before such work can be recommenced, a new permit shall be first obtained and the fee therefor shall be one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original construction documents for such work, and provided further that such suspension or abandonment has not exceeded 1 year.~~ The Code Official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

[A] 106.6 Fees

Fees Issuance of the 2012 International Fuel Gas Code is amended as follows:

[A] 106.6.2 Fee Schedule

The fees for all fuel gas work shall be as indicated in the Consolidated Fee Ordinance for the Town of Lakewood Village.

[A] 106.6.3 Fee Refunds

The code official shall authorize the refunding of fees as follows:

1. The full amount of any fee paid hereunder that was erroneously paid or collected.
2. Not more than 80 percent of the permit fee paid when no work has been done under a permit issued in accordance with this code.
3. Not more than 50 percent of the plan review fee paid when an application for a permit for which a plan review fee has been paid is withdrawn or canceled before any plan review effort has been expended.

The code official shall not authorize the refunding of any fee paid except upon written application filed by the original permittee not later than 180 days after the date of fee payment.

[A] 108 Violations

Violations of the 2012 International Fuel Gas Code is amended as follows:

[A] 108.4 Violation Penalties

Any person who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter or repair plumbing work in violation of the

approved construction documents or directive of the code official, or of a permit or certificate issued under the provisions of this code, shall be guilty of separate offenses for each day during which the violation is continued after notification. ~~of a [SPECIFY OFFENSE], punishable by a fine of not more than [AMOUNT] dollars or by imprisonment not exceeding [NUMBER OF DAYS], or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense.~~

[A] 108.5 Stop Work Orders

Upon notice from the code official, work on any fuel gas system that is being done contrary to the provisions of this code or in a dangerous or unsafe manner shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, or to the owner's agent, or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the code official shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine as required herein by this code. ~~of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.~~

CHAPTER 3. GENERAL REGULATIONS

The following additions, deletions and amendments to the 2012 International Fuel Gas Code adopted herein and herby approved and adopted.

306 Access and Service Space

Appliances in Attics of the 2012 International Fuel Gas Code is amended as follows:

306.3 Appliances in the Attic

Attics containing appliances shall be provided with an opening and unobstructed passageway large enough to allow removal of the largest *appliance.* The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) in length measured along the centerline of the passageway from the opening to the *appliance.* The passageway shall have continuous unobstructed solid flooring not less than 24 inches (610 mm) wide. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the *appliance.* The clear *access* opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), or larger and large enough to allow removal of the largest *appliance.* As a minimum, access to the attic spaces shall be provided by one of the following:

1. Permanent stairs or ladder fastened to the building
2. A pull down stair with a 300 lb. rating
3. An access door from an upper floor.

Exceptions:

1. The passageway and level service space are not required where the *appliance* is capable of being serviced and removed through the required opening.

2. Where the passageway is unobstructed and not less than 6 feet (1829 mm) high and 22 inches (559 mm) wide for its entire length, the passageway shall be not greater than 50 feet (15 250 mm) in length.

CHAPTER 4. GAS PIPING INSTALLATIONS

The following additions, deletions and amendments to the 2012 International Fuel Gas Code adopted herein and herby approved and adopted.

404 Piping System and Installation

Installation of the 2012 International Fuel Gas Code is amended as follows:

404.12 Minimal Burial Depth

All underground *piping* systems shall be installed a minimum depth of ~~12~~ 18 inches (~~305~~ 457 mm) below grade, except as provided for in Section 404.12.1.

404.12 Minimal Burial Depth

Individual lines to outside lights, grills or other *appliances* shall be installed a minimum of ~~8~~ 12 inches (~~203~~ 305 mm) below finished grade, provided that such installation is *approved* and is installed in locations not susceptible to physical damage.

End of Exhibit A

ADOPTION AND SUMMARY OF AMENDMENTS

Ordinance Number	Date	Summary
16-xx	October 13, 2016	• Removed ETJ
15-07	May 14, 2015	• Removed amendments to section R305 • Added amendments to Chapter 4 • Removed amendments to Chapter 6
11-13	April 14, 2011	REPEALED

TOWN OF LAKEWOOD VILLAGE
FIRE CODE 16-xx

AN ORDINANCE TO ADOPT THE 2012 INTERNATIONAL FIRE CODE, WITHIN THE TOWN OF LAKEWOOD VILLAGE ~~AND THE TOWN OF LAKEWOOD VILLAGE EXTRATERRITORIAL JURISDICTION~~; PROVIDING A SAVINGS/REPEALING CLAUSE, PROVIDING A PENALTY CLAUSE, PROVIDING A SEVERABILITY CLAUSE, PROVIDING AN EFFECTIVE DATE.

WHEREAS, the Town Council of the Town of Lakewood Village, Texas ("Town Council") has investigated and determined that it would be advantageous and beneficial to the citizens of the Town of Lakewood Village, Texas ~~and the citizens inside the Town of Lakewood village Extraterritorial Jurisdiction (collectively "Lakewood Village")~~ to adopt the 2012 Edition of the International Fire Code, save and except the deletions and amendments set forth below.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF LAKEWOOD VILLAGE, TEXAS, THAT:

Section 1: Findings

The findings set forth above are incorporated into the body of this Ordinance as if fully set forth herein.

Section 2: Adoption of the 2012 International Fire Code

The International Fire Code, 2012 Edition, copyrighted by the International Code Council, Inc., including all Regular Chapters and Appendix Chapters, save and except the deletions and amendments set forth in Exhibit "A", attached hereto and incorporated herein for all purposes, is hereby adopted as the Fire code for Lakewood Village, prescribing regulations governing the safeguarding of life and property from fire and explosion hazards arising from storage, handling and use of hazardous substances, materials and devices, and from conditions hazardous to life and property in the occupancy of buildings and premises, or maintenance of Fire systems within Lakewood Village (the "2012 International Fire Code"). The 2012 International Fire Code is made a part of this Ordinance as if fully set forth herein.

Section 3: Repeal

Fire Code 15-16~~11-06 and Discharge of Fireworks 89-04A~~ ordinance~~s~~ is~~are~~ hereby repealed in its entirety.

Section 4: Penalty Clause

A. Violation

A person who knowingly violates any provision of this chapter is guilty of separate offenses for each day during which the violation is continued after notification. Neither allegation nor evidence of a culpable mental state is required for the proof of an offense defined by this ordinance.

B. Fine

Each offense is punishable by a fine of not more than two-thousand ($2,000) nor less than two-hundred ($200). The minimum fine established in this paragraph shall be doubled for the second conviction of the same offense within any 24-month period and tripled for the third and subsequent convictions of the same offense within any 24-month period. At no time shall the minimum fine exceed the maximum fine established in this paragraph.

Section 5: Legal Rights

The penal provision imposed under this Ordinance shall not preclude the Town of Lakewood Village from filing suit to enjoin the violation. The Town of Lakewood Village retains all legal rights and remedies available to it pursuant to local, state, and federal law.

Section 6: Severability

A. Unconstitutional or Invalid Section

Should any section, subsection, sentence, clause or phrase of this Ordinance be declared unconstitutional or invalid by a court of competent jurisdiction, it is expressly provided that any and all remaining portions of this Ordinance shall remain in full force and effect.

B. Independent Sections

The Town hereby declares that it would have passed this Ordinance, and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses and/or phrases be declared unconstitutional or invalid.

Section 7: Estoppel / Waiver

The failure of the Town to enforce any term or condition of this Ordinance shall not constitute a waiver or estoppel or any subsequent violation of this Ordinance.

Section 8: Effective Date

The amendments to this Ordinance shall become effective from and after its date of passage and publication as provided by law.

PASSED AND APPROVED by the Town Council of the Town of Lakewood Village, Texas this the 13~~10~~th day of October~~December~~, 2016~~2015~~.

Dr. Mark E. Vargus
Mayor

ATTEST:

Linda Asbell, TRMC
Town Secretary

Exhibit A

Town of Lakewood Village Amendments

2012 International Fire Code

FIRE CODE

Adopted: October 13th, 2016~~December 10th, 2015~~

TABLE OF CONTENTS

CHAPTER 1. SCOPE AND APPLICATION

The following additions, deletions and amendments to the 2012 International Fire Code adopted herein and herby approved and adopted.

[A] 101 General

[A] 101.1 Title

These regulations shall be known as the *International Fire Code* of the Town of Lakewood Village hereinafter referred to as "this code."

[A] 102 Applicability

[A] 102.4 Application of Other ~~Building~~ Codes

The design and construction of new structures shall comply with the *International Building Code*, this code, and other codes applicable, and any *alterations*, additions, changes in use or changes in structures required by this code, which are within the scope of the *International Building Code*, this code, and other codes as applicable, shall be made in accordance therewith.

[A] 102.7 Referenced Codes and Standards

The codes and standards referenced in this code shall be those that are listed in Chapter 80, and such codes, when specifically adopted, and standards shall be considered part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.7.1 and 102.7.2.

[A] 102.7.2 Provisions in Referenced Codes and Standards

Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code and any adopted amendments, the provisions of this code and any adopted amendments, as applicable, shall take precedence over the provisions in the referenced code or standard.

[A] 103 Department of Fire Prevention

[A] 103.1 General

The Fire Code shall be enforced by the Lakewood Village Fire Code Official, the Fire Marshal, the Mayor and Mayor pro-Tem of Lakewood Village, and their designees. ~~The department of fire prevention is established within the jurisdiction under the direction of the *fire code official.* The function of the department shall be the implementation, administration and enforcement of the provisions of this code.~~

[A] 103.2 Appointment

The Lakewood Village Fire Code Official is the Chief Building Inspector, the Deputy Chief Building Inspector and any other persons designated by the Town Council. Fire Marshall shall refer to the Little Elm Fire Marshal or the fire marshal employed by any successor agency which provides

Fire/EMS services to Lakewood Village. All authority granted to the Fire Marshal under this code is likewise graged to the Fire Code Official. ~~The *fire code official* shall be appointed by the chief appointing authority of the jurisdiction; and the *fire code official* shall not be removed from office except for cause and after full opportunity to be heard on specific and relevant charges by and before the appointing authority.~~

[A] 103.3 Deputies

The Chief of the Fire Department may detail such members of the Fire Department of proper qualification as inspectors as shall from time to time be necessary and each member so assigned shall be authorized to enforce the provisions of this code. ~~In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the *fire code official* shall have the authority to appoint a deputy *fire code official,* other related technical officers, inspectors and other employees.~~

[A] 104 General Authority and Responsibilities

[A] 104.12 Fire Marshal's Office Procedures and Specification Guide

References to the Little Elm Fire Department's *Fire Marshal's Office Procedures and Specification Guide* (aka "Contractor's Guide" or "the Guide") will be made throughout this code and serves as a quick reference guide to assist developers and contractors in facilitating their responsibilities as they relate to the fire code. Any conflict between the guide, local amendments, and/or the International Fire Code shall be resolved at the discretion of the fire code official.

[A] 105 Permits

[A] 105.2 Application

[A] 105.2.3 Time Limitation of Application

An application for a permit for any proposed work or operation shall be deemed to have been abandoned 180 days after the date of filing, unless such application has been diligently prosecuted or a permit shall have been issued; except that the *fire code official* is authorized to grant one or more extensions of time for additional periods not exceeding 90 days each. The extension shall be requested in writing and justifiable cause demonstrated.

Reinstatement of expired permits will require the applicant to resubmit application and required documents, and shall be liable for applicable permit fees.

[A] 105.4 Construction Documents

[A] 105.4.6 Retention of Construction Documents

One set of *construction documents* (printed or digital) shall be retained by the *fire code official* for a period of not less than 180 days from date of completion of the permitted work, or as required by state or local laws. One set of *approved construction documents* shall be returned to the applicant, and said set, along with the fire department permit, and plan review comments, if any, shall be kept on the site of the building or work from the date issued and until the completion of

the permits associated inspections and the Fire Department's Final Certificate of Occupancy Inspection, where applicable. ~~at all times during which the work authorized thereby is in progress.~~

[A] 105.6 Required Operational Permits

~~**[A] 105.6.27 LP-Gas**~~

~~An operational permit is required for:~~

~~1. Storage and use of LP-Gas.~~

~~**Exception:**~~

~~A permit is not required for individual containers with a 500-gallon (1893 L) water capacity or less serving occupations in Group R-3.~~

~~2. Operation of cargo tankers that transport LP-Gas.~~

[A] 105.7 Required Construction Permits

The *fire code official* is authorized to issue construction permits for work as set forth in Sections 105.7.1 through 105.7.20. ~~105.7.16.~~

[A] 105.7.17 Smoke Control or Exhaust Systems

Construction permits are required for smoke control or exhaust systems as specified in Section 909 and Section 910 respectively. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

[A] 105.7.18 Electronic Access Control Systems

Construction permits are required for the installation or modification of an electronic access control system, as specified in Section 503 and Section 1008. A separate construction permit is required for the installation or modification of a fire alarm system that may be connected to the access control system. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

[A] 105.7.19 Gates an Barricades

Construction permits are required for the installation or modification of an electronic or manual control system specified in section 503.5 and 503.6. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

[A] 105.7.20 Fire Lands and Traffic Calming Devices

Construction permits are required for the modification of any fire lane and/or for the installation or modification of any traffic calming device. Maintenance performed in accordance with this code is not considered a modification; unless such device is not in compliance with this code, and does not require a permit.

[A] 106 Inspections

[A] 106.2 Inspections

[A] 106.2.1 Inspection Requests

It shall be the duty of the holder of the permit or their duly authorized agent to notify the *fire code official* when work is ready for inspection. It shall be the duty of the permit holder to provide access to and means for inspections of such work that are required by this code.

Inspection requests shall comply with the Town of Lakewood Village Administrative Procedures.

[A] 106.5 Inspections of Existing Premises

The fire code official or designated representative shall inspect all buildings, premises, or portions thereof as often as may be necessary to ensure continued compliance with the provisions of this code.

An inspection and fee shall be charged. The occupant, lessee, or person making use of the building or premise shall pay said fee(s), as established in Section 113.2, within thirty (30) days of being billed as a condition to continue lawful occupancy of the building or premise. Continued non-compliance may result in the issuance of a citation and subject to the penalties established in Section 109.4.

[A] 106.5.1 Habitual Violations

An occupant, lessee, or person making use of a building or premise that has been cited for a violation of this code, or previous code for the same violation over multiple initial maintenance inspections shall waive right to notice of violation in Section 109.3 and may be immediately issued a citation subject to the penalties as established by Section 109.4.

[A] 109 Violations

[A] 109.4 Violation Penalties

Any person who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the *approved construction documents* or directive of the *fire code official*, or of a permit or certificate used under provisions of this code, shall be guilty of separate offenses for each day during which the violation is continued after notification.~~, punishable by a fine of not more than **[AMOUNT]** dollars or by imprisonment not exceeding **[NUMBER OF DAYS]**, or both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense.~~

[A] 111 Stop Work Order

[A] 111.4 Failure to Comply

Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine. ~~of not less than **[AMOUNT]** dollars or more than **[AMOUNT]** dollars.~~

[A] 113 Fees

[A] 113.2 Schedule of Permit Fees

A fee for each permit, inspection or re-inspection shall be as indicated in the Consolidated Fee Ordinance for the Town of Lakewood Village. ~~A fee for each permit shall be paid as required, in accordance with the schedule as established by the applicable governing authority.~~

[A] 113.3 Work Commencing Before Permit Issuance

Any person who commences any work, activity or operation regulated by this code before obtaining the necessary permits shall be subject to penalty of 100 percent of the usual permit fee ~~an additional fee established by the applicable governing authority, which shall be~~ in addition to the required permit fees.

CHAPTER 2. DEFINITIONS

The following additions, deletions and amendments to the 2012 International Fire Code adopted herein and herby approved and adopted.

202 General Definitions

Ambulatory Care Facility

Buildings or portions thereof used to provide medical, surgical, psychiatric, nursing or similar care on a less-than-24-hour basis to persons who are rendered incapable of self-preservation by the services provided. This group may include but not limited to the following:

1. Dialysis Centers
2. Sedation Dentistry
3. Surgery Centers
4. Colonic Centers
5. Psychiatric Centers

Atrium

An opening connecting three ~~two~~ or more stories other than enclosed *stairways*, elevators, hoistways, escalators, plumbing, electrical, air-conditioning or other equipment, which is closed at the top and not defined as a mall. Stories, as used in this definition, do not include balconies within assembly groups or mezzanines that comply with Section 505 of the *International Building Code*.

Fire Watch

A temporary measure intended to ensure continuous and systematic surveillance of a building or portion thereof by one or more qualified individuals or standby personnel when required by the fire code official, for the purposes of identifying and controlling fire hazards, detecting early signs of unwanted fire, raising an alarm of fire and notifying the fire department.

Fireworks

Any composition or device for the purpose of producing a visible or an audible effect for entertainment purposes by combustion, deflagration or detonation, and/or activated by ignition with a match or other heat production device that meets the definition of 1.4G fireworks or 1.3G fireworks as set forth herein.

Fireworks, 1.4G.

Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion. Such 1.4G fireworks which comply with the construction, chemical composition and labeling regulations of the DOTn for Fireworks, UN 0336, and the U.S. Consumer Product Safety Commission as set forth in CPSC 16 CFR Parts 1500 and 1507, are not explosive materials for the purpose of this code.

Fireworks, 1.3G.

Large fireworks devices, which are explosive materials, intended for use in fireworks displays and designed to produce audible or visible effects by combustion, deflagration or detonation. Such 1.3G fireworks include, but are not limited to, firecrackers containing more than 130 milligrams (2 grains) of explosive composition, aerial shells containing more than 40 grams of pyrotechnic composition and other display pieces which exceed the limits for classification as 1.4G fireworks. Such 1.3G fireworks are also described as Fireworks, UN 0335 by the DOTn.

High-Piled Combustible Storage

Storage of combustible materials in closely packed piles or combustible materials on pallets, in racks or on shelves where the top of storage is greater than 12 feet (3658 mm) in height. When required by the *fire code official*, *high-piled combustible storage* also includes certain high-hazard commodities, such as rubber tires, Group A plastics, flammable liquids, idle pallets and similar commodities, where the top of storage is greater than 6 feet (1829 mm) in height.

Any building classified as a group S Occupancy or Speculative Building exceeding 5,000 sq.ft. that has a clear height in excess of 14 feet, making it possible to be used for storage in excess of 12 feet, shall be considered to be high-piled storage. When a specific product cannot be identified, a fire protection system and life safety features shall be installed as for Class IV commodities, to the maximum pile height.

High-Rise Building

A building with an occupied floor located more than 55 ~~75~~ feet (16,764mm ~~22 860 mm~~) above the lowest level of fire department vehicle access.

Repair Garage

A building, structure or portion thereof used for servicing or repairing motor vehicles. This occupancy shall also include garages involved in minor repair, modification and servicing of motor

vehicles for items such a lube changes, inspections, windshield repair or replacement, shocks, minor part replacement and other such minor repairs.

Self-Service Storage Facility

Real property designed and used for the purpose of renting or leasing individual storage spaces to customers for the purpose of storing and removing personal property on a self-service basis.

Standby Personnel

Qualified fire service personnel approved by the Fire Chief. When utilized, the umber required shall be as directed by the Fire Chief. Charges for utilization shall be as normally calculated by the jurisdiction.

CHAPTER 3. GENERAL REQUIREMENTS

307 Open Burning, Recreational Fires and Portable Outdoor Fireplaces

307.2 Permit Required

A permit shall be obtained from the *Denton County* in accordance with Section 105.6 prior to kindling a fire for recognized silvicultural or range or wildlife management practices, prevention or control of disease or pests. ~~a bonfire.~~ Application for such approval shall only be presented by and permits issued to the *owner* of the land upon which the fire is to be kindled.

Examples of state or local law, or regulations referenced elsewhere in this section may include but not be limited to the following:

1. Texas Commission on Environmental Quality guidelines and/or restrictions
2. State, County, or local temporary or permanent bans on open burning.
3. Local written policies as established by the fire code official.

~~**307.4 Location**~~

~~The location for *open burning* shall not be less than 50 feet (15 240 mm) from any structure, and provisions shall be made to prevent the fire from spreading to within 50 feet (15 240 mm) of any structure.~~

~~**Exceptions:**~~

1. ~~Fires in approved containers that are not less than 15 feet (4572 mm) from a structure.~~
2. ~~The minimum required distance from a structure shall be 25 feet (7620 mm) where the pile size is 3 feet (914 mm) or less in diameter and 2 feet (610 mm) or less in height.~~

307.4.3 Portable outdoor fireplaces.

Portable outdoor fireplaces shall be used in accordance with the manufacturer's instructions and shall not be operated within 15 feet (3048 mm) of a structure or combustible material.

Exception:

1. Portable outdoor fireplaces used at one- and two-family dwellings.

2. Except in one- or tow-family dwellings when used on a non-combustible or limited combustible surface (i.e. concrete pad or maintained lawn).

307.4.4 Permanent Outdoor Firepit

Permanently installed outdoor firepits for recreational fire purposes shall not be installed within 10 feet of a structure or combustible material.

307.4.5 Trench Burns

Trench burns shall be conducted in air curtain trenches and in accordance with Section 307.2.

307.5 Attendance

Open burning, trench burns, bonfires~~,~~ or *recreational fires* and use of portable outdoor fireplaces shall be constantly attended until the fire is extinguished. A minimum of one portable fire extinguisher complying with Section 906 with a minimum 4-A rating or other *approved* on-site fire-extinguishing equipment, such as dirt, sand, water barrel, garden hose or water truck, shall be available for immediate utilization.

308 Open Flames

308.1 General

308.1.4 Open-Flame Cooking Devices

Open-flame cooking devices, charcoal burners and other similar ~~open-flame cooking~~ devices shall not be operated on combustible balconies or within 10 feet (3048 mm) of combustible construction.

Exceptions:

1. One- and two-family *dwellings*, except that LP-gas containers are limited to a water capacity not greater than 50 pounds (33.58 kg) [nominal 20 pounds (9.08 kg) LP-gas capacity] with an aggregate LP-gas capacity not to exceed 100 lbs. (5 containers).
2. Where buildings, balconies and decks are protected by an *automatic sprinkler system*, except that LP-gas containers are limited to a water capacity not greater than 50 pounds (22.68 kg) [nominal 20 pound (9.08 kg) LP-gas capacity], with an aggregate LP-gas capacity not to exceed 40 lbs. (2 containers).
3. LP-gas cooking devices having LP-gas container with a water capacity not greater than $2^1/_2$ pounds [nominal 1 pound (0.454 kg) LP-gas capacity].

308.6 Open-Flame Devices

308.1.6.2 Portable Fueled Open-Flame Devices

Portable open-flame devices fueled by flammable or combustible gases or liquids shall be enclosed or installed in such a manner as to prevent the flame from contacting combustible material.

Exceptions:

1. LP-gas-fueled devices used for sweating pipe joints or removing paint in accordance with Chapter 61.
2. Cutting and welding operations in accordance with Chapter 35.
3. Torches or flame-producing devices in accordance with Section 308.1.3. ~~Section 308.4.~~
4. Candles and open-flame decorative devices in accordance with Section 308.3.

311 Vacant Premises

3011.5 Placards

The fire code official is authorized to require marking of any vacant or abandoned buildings or structures determined to be unsafe pursuant to Section 110 of this code relating to structural or interior hazards shall be marked as required by Sections 311.5.1 through 311.5.5.

319 Burn Ban

319.1 General

In the event that a fire emergency declaration (burn ban) is issued by the County of Denton, Texas, through proclamation or Executive Order of the Denton County Commissioners Court; that ban shall become enforceable within the Town limits of Lakewood Village and be in effect from the date executed until such time the declaration/ban expires or is terminated.

319.2 Definition

The definition of combustible materials in the section shall include but not limited to, the use of all fireworks, discarding of cigarettes or other flammable materials, materials used in activities such as welding and any other activity that could result in fire.

319.3 Violation

The use of a combustible material or knowingly and willingly allowing the use of a combustible material on private property or in any outdoor environment by any person is prohibited while this section is in effect.

A violation of this section is a separate and distinct offense of other provisions of this code.

319.4 Outdoor Cooking

All outdoor cooking or open flame device while this section is in effect are prohibited.

Exceptions:

1. The cooking device is propane or natural gas and has a complete and full enclosure that is utilized at all times.
2. The cooking device is wood or charcoal and has a complete and full enclosure that is utilized, and all areas around the cooking device shall be clear of vegetation and/or combustible materials or debris for a 5 foot (1524 mm) radius

319.5 Hot Work / Welding

Where welding must be performed in the field, the following mitigating efforts will be in force while this section is in effect.

319.5.1 Open Hot-Work

1. All areas where welding, cutting or grinding operations are being performed will be free of vegetation and/or combustibles for at least thirty feet in all directions;
2. Winds speed must be no more than 20 miles per hour while performing welding, cutting or grinding operations outside of approved barriers or enclosures;
3. Relative humidity must be above 25%
4. Each site will have the ability to call 911 for emergency response;
5. A dedicated fire watch person will attend each welder, cutter, grinder or any activity that causes a spark;
6. A minimum of one (1) water pressure fire extinguisher or pressurized water source per fire watch person is required;
7. If an emergency exists where welding has to be performed, the Fire Marshal may issue a temporary exception to the order.
8. All persons must report the intent to perform hot work to the Town of Lakewood Village Fire Cod Official prior to work commencing. Unreported hot work is in violation of this order.

319.5.2 Enclosed Hot-Work

1. All welding, cutting and grinding operations may be performed in a total welding enclosure, or "welding box", that is sufficiently high to control sparks and includes a fire retardant cover over the top.
2. All areas where welding, cutting or grinding operations are being performed will be free of vegetation and/or combustibles for at least twenty feet in all directions;
3. Winds speed must be no more than 22 miles per hour while performing welding, cutting or grinding operations;
4. Relative humidity must be above 20%;
5. Each site will have the ability to call 911 for emergency response;
6. A dedicated fire watch person will attend each welder, cutter, grinder or any activity that causes a spark;
7. A minimum of one (1) water pressure fire extinguisher or pressurized water source per fire watch person is required;
8. Where welding (above ground and sub-surface) is required in an area where there is a potential for a hazardous atmosphere, barriers will be substituted for total enclosures (e.g. "wind walls") to prevent sparks from coming in contact with any combustible material and/or vegetation;
9. The barriers will be installed to allow ventilation of the work area and ingress and egress to the work area for personnel safety;
10. Sub-surface, or "bell hole", welding and grinding operations within approved excavations are allowed if all other "enclosed" mitigation efforts are in compliance;

11. If an emergency exists where welding has to be performed, the Fire Marshal may issue a temporary exception to the order.
12. All persons must report the intent to perform hot work to the Lakewood Village Fire Code Official prior to work commencing. Unreported hot work is in violation of this order.

319.6 Burn Permits

All burn permits, regardless of whether previously issued shall be suspended for the duration of the burn ban.

319.7 Penalty

Penalty for violation(s) of the section are established in Sec 109.3 of this code as adopted.

CHAPTER 4. EMERGENCY PLANNING AND PREPAREDNESS

401 General

401.3 Emergency Responder Notification

401.3.2 Alarm Activations

Upon activation of a fire alarm signal, employees or staff shall immediately notify the fire department. All occupants of that facility shall follow their fire department approved evacuation plan or immediately evacuate the facility and shall not return until authorized by the fire department personnel.

401.9 False Alarms and Nuisance Alarms

False alarms and nuisance alarms shall not be given, signaled or transmitted or caused or permitted to be given, signaled or transmitted.

CHAPTER 5. FIRE SERVICE FEATURES

501 General

501.4 Timing of Installation

When fire apparatus access roads or a water supply for fire protection is required to be installed for any structure or development, they shall be installed, tested and approved prior to the time of which construction has progress beyond completion of the foundation of any structure. ~~And made serciceable prior to and during the time of construction except when approved alternative methods of protection are provided. Temporary street signs shall be installed at each street intersection when construction of new roadways allows passage by vehicles in accordance with Section 505.2.~~

503 Fire Apparatus Access Roads

503.1 Where Required

503.1.1 Buildings and Facilities

Approved fire apparatus access roads shall be provided for every facility, building or portion of a building hereafter constructed or moved into or within the jurisdiction. The fire apparatus access road shall comply with the requirements of this section and shall extend to within 150 feet (45 720 mm) of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an *approved* route around the exterior of the building or facility.

Fire lance measurements shall be as the hose lays, begin from the centerline of the fire lane and unobstructed by any barriers. Except for one- or tow-family dwellings, the path of measurement shall be along a minimum of a ten feet (10') wide unobstructed path around the external walls of the structure. A five-foot wide level pathway shall be provided unobstructed through all barriers. A continuous row of parking between the fire lane and the structure shall be considered a barrier.

Exception: The *fire code official* is authorized to increase the dimension of 150 feet (45 720 mm) where:

1. The building is equipped throughout with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3.
2. Fire apparatus access roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or other similar conditions, and an *approved* alternative means of fire protection is provided.
3. There are not more than two Group R-3 or Group U occupancies.

503.1.2 Additional Access

The *fire code official* is authorized to require more than one fire apparatus access road based on the potential for impairment of a single road by vehicle congestion, condition of terrain, climatic conditions or other factors that could limit access.

503.2 Specifications

Fire apparatus access roads shall be installed and arranged in accordance with Sections 503.2.1 through 503.2.8.

Fire lanes provided during the platting process shall be so indicated on the plat as an easement. Where fire lanes are provided and a plat is not required, the limits of the fire lane shall be shown on a site plan and placed on permanent file with the Town's Planning Department.

503.2.1 Dimensions

Fire apparatus access roads shall have an unobstructed width of not less than 24 ~~20~~ feet (7315 ~~6096~~ mm), ~~exclusive of shoulders,~~ except for *approved* security gates in accordance with Section

503.6, and an unobstructed vertical clearance of not less than 14 ~~13~~ feet ~~6 inches~~ (4267 ~~4115~~ mm).

When servicing a structure of greater than two stories in height, a 26 foot fire lane is required. Any such fire lane easement shall either connect both ends to a dedicated street or be provided with a turnaround having a minimum outer radius of 50 feet.

503.2.1.2 Radius

All curve or turn radii must be sufficient to accommodate the turning profile of the largest first-alarm emergency apparatus provided by or available to the Little Elm Fire Department through mutual/automatic aid agreement.

This may be accomplished by use of minimum turn requirements for an AASHTO WB-50 vehicle. Twenty-foot (20') minimum radius is preferred. Conformance must be demonstrated by including a scale illustration on the submitted site plan showing the turning of an AASHTO WB-50 vehicle within the proposed fire lanes.

Fire lane designs shall be provided during the site plan process or when appropriate if site plan approval is not required.

503.2.2 Authority

The *fire code official* shall have the authority to require an increase in the minimum access widths, vertical clearances, and radii where they are inadequate for fire or rescue operations.

503.2.3 Surface

Fire lane and fire apparatus access roads shall be constructed to meet the Town of Lakewood Village Engineering Standards. ~~designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide all-weather driving capabilities.~~

All fire lanes shall be maintained and kept in good state of repair at all times by the owner and the Town of Lakewood Village shall not be responsible for maintenance thereof. It shall further be the responsibility of the owner to ensure that all fire lane markings required by Section 503.3 be kept so that they are easily distinguishable to the public.

503.2.5 Dead-Ends

Dead-end fire apparatus ~~access~~ roads are not permitted. ~~in excess of 150 feet (45 720 mm) in length shall be provided with~~ An *approved* fire department turn around shall be required. ~~area for turning around fire apparatus.~~

503.3 Marking

~~Where required by the *fire code official, approved* signs or other *approved* notices or markings that include the words NO PARKING—FIRE LANE shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. The means by which *fire lanes* are~~

~~designated shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility.~~

Striping, signs, or other markings, when approved by the code official, shall be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. Striping, signs and other markings shall be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility.

1. Striping. Fire apparatus access roads shall be continuously marked by painted lines of red traffic paint six inches (6") in width to show the boundaries of the lane. The words "NO PARKING FIRE LANE" or "FIRE LANE NO PARKING" shall appear in four inch (4") white letters at 25 feet intervals on the red border markings along both sides of the fire lanes. Where a curb is available, the striping shall be on the vertical face of the curb.
2. Sign. Signs shall read "NO PARKING FIRE LANE" or "FIRE LANE NO PARKING" and shall be 12" wide and 18" high. Signs shall be painted on a white background with letters and borders in red, using not less than 2" lettering. Signs shall be permanently affixed to a stationary post and the bottom of the sign shall be six feet, six inches (6'6") above finished grade. Signs shall be spaced not more than fifty feet (50') apart. Signs may be installed on permanent buildings or walls or as approved by the Fire Chief.

503.4 Obstructions of Fire Apparatus Access Roads

~~Fire apparatus access roads shall not be obstructed in any manner, including the parking of vehicles. The minimum widths and clearances established in Section 503.2.1 shall be maintained at all times.~~

Fire apparatus roads shall not be obstructed in any manner, including the parking of vehicles, whether attended or unattended for any period of time. Persons in charge of a construction project, such as, but not limited to, a General Contractor, are responsible to ensure that fire lanes are kept clear of vehicles and other obstructions at all times and may be issued a citation for non-compliance under this section. The minimum widths and clearances established in Section 503.2.1 and any area marked as a fire lane as described in Section 503.3 shall be maintained at all times. The Little Elm Fire Chief, Chief Building Official, Fire Marshal, Lakewood Village Mayor, and Lakewood Village Mayor Por-Tem, and their designated representatives are authorized to remove or cause to be removed any material, vehicle or object obstructing a fire lane at the expense of the owner of such material, vehicle or object.

503.4.1 Traffic Calming Devices

Traffic calming devices shall be prohibited unless *approved* by the *fire code official.* A permit shall be required as per Section 105.7 of this code and the construction of such devices shall comply with the Fire Marshal's Office's Procedures and Specification Guide.

503.4.2 Obstruction and Control

No owner or person in charge of any premises served by a fire lane or access easement shall abandon, restrict or close any fire lane or easement without first securing a permit as required in

105.7 of this code and securing from the Town of Lakewood Village approval of an amended plat or other acceptable legal instrument showing the removal of the fire lane.

503.6 Security Gates

The installation of security gates across a fire apparatus access road shall be *approved* by the fire chief. Where security gates are installed, they shall have an *approved* means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be *listed* in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200.

The installation of security gates or other devices intended to limit the access of vehicles or persons shall require a permit as established in Section 105.7 and shall comply with the Fire Marshal's Office's Procedures and Specification Guide.

505 Premises Identification

505.1 Address Identification

New and existing buildings shall have *approved* address numbers, building numbers or *approved* building identification placed in a position that is plainly legible and visible from the street or road fronting the property. These numbers shall be substantially contrasting with their background. Where required by the *fire code official*, address numbers shall be provided in additional *approved* locations to facilitate emergency response. Address numbers shall be Arabic numbers or alphabetical letters. ~~Numbers shall be a minimum of 4 inches (101.6 mm) high with a minimum stroke width of 0.5 inch (12.7 mm). Where access is by means of a private road and the building cannot be viewed from the *public way* , a monument, pole or other sign or means shall be used to identify the structure. Address numbers shall be maintained.~~ Address numbering shall comply with the following:

505.1.1 Single Family Homes

Minimum 4" high, 5/8" stroke.

505.1.2 Multifamily Communities

Street Address shall be a minimum of 12 inch high with a 2" stroke. Individual building numbers shall be a minimum of 18" high with a 3" stroke. Buildings over 100 feet in length require a minimum of two (2) numbers per building. Apartment spread numbers shall be a minimum of 7" high with a one inch stroke and corridor spread numbers shall be a minimum of 4" high with a 5/8 inch brush stroke. Individual apartment unit numbers shall be a minimum of 4" in height with a 5/8 inch stroke.

505.1.3 Large Office and Warehouse Buildings

Address must be visible from all access directions. Number shall be a minimum of 24 inches in height with a 4 inch stroke. Buildings over 500 feet long shall have two address locations if more than one access point is visible. Suite numbers shall be required for multi-tenant complexes and

shall be located over the front door and on the rear door, six inches in height with a one inch brush stroke.

505.1.4 Shopping Centers, High Rise Buildings and Other Applications.

A minimum of 10 inch high numbers with a 2" brush stroke shall be visible from all access directions. Suite numbers are required over the door with 4" high numbers with a 5/8 inch brush stroke. Buildings beyond 100 feet from the street and 10,000 square feet shall install 12 to 18 inch numbers as determined by the fire code official.

505.1.5 Marquee and monument

Addresses installed on a marquee located next to the street will require numbers 8 inch high with a two inch brush stroke to be located a minimum of 3 feet above grade. Marquee and Monument signs must also comply with other Town of Lakewood Village Sign Ordinance Requirements.

505.3 Directional / Equipment ID Signage

Directional and equipment identification signage shall be provided by the building owner on all new and existing buildings where required by the fire code official and shall meet the requirements as set forth in the Fire Marshal's Office's Procedures and Specification Guide.

506 Key Boxes

506.1 Where Required

Where access to or within a structure or an area is restricted because of secured openings or where immediate access is necessary for life-saving or fire-fighting purposes, the *fire code official* is authorized to require a key box to be installed in an *approved* location. The key box shall be of an *approved* type listed in accordance with UL 1037, and shall contain keys to gain necessary access as required by the *fire code official.*

All new and existing occupancies, except one- and two- family residences, shall provide (a) lock box (es) as specified in the Fire Marshal's Office's Procedures and Specification Guide. Existing properties that are equipped with a lockbox that is of inadequate size shall be upgraded to a size appropriate.

507 Fire Protection Water Services

507.1 Where Required

507.1.1 Water Distribution Systems

Water distribution systems shall be designed meeting the minimum criteria in sections 507.1.1.1 through 507.1.1.4 and approved by the AHJ.

507.1.1.1 Fire Protection and Hydrants

The minimum size of water mains, for providing fire protection and serving fire hydrants shall be 6 inches in diameter.

507.1.1.2 Minimum Standards for Distribution Piping

Distribution piping shall be sized to meet design flow as determined by hydraulic analysis on water system flow gradients. The minimum size in a distribution system shall be 6 inches in diameter. Larger main sizes may be necessary to achieve required fire flow and maintain residual pressure specified for both domestic consumption and fire flow. The piping sizes must meet standards specified in Table 507.1.1.2.

TABLE 507.1.1.2. Minimum Standards for Distribution Piping

Appurtenance	Minimum Standard
Smallest pipe for hydrant feed[1]	6 inches
Smallest pipe in distribution system	8 inches
Smallest branching pipes that are dead ends	8 inches
Smallest pipe in high value district	8 inches
Smallest pipe on principal streets in business, commercial, multifamily districts or complexes	12 inches
Main supplying 3 or more hydrants[1,2]	12 inches

[1]fire suppression system supply mains are considered as a "hydrant" for pipe sizing

[2]Does not apply to residential developments

507.1.1.3 Looped System Requirements for Secondary Feeders

A looped secondary feeder system shall be installed to supply all buildings with a fire flow over 1,000 gpm or in high value, commercial, business, and multifamily districts, or as determined by the AHJ.

507.1.1.4 Looped System Requirements for Distributor Mains

Where a distributor main supplies 3 or more fire hydrants or fire suppression system supply mains, the distribution system shall be looped.

507.1.1.5 Valves in Distribution Systems

Valves shall be installed along water distribution lines as required by the Town of Lakewood Village.

507.4 Water Supply Test Date and Information

The water supply test used for hydraulic calculation of fire protection systems shall be conducted in accordance with NFPA 291 "Recommended Practice for Fire Flow Testing and Marking of Hydrants" and within one year of sprinkler plan submittal. Test shall be conducted by Town Lakewood Village or contractor approved by the Fire Code Official. The exact location of the static/residual hydrant and the flow hydrant shall be indicated on the design drawings. All fire protection plan submittals shall be accompanied by a hard copy of the waterflow test report, or as approved by the *fire code official*. The report must indicate the dominant water tank level at the time of the test and the maximum and minimum operating levels of the tank, as well, or identify applicable water supply

fluctuation. The licensed contractor must then design the fire protection system based on this fluctuation information, as per the applicable referenced NFPA standard. Reference Section 903.3.5 for additional design requirements.

~~The *fire code official* shall be notified prior to the water supply test. Water supply tests shall be witnessed by the *fire code official* or *approved* documentation of the test shall be provided to the *fire code official* prior to final approval of the water supply system.~~

507.5 Fire Hydrant Systems

507.5.1 Where Required

As properties develop, fire hydrants shall be located at all intersecting streets and at the maximum spacing indicated in Table 507.5.1. Distances between hydrants shall be measured along the route that fire hose is laid by a fire vehicle from hydrant to hydrant.

TABLE 507.5.1
MAXIMUM DISTANCE BETWEEN HYDRANTS

OCCUPANCY	SPRINKLERED	NOT SPRINKLERED
Residential (1 & 2 Family)	600 feet	500 feet
Residential (Multi-Family)	400 feet	300 feet
All Other	500 feet	300 feet

There shall be a minimum of two (2) fire hydrants serving each property within the prescribed distance listed in Table 507.5.1.

Protected Properties. Fire Hydrants shall be installed along fire lanes with spacing as required for street installations specified in 507.5.1. In addition, hydrants required to provide supplemental water supply for automatic fire protection systems shall be within 100 feet of the fire department connection (FDC) for such systems.

~~Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet (122 m) from a hydrant on a fire apparatus access road, as measured by an *approved* route around the exterior of the facility or building, on-site fire hydrants and mains shall be provided where required by the *fire code official*.~~

~~**Exceptions:**~~

~~1. For Group R-3 and Group U occupancies, the distance requirement shall be 600 feet (183 m).~~
~~2. For buildings equipped throughout with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2, the distance requirement shall be 600 feet (183 m).~~

507.5.4 Obstruction

Unobstructed access to fire hydrants shall be maintained at all times. Post, fences, vehicles, growth, trash, storage and other materials or objects shall not be placed or kept near fire hydrants, fire department inlet connections or fire protection system control valves in a manner that would prevent such equipment or fire hydrant from being immediately discernible. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment. ~~or fire hydrants.~~ The Fire Chief, and their designated representatives are authorized to remove or cause to be removed any material, vehicle or object obstructing a fire hydrant, fire department inlet connection or fire protection system control valves at the expense of the owner of such material, vehicle or object.

507.5.7 Fire Hydrant Type

All hydrants shall be of the three-way type with National Standard threads, breakaway construction, minimum 5 1/4" valve opening, and shall comply with the latest AWWA specification C-502. The hydrant shall have a 4 1/2" large connection with a 5" Hydra-Storz quick connection by Hydra-Shield and with two 2 1/2" side connections and shall be placed on water mains of no less than six inches (6") in size. Fire hydrants shall be Mueller "Centurion" or approved equal.

507.5.8 Valves

Valves shall be placed on all fire hydrants leads.

507.5.9 Breakaway Point

Fire hydrants shall be installed so that the breakaway point is no less than three (3) inches, and no greater than five (5) inches above the grade surface.

507.5.10 Curb Line

Fire hydrants shall be located a minimum of two (2) feet and a maximum of six (6) feet behind the curb line. No fire hydrant shall be placed in a cul-de-sac or the turning radius of fire lanes.

507.5.11 Positioning

All fire hydrants shall be installed so that the 4 1/2" connection will face the fire lane or street.

507.5.12 Limiting Access Obstruction

Fire hydrants, when placed at intersections or access drives to parking lots, shall be placed so that the minimum obstruction of the intersection or access drive will occur when the hydrant is in use.

507.5.13 Private Property

Fire hydrants located on private property shall be accessible to the fire department at all times.

All fire hydrants placed on private property shall be adequately protected by either curb stops or concrete post or other approved methods. Such stops shall be the responsibility of the landowner on which the fire hydrant is installed.

507.5.14 Location to Building

No fire hydrant shall be located closer than 40 feet to a non-residential building or structure

507.5.15 Identification

An approved blue, two-sided reflector shall be utilized to identify each hydrant location. The reflector shall be affixed to the center line of each roadway or fire access lane opposite fire hydrants.

507.5.16 Color

Fire hydrant caps and bonnet shall be painted according Little Elm Engineering Department Standards

509 Fire Protection and Utility Equipment Identification and Access

509.1 Identification

Fire protection equipment shall be identified in an accordance with the Fire Marshal's Offices's Procedures and Specification Guide. ~~*approved* manner.~~ Rooms containing controls for air-conditioning systems, sprinkler risers and valves, or other fire detection, suppression or control elements shall be identified for the use of the fire department. *Approved* signs required to identify fire protection equipment and equipment locations shall be constructed to the Fire Marshal's Offices' Procedures and Specification Guide. ~~of durable materials, permanently installed and readily visible.~~

CHAPTER 6. BUILDING SERVICES AND SYSTEMS

603 Fuel-Fired Appliances

603.3 Fuel Oil Storage Systems

603.3.2 Fuel Oil Storage Inside Buildings

603.3.2.1 Quality Limits

One or more fuel oil storage tanks containing Class II or III *combustible liquid* shall be permitted in a building. The aggregate capacity of all such tanks shall not exceed 660 gallons (2498 L).

Exception: The aggregate capacity limit shall be permitted to be increased to 3,000 gallons (11 356 L) in accordance with all requirements of Chapter 57. ~~of Class II or III liquid for storage in protected above-ground tanks complying with Section 5704.2.9.7, when all of the following conditions are met:~~

1. ~~The entire 3,000 gallon (11 356 L) quantity shall be stored in protected above ground tanks;~~
2. ~~The 3,000 gallon (11 356 L) capacity shall be permitted to be stored in a single tank or multiple smaller tanks; and~~

~~3. The tanks shall be located in a room protected by an *automatic sprinkler system* complying with Section 903.3.1.1.~~

603.3.2.2 Restricted Use and Connections

Tanks installed in accordance with Section 603.3.2 shall be used only to supply fuel oil to fuel-burning ~~or generator~~ equipment installed in accordance with Section 603.3.2.4. Connections between tanks and equipment supplied by such tanks shall be made using closed piping systems.

604 Emergency and Standby Power Systems

604.1 Installation

Emergency and standby power systems required by this code or the *International Building Code* shall be installed in accordance with this code, NFPA 110 and NFPA 111. Existing installations shall be maintained in accordance with the original approval, except as specified in Chapter 11.

604.1.2 Critical Operations Power Systems (COPS)

For Critical Operations Power Systems necessary to maintain continuous power supply to facilities or parts of facilities that require continuous operation for the reasons of public safety, emergency management, national security, or business continuity, see NFPA 70.

604.2 Where Required

Emergency and standby power systems shall be provided where required by Sections 604.2.1 through 604.2.24 or elsewhere identified in this code or any other referenced code. ~~604.2.18.4.~~

604.2.1 Emergency Voice/Alarm Communications Systems

Emergency power shall be provided for emergency voice/alarm communication systems in the following occupancies, or specified elsewhere in this code ~~Group A occupancies~~ in accordance with Section 907.2.1.1.

Covered and Open Malls, Section 604.2.13
Group A occupancies, Sections 907.2.1.1 and 907.5.2.2.4.
Special Amusement buildings, Section 907.2.12.3
High rise buildings, Section 907.2.13
Atriums, Section 907.2.14
Deep Underground buildings, Section 907.2.19

604.2.2 Smoke Control Systems

Standby power shall be provided for smoke control systems in the following occupancies, or as specified elsewhere in this code, in accordance with Section 909.11.

Covered mall building, IBC, Section 404.5
Atriums, IBC, Section 404.7
Underground buildings, IBC, Section 405.5
Group I-3, IBC, Section 408.9 Stages, IBC, Section 410.3.7.2

Special Amusement buildings (as applicable to Group A's), IBC, Section 411.1
Smoke protected seating, Section 1028.6.2.1

604.2.3 Exit Signs

Emergency power shall be provided for *exit* signs in accordance with Section 1011.6.3. (90 minutes)

604.2.4 Means of Egress Illumination

Emergency power shall be provided for *means of egress* illumination in accordance with Section 1006.3. (90 minutes)

604.2.9 Membrane Structures

Emergency power shall be provided for *exit* signs in temporary tents and membrane structures in accordance with Section 3103.12.6.1. Standby power shall be provided for auxiliary inflation systems in permanent membrane structures in accordance with the *International Building Code*. (4 hours)

604.2.19 Smokeproof Enclosures and Stair Pressurization Alternative

Standby power shall be provided for smokeproof enclosures, stair pressurization alternative and associated automatic fire detection systems as required by the International Building Code, Section 909.20.6.2.

604.2.20 Elevator Pressurization

Standby power shall be provided for elevator pressurization system as required by the International Building Code, Section 909.21.5.

604.2.21 Elimination of Smoke Dampers in Shaft Penetrations

Standby power shall be provided when eliminating the smoke dampers in ducts penetrating shafts in accordance with the International Building Code, Section 717.5.3, exception 2.3.

604.2.22 Common Exhaust Systems for Clothes Dryers

Standby power shall be provided for common exhaust systems for clothes dryers located in multistory structures in accordance with the International Mechanical Code Section 504.8, item 7.

604.2.23 Hydrogen Cutoff Rooms

Standby power shall be provided for mechanical ventilation and gas detection systems of Hydrogen Cutoff Rooms in accordance with the International Building Code, Section 421.8.

604.2.24 Means of Egress Illumination in Existing Buildings

Emergency power shall be provided for means of egress illumination in accordance with Section 1104.5 and 1104.5.1 when required by the fire code official. (90 minutes in I-2, 60 minutes elsewhere.)

604.7 Energy Time Duration

Unless a time limit is specified by the fire code official, in this chapter or elsewhere in this code, or in any other referenced code or standard, the emergency and standby power system shall be supplied with enough fuel or energy storage capacity for not less than 2-hour full-demand operation of the system.

Exception: Where the system is supplied with natural gas from a utility provider and is approved.

CHAPTER 7. FIRE-RESISTANCE-RATED-CONSTRUCTION

704 Floor Openings and Shafts

704.1 Enclosure

Interior vertical shafts including, but not limited to, *stairways*, elevator hoistways, service and utility shafts, that connect two or more stories of a building shall be enclosed or protected in accordance with the codes in effect at the time of construction but, regardless of when constructed, not less than as required in Chapter 46. New floor openings in existing buildings shall comply with the International Code. ~~as required in Chapter 11. New floor openings in existing buildings shall comply with the *International Building Code*.~~

CHAPTER 8 INTERIOR FINISH, DECORATIVE MATERIALS AND FURNISHINGS

807 Decorative Materials other than Decorative Vegetation in new and Existing Buildings

807.4 Occupancy Based Requirements

807.4.3 Group E

807.4.3.2 Artwork

Artwork and teaching materials shall be limited on the walls of *corridors* to not more than 20 percent of the wall area and on the walls of classrooms to not more than 50 percent of each wall area. Such material shall not be continuous from floor to ceiling or wall to wall.

Curtains, draperies, wall hangings and other decorative material suspended from the walls or ceiling shall meet the flame propagation performance criteria of NFPA 701 in accordance with Section 807 or be noncombustible.

Exception: Corridors protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 shall be limited to 50 percent of the wall area.

807.4.4 Group I-4, Day Care Facilities

807.4.4.2 Artwork

Artwork and teaching materials shall be limited on the walls of *corridors* to not more than 20 percent of the wall area and on the walls of classrooms to not more than 50 percent of each wall area. Such material shall not be continuous from floor to ceiling or wall to wall.

Curtains, draperies, wall hangings and other decorative material suspended from the walls or ceiling shall meet the flame propagation performance criteria of NFPA 701 in accordance with Section 807 or be noncombustible.

Exception: Corridors protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 shall be limited to 50 percent of the wall area.

CHAPTER 9 FIRE PROTECTION SYSTEMS

901 General

901.4 Installation

901.4.6 Pump and Riser Room Size

901.4.6.1 Automatic Fire Sprinkler Control Room (Riser Rooms)

Riser rooms shall be used for the purpose of fire suppression, fire alarm and control systems only. The following are prohibited equipment and/or facilities in a riser room: mop sinks, roof access, electrical equipment and all storage.

901.4.6.2 Riser Room Size

Riser rooms shall be so constructed to a size that facilitates maintenance and where fire operations can be performed. Minimum riser room size for a "shotgun" riser is 6 feet by 6 feet.

901.4.6.3 Lighting

Riser rooms shall be provided with an emergency light.

901.4.6.4 Temperature of Riser Room

Riser rooms shall be provided with a suitable means for maintaining the temperature above 40 degrees Fahrenheit (5 degrees Celsius).

901.4.6.5 Riser Room Access

All Riser rooms shall be directly and only accessible from the exterior of the structure. All new and existing riser rooms shall be identified in accordance to the Fire Marshal's Office's Procedures and Specification Guide.

901.6 Inspection, Testing and Maintenance

901.6.1 Standards

901.6.1.1 Standpipe Testing

Building owners/managers must maintain and test standpipe systems as per NFPA 25 requirements. The following additional requirements shall be applied to the testing that is required every 5 years:

1. The piping between the Fire Department Connection (FDC) and the standpipe shall be hydrostatically tested for all FDC's on any type of standpipe system. Hydrostatic testing shall also be conducted in accordance with NFPA 25 requirements for the different type of standpipe systems.
2. For any manual (wet or dry) standpipe system not having an automatic water supply capable of flowing water through the standpipe, the tester shall connect hose from a fire hydrant or portable pumping system (as approved by the fire code official) to each FDC, and flow water through the standpipe system to the roof outlet to verify that each inlet connection functions properly. Confirm that there are no open hose valves prior to introducing water into a dry standpipe. There are no required pressure criteria at the outlet. Verify that check valves function properly and that there are no closed control valves on the system.
3. Any pressure relief, reducing or control calves shall be tested in accordance with the requirements of NFPA 25. All hose valves shall be exercised.
4. If the FDC is not already provided with approved caps, the contractor shall install such caps for all FDC's as required by the fire code official.
5. Upon successful completion of standpipe test, place a blue tag (as per Texas Administrative Code, Fire Sprinkler Rules for Inspection, Test and Maintenance Service (ITM) Tag) at the bottom of each standpipe riser in the building. The tag shall be check-marked as "Fifth-Year" for Type ITM, and the note on the back of the tag shall read "5 year Standpipe Test" at a minimum.
6. The procedures required by Texas Administrative code Fire Sprinkler Rules with regard to Yellow Tag and Red Tags or any deficiencies noted during the testing, including the required notification of the local Authority Having Jurisdiction (fire code official) shall be followed.
7. Additionally, records or the testing shall be maintained by the owner and contractor, if applicable, as required by the State Rules mentioned above and NFPA 25.
8. Standpipe system tests where water will be flowed external to the building shall not be conducted during freezing conditions or during the day prior to expected night time freezing conditions.
9. Contact the fire code official for request to remove existing fire hose from Class II and III standpipe systems where employees are not trained in the utilization of this firefighting equipment. All standpipe hose valves must remain in place and be provided with an approved cap and chain when approval is given to remove hose by the fire code official.

901.7 Systems of Service

Where a required *fire protection system* is out of service or in the event of an excessive number of activations, the fire department and the *fire code official* shall be notified immediately and, where required by the ~~*fire*~~ *code official*, the building shall either be evacuated or an *approved* fire watch shall be provided for all occupants left unprotected by the shutdown until the *fire protection system* has been returned to service.

Where utilized, fire watches shall be provided with at least one *approved* means for notification of the fire department and their only duty shall be to perform constant patrols of the protected premises and keep watch for fires.

901.11 Discontinuation or Change of Service

Notice shall be made to the fire code official whenever contracted alarm services for monitoring of any fire alarm system is terminated for any reason, or a change in alarm monitoring provider occurs. Notice shall be made in writing to the fire code official by the building owner and alarm service provider prior to the service being terminated.

903 Automatic Fire Sprinkler Systems

903.1 General

903.1.1 Alternative Protection

Alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted in addition to ~~lieu of~~ automatic sprinkler protection where recognized by the applicable standard and *approved* by the ~~*fire*~~ *code official.*

903.2 Where Required

Automatic sprinklers shall not be installed in elevator machine rooms, elevator machine spaces, and elevator hoistways, other than pits where such sprinklers would not necessitate shunt trip requirements under any circumstances. Storage shall not be allowed within the elevator machine room. Signage shall be provided at the entry door to the elevator machine room indicating "ELEVATOR MACHINERY – NO STORAGE ALLOWED."

~~*Approved automatic sprinkler systems* in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12.~~

~~**Exception:** Spaces or areas in telecommunications buildings used exclusively for telecommunications equipment, associated electrical power distribution equipment, batteries and standby engines, provided those spaces or areas are equipped throughout with an automatic smoke detection system in accordance with Section 907.2 and are separated from the remainder of the building by not less than 1-hour *fire barriers* constructed in accordance with Section 707 of the *International Building Code* or not less than 2-hour *horizontal assemblies* constructed in accordance with Section 711 of the *International Building Code,* or both.~~

903.2.9 Group S-1

903.2.9.3 Self-Service Storage Facility

An automatic sprinkler system shall be installed throughout all self-service storage facilities.

A screen shall be installed at eighteen (18") inches below the level of the sprinkler heads to restrict storage above that level. This screen shall be a mesh of not less than one (1) inch not

greater than six (6") inches in size. This screen and its supports shall be installed such that all elements are at least eighteen (18") inches below any sprinkler head.

Exception: One-story self-service storage facilities that have no interior corridors, with a one-hour fire barrier separation wall installed between every storage compartment.

903.2.11 Specific Building Areas and Hazards

903.2.11.3 Non-Residential Buildings 35 Feet or More in Height

An *automatic sprinkler system* shall be installed throughout non-residential buildings with a floor level, other than penthouses in compliance with Section 1509 of the International Building Code ~~having an *occupant load* of 30 or more~~ that is located 35 ~~55~~ feet (10,668 mm) ~~(16 764 mm)~~ or more above the lowest level of fire department vehicle access.

Exceptions:

1. Airport control towers.
2. Open parking structures in compliance with Section 406.5 of the International Building Code.
3. Occupancies in Group F-2.

903.2.11.7 High-Piled Combustible Storage

For any building with a clear height exceeding 12 feet (4572mm), see Chapter 32 to determine if those provisions apply.

903.2.11.8 Spray Booths and Rooms

New and existing spray booths and spray rooms shall be protected by an approved automatic fire-extinguishing system.

903.2.11.9 Non-Single Family Residential Buildings over 5,000 sq. ft.

An automatic fire sprinkler system shall be installed throughout all non-single family residential buildings with a building area 5,000 sq. ft. or greater, in all existing buildings that are enlarged to be 5,000 sq. ft. or greater, and in all existing buildings that the cumulative remodel over any period of time that is equal to or greater than 5,000 sq. ft.. For the purpose of this provision, fire walls shall not define separate buildings.

Exception: Open parking garages in compliance with Section 406.5 of the *International Building Code*.

903.3 Installation Requirements

903.3.1 Standards

903.3.1.1 NFPA 13 Sprinkler Systems

903.3.1.1.1 Exempt Locations

Where approved by the fire code official, automatic sprinklers shall not be required in the following rooms or areas where such rooms or areas are protected with an *approved* automatic fire detection system in accordance with Section 907.2 that will respond to visible or invisible particles of combustion. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistance rated construction or contains electrical equipment.

1. Any room where the application of water, or flame and water, constitutes a serious life or fire hazard.
2. Any room or space where sprinklers are considered undesirable because of the nature of the contents, when *approved* by the *fire code official*.
3. Generator and transformer rooms separated from the remainder of the building by walls and floor/ceiling or roof/ceiling assemblies having a *fire-resistance rating* of not less than 2 hours.
4. ~~Rooms or areas that are of noncombustible construction with wholly noncombustible contents.~~
5. ~~Fire service access elevator machine rooms and machinery spaces.~~
6. Elevator machine rooms, ~~and~~ machinery spaces, and hoistwayes, other than pits where such sprinklers would not necessitate shunt trip requirements under any circumstance. ~~associated with occupant evacuation elevators designed in accordance with Section 3008 of the *International Building Code*.~~

903.3.1.2 NFPA 13R Sprinkler Systems

903.3.1.2.2 Attics, Open Breezeways, and Attached Garages.

Sprinkler protection is required in attic spaces of such buildings two or more stories in height, open breezeways, and attached garages.

903.3.1.3 NFPA 13D Sprinkler Systems

Where allowed, *automatic sprinkler systems* installed in one and two-family *dwellings*~~, Group R-3 and R-4 congregate living facilities~~ and *townhouses* shall be permitted to be installed throughout in accordance with NFPA 13D or in accordance with state law.

903.3.5 Water Supplies

Water supplies for *automatic sprinkler systems* shall comply with this section and the standards referenced in Section 903.3.1. The potable water supply shall be protected against backflow in accordance with the requirements of this section and the *International Plumbing Code*.

~~Water supply as required for such systems shall be provided in conformance with the supply requirements of the respective standards; however, every fire protection system shall be designed with a 10 psi safety factor.~~

903.3.7 Fire Department Connections

The location of fire department connections shall be *approved* by the *fire code official* and shalle be remote from the building (outside of the collapse zone), placed adjacent to the primary fire lane access for the building served and signed in accordance with the Fire Marchal's Office's Procedures and Specification Guide.

FDC shall be five-inch (5") Storz connection with a 30-45 degree down elbow with chained cap. Traditional 2-way Siamese connection with caps may be used when approved by the Fire Department.

Where the FDC is serving more than 500 GPM the building shall be provided with one 5-inch Storz connection and one 2-way Siamese connection.

903.4 Sprinkler System Supervision and Alarms

All valves controlling the water supply for *automatic sprinkler systems*, pumps, tanks, water levels and temperatures, critical air pressures and water-flow switches on all sprinkler systems shall be electrically supervised by a *listed* fire alarm control unit.

Exceptions:

1. *Automatic sprinkler systems* protecting one- and two-family *dwellings*.
2. Limited area systems serving fewer than 20 sprinklers.
3. *Automatic sprinkler systems* installed in accordance with NFPA 13R where a common supply main is used to supply both domestic water and the *automatic sprinkler system*, and a separate shutoff valve for the *automatic sprinkler system* is not provided.
4. Jockey pump control valves that are sealed or locked in the open position.
5. Control valves to commercial kitchen hoods, paint spray booths or dip tanks that are sealed or locked in the open position.
6. Valves controlling the fuel supply to fire pump engines that are sealed or locked in the open position.
7. Trim valves to pressure switches in dry, preaction and deluge sprinkler systems that are sealed or locked in the open position.

Sprinkler and standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system and shall cause an alarm upon detection of water flow for more than 45 seconds. All control valves in the sprinkler and standpipe systems except for fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering.

903.4.2 Alarms

An approved audible device, located on the exterior of the building in an *approved* location, shall be connected to each *automatic sprinkler system*. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a fire alarm system is installed, actuation of the *automatic sprinkler system* shall actuate the building fire alarm system.

The alarm device required on the exterior of the building shall be a weatherproof horn/strobe notification appliance with a minimum 75 candela strobe rating, installed as close as practicable to the fire department connection.

904 Alternative Automatic Fire Extinguishing Systems

904.11 Commercial Cooking Systems

904.11.6 Operations and Maintenance

903.11.6.4 Nozzle Caps

All new and existing automatic hood suppression systems shall use metal caps on nozzles that are located between the cooking surface and hood filters.

905 Standpipe Systems

905.2 Installation Standard

Standpipe systems shall be installed in accordance with this section and NFPA 14. Manual dry standpipe systems shall be supervised with minimum of 10 psig and a maximum of 40 psig air pressure with a high/low alarm.

905.3 Required Installations

905.3.8 Building Area

In buildings exceeding 10,000 square feet in area per story, Class I automatic wet or manual wet standpipes shall be provided where any portion of the building's interior area is more than 200 feet (60,960 mm) of travel, vertically and horizontally, from the nearest point of fire department vehicle access.

Exception: Automatic dry and semi-automatic dry standpipes are allowed as provided for in NFPA 14.

905.4 Location of Class I Standpipe Hose Connections

Class I standpipe hose connections shall be provided in all of the following locations:

1. In every required *stairway*, a hose connection shall be provided for each floor level above or below grade. Hose connections shall be located at an intermediate floor level landing between floors, unless otherwise *approved* by the *fire code official*.
2. On each side of the wall adjacent to the *exit* opening of a horizontal *exit*.

Exception: Where floor areas adjacent to a horizontal *exit* are reachable from *exit stairway* hose connections by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the horizontal *exit*

3. In every *exit* passageway, at the entrance from the exit passageway to other areas of a building.

   Exception: Where floor areas adjacent to an exit passageway are reachable from *exit stairway* hose connections by a 30-foot (9144 mm) hose stream from a nozzle attached to 100 feet (30 480 mm) of hose, a hose connection shall not be required at the entrance from the exit passageway to other areas of the building.
4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an *exit* passageway or *exit corridor* to the mall. In open mall buildings, adjacent to each public entrance to the mall at the perimeter line and adjacent to each entrance from an exit passageway or exit corridor to the mall.
5. Where the roof has a slope less than four units vertical in 12 units horizontal (33.3-percent slope), each standpipe shall be provided with a two-way ~~a~~ hose connection s~~hall be~~ located to serve the roof or at the highest landing of a stairway with stair access to the roof provided in accordance with Section 1009.16. An additional hose connection shall be provided at the top of the most hydraulically remote standpipe for testing purposes.
6. Where the most remote portion of a nonsprinklered floor or story is more than 150 feet (45 720 mm) from a hose connection or the most remote portion of a sprinklered floor or story is more than 200 feet (60 960 mm) from a hose connection, the *fire code official* is authorized to require that additional hose connections be provided in *approved* locations.
7. When required by this Chapter, standpipe connections shall be placed adjacent to all required exits to the structure and at two hundred feet (200') intervals along majore corridors or as required by the code official.

905.9 Valve Supervision

Valves controlling water supplies shall be supervised in the open position so that a change in the normal position of the valve will generate a supervisory signal at the supervising station required by Section 903.4. Where a fire alarm system is provided, a signal shall also be transmitted to the control unit.

Exceptions:

1. Valves to underground key or hub valves in roadway boxes provided by the municipality or public utility do not require supervision.
2. Valves locked in the normal position and inspected as provided in this code in buildings not equipped with a fire alarm system.

Sprinkler and standpipe system water-flow detectors shall be provided for each floor tap to the sprinkler system and shall cause an alarm upon detection of water flow for more than 45 seconds and not more than 90 seconds. All control valves in the sprinkler and standpipe systems except for

fire department hose connection valves shall be electrically supervised to initiate a supervisory signal at the central station upon tampering.

907 Fire Alarm and Detection Systems

907.1 General

907.1.4 Design Standards

All alarm systems new or replacement shall be analog addressable unless approved by the fire code official.

Exception:

Existing systems need not comply unless the total building remodel or expansion exceeds 30% of the building or cumulative building remodel or expansion exceeds 50% of the original construction of the building.

907.2 Where Required – New Buildings and Structures

907.2.1 Group A

A manual fire alarm system that activates the occupant notification system in accordance with Section 907.5 shall be installed in Group A occupancies ~~where the occupant load due to the assembly occupancy is~~ having an occupant load of 300 or more persons or more than 100 persons above or below the lowest level of exit discharge. Group A occupancies not separated from one another in accordance with Section 707.3.9 of the *International Building Code* shall be considered as a single occupancy for the purposes of applying this section. Portions of Group E occupancies occupied for assembly purposes shall be provided with a fire alarm system as required for the Group E occupancy.

Activation of fire alarm modification appliances shall:

1. Cause illumination of the means of egress with light of not less than 1 foot candle (11 lux) at the walking surface. level, and
2. Stop any conflicting or confusing sounds and visual distractions.

Exception: Manual fire alarm boxes are not required where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 and the occupant notification appliances will activate throughout the notification zones upon sprinkler water flow.

907.2.3 Group E

A manual fire alarm system that activates the occupant notification system ~~initiates the occupant notification signal utilizing an emergency voice/alarm communication system meeting the requirements of Section 907.5.2.2 and~~ installed in accordance with Section 907.6 shall be installed in Group E occupancies. When *automatic sprinkler systems* or smoke detectors are installed, such systems or detectors shall be connected to the building fire alarm system. An approved smoke detection system shall be installed in Group E day care occupancies. Unless separated by a

minimum of 100' of open space, all buildings, whether portable buildings or the main building, will be considered one building for alarm occupant load consideration and interconnection of alarm systems.

Exceptions:

1. A manual fire alarm system is not required in Group E educational and day care occupancies with an *occupant load* of ~~30 or~~ less 30 when provided with an approved automatic sprinkler system.
    a. Residential In-Home day care with not more than 12 children may use interconnected single station detectors in all habitable rooms. (for care of more than five children 2 ½ or less years of age, see Section 907.2.6.).
2. Manual fire alarm boxes are not required in Group E occupancies where all of the following apply:
    a. Interior *corridors* are protected by smoke detectors.
    b. Auditoriums, cafeterias, gymnasiums and similar areas are protected by *heat detectors* or other *approved* detection devices.
    c. Shops and laboratories involving dusts or vapors are protected by *heat detectors* or other *approved* detection devices.
3. Manual fire alarm boxes shall not be required in Group E occupancies where the building is equipped throughout with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1, the emergency voice/alarm communication system will activate on sprinkler water flow and manual activation is provided from a normally occupied location.

907.2.3.1 Manual Fire Alarm Box Tamper Covers

Where pull stations are installed a tamper cover with a local audible alarm shall be installed.

907.2.6 Group I

907.2.6.4 Manual Fire Alarm Box Tamper Covers

Where pull stations are installed a tamper cover with a local audible alarm shall be installed.

907.2.13 High-Rise Buildings

High-rise buildings shall be provided with an automatic smoke detection system in accordance with Section 907.2.13.1, a fire department communication system in accordance with Section 907.2.13.2 and an emergency voice/alarm communication system in accordance with Section 907.5.2.2.

Exceptions:

1. Airport traffic control towers in accordance with Section 907.2.22 and Section 412 of the *International Building Code.*
2. Open parking garages in accordance with Section 406.5 of the *International Building Code.*
3. Open air portions of buildings with an occupancy in Group A-5 in accordance with Section 303.1 of the *International Building Code*, however, this exception does not apply to

accessory uses including but not limited to sky boxes, restaurants, and similarly enclosed areas.

4. Low-hazard special occupancies in accordance with Section 503.1.1 of the *International Building Code.*
5. Buildings with an occupancy in Group H-1, H-2 or H-3 in accordance with Section 415 of the *International Building Code.*
6. In Group I-1 and I-2 occupancies, the alarm shall sound at a constantly attended location and occupant notification shall be broadcast by the emergency voice/alarm communication system.

907.5 Occupant Notification Systems

907.5.2 Alarm Notification Appliances

907.5.2.6 Type

Manual alarm actuating devices shall be an approved double action type.

907.5.3 Sound System Shunt

Where a fire alarm is installed, any circuit in which a sound system is installed for the purpose of projecting voice (other than emergency voice communication systems), music, or other sound shall be provided with a shunt mechanism to disable the circuit eliminating any potential conflict of the audible notification devices of the alarm system.

907.5.4 Signal Transmission

All signal transmissions from the protected facilities to the central station monitoring facility shall comply with NFPA 72 26.6.3.2.1.4; where referring to “one telephone-line” shall mean a hard-wired telephone line on a public switched telephone network (PSTN).

907.6 Installation

907.6.5 Monitoring

907.6.5.3 Communications Requirements

All alarm systems, new or replacement, shall transmit alarm, supervisory and trouble signals descriptively to the approved central station as defined by NFPA 72, with the correct device designation and location of addressable device identification. Alarms shall not be permitted to be transmitted as a General Alarm or Zone condition.

907.10 Password Protection Prohibited

No fire alarm system shall be protected by a password or pin number that would hinder immediate silencing capabilities by the fire department.

907.11 Occupant Reset

Once an alarm is initiated and fire department is contacted, no person shall silence or reset an alarm prior to fire department arrival.

910 Smoke and Heat Removal

910.1 General

Where required by this code or otherwise installed, smoke and heat vents or mechanical smoke exhaust systems and draft curtains shall conform to the requirements of this section.

Exceptions:

1. Frozen food warehouses used solely for storage of Class I and II commodities where protected by an *approved automatic sprinkler system.*
2. Where areas of buildings are equipped with early suppression fast-response (ESFR) sprinklers, only manual smoke and heat vents manually activated engineered mechanical smoke exhaust systems shall be required with these areas. Automatic smoke and heat vents are prohibited. ~~shall not be required within these areas.~~

910.2 Where Required

910.2.3 Group H

Buildings and portions thereof used as a Group H occupancy as follows:

1. In occupancies classified as Group H-2 or H-3, any of which are more than 15,000 square feet (1394m^2) in single floor area.

   Exception:

   Buildings of noncombustible construction containing only noncombustible materials.

2. In areas of buildings in Group H used for storing Class 2, 3, and 4 liquid and solid oxidizers, Class 1 and unclassified detonable organic peroxides, Class 3 and 4 unstable (reactive) materials, or Class 2 or 3 water-reactive materials as required for a high-hazard commodity classification.

   Exception:

   Buildings of noncombustible construction containing only noncombustible materials.

910.3 Design and Installation

Table 910.3 Requirements for Draft Curtains and Smoke and Heat Vents[a]

OCCUPANCY GROUP AND COMMODITY CLASSIFICATION	DESIGNATED STORAGE HEIGHT (feet)	MINIMUM DRAFT CURTAIN DEPTH (feet)	MAXIMUM AREA FORMED BY DRAFT CURTAINS (square feet)	VENT-AREA TO FLOOR AREA RATIO[c]	MAXIMUM SPACING OF VENT CENTERS (feet)	MAXIMUM DISTANCE FROM VENTS TO WALL OR DRAFT CURTAIN[b] (feet)
Group H, F-1 and S-1	—	0.2 × H[d] but ≥ 4	50,000	1:100	120	60
High-piled storage (see Section 910.2.2) Class I-IV Commodities (Option 1)	≤ 20	6	10,000	1:100	100	60
	> 20 ≤ 40	6	8,000	1:75	100	55
High-piled storage (see Section 910.2.2) Class I-IV Commodities (Option 2)	≤ 20	4	3,000	1:75	100	55
	> 20 ≤ 40	4	3,000	1:50	100	50
High-piled storage (see Section 910.2.2) High-hazard Commodities (Option 1)	≤ 20	6	6,000	1:50	100	50
	> 20 ≤ 30	6	6,000	1:40	90	45
High-piled storage (see Section 910.2.2) High-hazard Commodities (Option 2)	≤ 20	4	4,000	1:50	100	50
	> 20 ≤ 30	4	2,000	1:30	75	40

910.3.1 Design

Smoke and heat vents shall be *listed* and *labeled* to indicate compliance with UL793.

910.3.2 Vent Operation

Smoke and heat vents shall be capable of being operated by approved automatic and manual means. Automatic operation of smoke and heat vents shall conform to the provisions of Sections 910.3.2.1 through 91.3.2.3.

910.3.2.1 Gravity-Operated Drop Out Vents

Automatic smoke and heat vents containing heat-sensitive glazing designed to shrink and drop out of the vent opening when exposed to fire shall fully open within 5 minutes after the vent cavity is exposed to a simulated fire represented by a time-temperature gradient that reaches an air temperature of 500°F (260°C) within 5 minutes.

910.3.2.2 Sprinklered Buildings

Where installed in buildings equipped with an approved automatic sprinkler system, smoke and heat vents shall be designed to operate automatically. The automatic operating mechanism of the smoke and heat vents shall operate at a temperature rating at least 100°F (approximately 38°) greater than the temperature rating of the sprinklers installed.

910.3.2.3 Non-Sprinklered Buildings

Where installed in buildings not equipped with an approved automatic sprinkler system, smoke and heat vents shall operate automatically by actuation of a heat-responsive device rated at between 100°F (56°C) and 220°F (122°C) above ambient.

Exception:

Gravity operated drop out vents complying with Section 910.3.2.1.

910.3.3 Vent Dimensions

The effective venting area shall not be less than 16 square feet (1.5 m^2) with no dimension less than 4 feet (1219 mm), excluding ribs or gutters having a total width of not exceeding 6 inches (152 mm).

912 Fire Department Connections

912.2 Location

With respect to hydrants, driveways, buildings and landscaping, fire department connections shall be so located that fire apparatus and hose connected to supply the system will not obstruct access to the buildings for other fire apparatus. The location of fire department connections shall be *approved* by the fire chief.

Fire department connections shall be remote (outside of the collapse zone) from the building and placed adjacent to the primary fire lane access for the building served.

912.2.2 Existing Buildings

Existing buildings shall have the fire department connection identified by an approved sign in accordance with the Fire Marshal's Office's Procedures and Specification Guide.

~~On existing buildings, wherever the fire department connection is not visible to approaching fire apparatus, the fire department connection shall be indicated by an *approved* sign mounted on the street front or on the side of the building. Such sign shall have the letters "FDC" at least 6 inches (152 mm) high and words in letters at least 2 inches (51 mm) high or an arrow to indicate the location. All such signs shall be subject to the approval of the *fire code official*.~~

912.2.3 Hydrant Distance

An approved fire hydrant shall be located within 100 feet of the fire department connection as the fire hose lays along an unobstructed path.

912.4 Signs

A sign shall be provided in accordance to the Fire Marshal's Office's Procedures and Specification Guide and shall be approved by the fire code official. The sign shall be mounted in an approved location and manner on all fire department connections serving automatic sprinklers, standpipes, or fire pump connections; or where required by the fire code official. Where the fire department connection does not serve the entire building, a sign shall be provided indicating the portion(s) of the building served.

~~A metal sign with raised letters at least 1 inch (25 mm) in size shall be mounted on all fire department connections serving automatic sprinklers, standpipes or fire pump connections. Such signs shall read: AUTOMATIC SPRINKLERS or STANDPIPES or TEST CONNECTION or a combination thereof as applicable. Where the fire department connection does not serve the entire building, a sign shall be provided indicating the portions of the building served.~~

913 Fire Pumps

913.1 General

Where provided, fire pumps shall be installed in accordance with this section and NFPA 20.

When located on the ground level at an exterior wall, the fire pump room shall be provided with an exterior fire department access door that is not less than 3 ft. in width and 6 ft. 8in. in height, regardless of any interior doors that are provided. A key box shall be provided at this door as required by Section 506.1.

Exception:

When it is necessary to locate the fire pump room on other levels or not at an exterior wall, the corridor leading to the fire pump room access from the exterior of the building shall be provided with equivalent fire resistance as that required for pump room, or as approved by the fire code official. Access keys shall be provided in the key box as required in Section 506.1.

CHAPTER 10. MEANS OF EGRESS

1007 Accessible Means of Egress

1007.1 Accessible Means of Egress Required

Accessible means of egress shall comply with this section. *Accessible* spaces shall be provided with not less than one *accessible means of egress.* Where more than one *means of egress* are required by Section 1015.1 or 1021.1 from any *accessible* space, each *accessible* portion of the space shall be served by not less than two *accessible means of egress.*

Exceptions:

1. *Accessible means of egress* are not required in alterations to existing buildings.
2. One *accessible means of egress* is required from an *accessible mezzanine* level in accordance with Section 1007.3, 1007.4 or 1007.5.
3. In assembly areas with sloped or stepped *aisles,* one *accessible means of egress* is permitted where the common path of travel is *accessible* and meets the requirements in Section 1028.8.
4. Buildings regulated under State Law and built in accordance with State registered plans, including any variances or waivers granted by the State, shall be deemed to be in compliance with the requirements of Section 1007.

1007.5 Platform Lifts

Platform (wheelchair) lifts shall not serve as part of an accessible *means of egress,* except where allowed as part of a required accessible route in Section 1109.8, Items 1 through 10 ~~Section 1109.7, Items 1 through 9~~, of the *International Building Code.* Standby power shall be provided in accordance with Section 604.2.6 for platform lifts permitted to serve as part of a *means of egress.*

1008 Doors, Gates and Turnstiles

1008.1 Doors

1008.1.9 Door Operations

1008.1.9.4 Bolt Locks

Manually operated flush bolts or surface bolts are not permitted.

Exceptions:

1. On doors not required for egress in individual dwelling units or sleeping units.
2. Where a pair of doors serves a storage or equipment room, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf.
3. Where a pair of doors serves an *occupant load* of less than 50 persons in a Group B, F, M or S occupancy, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf. The inactive leaf shall contain no doorknobs, panic bars or similar operating hardware.

4. Where a pair of doors serves a Group B, F, M or S occupancy, manually operated edge- or surface-mounted bolts are permitted on the inactive leaf provided such inactive leaf is not needed to meet egress width requirements and the building is equipped throughout with an*automatic sprinkler system* in accordance with Section 903.3.1.1. The inactive leaf shall contain no doorknobs, panic bars or similar operating hardware.
5. Where a pair of doors serves patient care rooms in Group I-2 occupancies, self-latching edge- or surface-mounted bolts are permitted on the inactive leaf provided that the inactive leaf is not needed to meet egress width requirements and the inactive leaf contains no doorknobs, panic bars or similar operating hardware.

1008.1.9.9 Electromagnetically Locked Egress Doors

Doors in the *means of egress* that are not otherwise required to have panic hardware in buildings with an occupancy in Group A, B, E, M, R-1 or R-2, and doors to tenant spaces in Group A, B, E, M, R-1 or R-2, shall be permitted to be electromagnetically locked if equipped with listed hardware that incorporates a built-in switch and meet the requirements below:

1. The listed hardware that is affixed to the door leaf has an obvious method of operation that is readily operated under all lighting conditions.
2. The listed hardware is capable of being operated with one hand.
3. Operation of the *listed* hardware directly interrupts the power to the electromagnetic lock and unlocks the door immediately.
4. Loss of power to the listed hardware automatically unlocks the door.
5. Where panic or *fire exit hardware* is required by Section 1008.1.10, operation of the *listed* panic or *fire exit hardware* also releases the electromagnetic lock.

1015 Exit and Exit Access Doorways

1015.1 Exit or Exit Access Doorways from Spaces

1015.1.2 All Exits and Exit Access Doorways

All exits and exit access doorways shall be designed as though they are required exits.

1015.7 Electrical Rooms

For electrical rooms, special exiting requirements may apply. Reference the electrical code as adopted.

1016 Exit Access and Travel Distance

1016.2 Limitations

1016.2.2 Group F-1 and S-1 Increase

The maximum exit access travel distance shall be 400 feet (122 m) in Group F-1 and S-1 occupancies where all of the following are met:

1. The portion of the building classified as Group F-1 or S-1 is limited to one story in height;

2. The minimum height from the finished floor to the bottom of the ceiling or roof slab or deck is 24 feet (7315 mm); and
3. The building is equipped throughout with an automatic fire sprinkler system in accordance with Section 903.3.1.1.

1018 Corridors

1018.1 Construction

Corridors shall be fire-resistance rated in accordance with Table 1018.1. The *corridor* walls required to be fire-resistance rated shall comply with Section 708 of the *International Building Code* for *fire partitions.*

Exceptions:

1. A *fire-resistance rating* is not required for *corridors* in an occupancy in Group E where each room that is used for instruction has at least one door opening directly to the exterior and rooms for assembly purposes have at least one-half of the required *means of egress* doors opening directly to the exterior. Exterior doors specified in this exception are required to be at ground level.
2. A *fire-resistance rating* is not required for *corridors* contained within a *dwelling* or *sleeping unit* in an occupancy in Group R.
3. A *fire-resistance rating* is not required for *corridors* in *open parking garages.*
4. A *fire-resistance rating* is not required for *corridors* in an occupancy in Group B which is a space requiring only a single *means of egress* complying with Section 1015.1.
5. *Corridors* adjacent to the exterior walls of buildings shall be permitted to have unprotected openings on unrated exterior walls where unrated walls are permitted by Table 602 of the *International Building Code* and unprotected openings are permitted by Table 705.8 of the *International Building Code.*
6. In Group B office buildings, corridor walls and ceilings within single tenant spaces need not be of fire-resistive construction when the tenant space corridor is provided with system smoke detectors tied to an approved automatic fire alarm. The actuation of any detector shall activate alarms audible in all areas served by the corridor.

1018.6 Corridor Continuity

~~Fire-resistance rated~~ All *corridors* shall be continuous from the point of entry to an *exit,* and shall not be interrupted by intervening rooms. Where the path of egress travel within a fire-resistance-rated *corridor* to the *exit* includes travel along unenclosed *exit access stairways* or ramps, the *fire resistance-rating* shall be continuous for the length of the *stairway* or *ramp* and for the length of the connecting *corridor* on the adjacent floor leading to the *exit.*

1026 Exterior Exit Stairways and Ramps

1026.6 Exterior Stairway and Ramp Protection

Exterior exit stairways and *ramps* shall be separated from the interior of the building as required in Section 1022.7. Openings shall be limited to those necessary for egress from normally occupied spaces.

Exceptions:

1. Separation from the interior of the building is not required for occupancies, other than those in Group R-1 or R-2, in buildings that are no more than two stories above grade plane where a *level of exit discharge* serving such occupancies is the first *story above grade plane.*
2. Separation from the interior of the building is not required where the *exterior stairway* or *ramp* is served by an *exterior ramp* or balcony that connects two remote *exterior stairways* or other approved *exits* with a perimeter that is not less than 50 percent open. To be considered open, the opening shall be a minimum of 50 percent of the height of the enclosing wall, with the top of the openings no less than 7 feet (2134 mm) above the top of the balcony.
3. Separation from the interior of the building is not required for an *exterior stairway* or *ramp* located in a building or structure that is permitted to have unenclosed exit access stairways in accordance with Section 1009.3.
4. Separation from the <u>open-ended corridors of the building</u> interior of the building is not required for *exterior stairways* or *ramps* connected to open-ended corridors, provided that Items 4.1 through 4.5 are met:
   4.1. The building, including *corridors, stairways* or *ramps,* shall be equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2.
   4.2. The open-ended *corridors* comply with Section 1018.
   4.3. The open-ended *corridors* are connected on each end to an *exterior exit ramp* or *stairway* complying with Section 1026.
   4.4. The exterior walls and openings adjacent to the *exterior exit stairway* or *ramp* comply with Section 1022.7.
   4.5. At any location in an open-ended *corridor* where a change of direction exceeding 45 degrees (0.79 rad) occurs, a clear opening of not less than 35 square feet (3.3 m^2) or an *exterior stairway* or *ramp* shall be provided. Where clear openings are provided, they shall be located so as to minimize the accumulation of smoke or toxic gases.

1029 Emergency Escape and Rescue

1029.1 General

In addition to the *means of egress* required by this chapter, provisions shall be made for *emergency escape and rescue openings* in <u>Group R and I-1</u> ~~Group R-2~~ occupancies in accordance with Tables 1021.2(1) and 1021.2(2) and Group R-3 occupancies. *Basements* and sleeping rooms below the fourth *story above grade plane* shall have at least one exterior *emergency escape and rescue opening* in accordance with this section. Where *basements* contain one or more sleeping rooms, *emergency escape and rescue openings* shall be required in each sleeping room, but shall not be

required in adjoining areas of the *basement.* Such openings shall open directly into a *public way* or to a *yard* or *court* that opens to a *public way.*

Exceptions:

1. *Basements* with a ceiling height of less than 80 inches (2032 mm) shall not be required to have *emergency escape and rescue openings.*
2. *Emergency escape and rescue openings* are not required from *basements* or sleeping rooms that have an *exit* door or *exit access* door that opens directly into a *public way* or to a *yard, court* or exterior exit balcony that opens to a *public way.*
3. *Basements* without habitable spaces and having no more than 200 square feet (18.6 m^2) in floor area shall not be required to have *emergency escape and rescue openings.*
4. In other than Group R-3 occupancies, buildings equipped throughout with an approved automatic sprinkler system in accordance with Sections 903.3.1.1 or 903.3.1.2.

1030 Maintenance of the Means of Egress

1030.2 Reliability

Required *exit accesses, exits* and *exit discharges* shall be continuously maintained free from obstructions or impediments to full instant use in the case of fire or other emergency. ~~when the building area served by the *means of egress* is occupied.~~ An *exit* or *exit passageway* shall not be used for any purpose that interferes with a *means of egress.*

CHAPTER 11. CONSTRUCTION REQUIREMENTS FOR EXISTING BUILDINGS

1103 Fire Safety Requirements for Existing Buildings

1103.3 Elevator Operation

Existing elevators with a travel distance of 25 feet (7620 mm) or more above or below the main floor or other level of a building and intended to serve the needs of emergency personnel for fire-fighting or rescue purposes shall be provided with emergency operation in accordance with ASME A17.3. Provide emergency signage as required by Section 607.2

CHAPTER 23. MOTOR FUEL-DISPENSING FACILITYS AND REPAIR GARAGES

2304 Dispensing Operations

2304.1 Supervision of Dispensing

The dispensing of fuel at motor fuel-dispensing facilities shall be in accordance with the following: ~~conducted by a qualified attendant or shall be under the supervision of a qualified attendant at all times or shall be in accordance with Section 2304.3.~~

1. Conducted by a qualified attendant; and/or,
2. Shall be under the supervision of a qualified attendant; and/or,
3. Shall be an unattended self-service facility in accordance with Section 2304.3.

At any time the qualified attendant of item Number 1 or 2 is not present, such operations shall be considered as an unattended self-service facility and shall also comply with Section 2304.3.

CHAPTER 24. FLAMMIBLE FINISHES

2401 General

~~**2401.2 Nonapplicability**~~

~~This chapter shall not apply to spray finishing utilizing flammable or *combustible liquids* which do not sustain combustion, including:~~

~~1. Liquids that have no fire point when tested in accordance with ASTM D 92.~~
~~2. Liquids with a flashpoint greater than 95°F (35°C) in a water-miscible solution or dispersion with a water and inert (noncombustible) solids content of more than 80 percent by weight.~~

CHAPTER 32. HIGH-PILED COMBUSTIBLE STORAGE

3204 Designation of High-Piled Storage Areas

Any building exceeding 5,000 square feet that has a clear height in excess of 12 feet, making it possible to be used for storage in excess of 12 feet, shall be considered to be high-piled storage and shall comply with the provisions of this section. When a specific product cannot be identified, a fire protection system shall be installed as for Class IV commodities, to the maximum pile height.

3206 General Fire Protection and Life Safety Features

Table 3206.2 General Fire Protection and Life Safety Features

[No changes to table, amend footnotes to Table 3206.2]

For SI: 1 foot = 304.8 mm, 1 cubic foot = 0.02832 m^3, 1 square foot = 0.0929 m^2.

a. When automatic sprinklers are required for reasons other than those in Chapter 32, the portion of the sprinkler system protecting the high-piled storage area shall be designed and installed in accordance with Sections 3207 and 3208.

b. For aisles, see Section 3206.9.

c. Piles shall be separated by aisles complying with Section 3206.9.

d. For storage in excess of the height indicated, special fire protection shall be provided in accordance with Note g when required by the fire code official. See also Chapters 51 and 57 for special limitations for aerosols and flammable and combustible liquids, respectively.

e. Section 503 shall apply for fire apparatus access.

f. For storage exceeding 30 feet in height, Option 1 shall be used.

g. Special fire protection provisions including, but not limited to, fire protection of exposed steel columns; increased sprinkler density; additional in-rack sprinklers, without associated reductions in

ceiling sprinkler density; or additional fire department hose connections shall be provided when required by the fire code official.

h. High-piled storage areas shall not exceed 500,000 square feet. A 2-hour fire wall constructed in accordance with Section 706 the *International Building Code* shall be used to divide high-piled storage exceeding 500,000 square feet in area.

i. Not required when an automatic fire-extinguishing system is designed and installed to protect the high-piled storage area in accordance with Sections 3207 and 3208.

j. ~~Not required when storage~~ Where areas of buildings are equipped ~~are protected~~ by early suppression fast response (ESFR) sprinklers, manual smoke and heat vents or manually activated engineered mechanical smoke exhaust systems shall be required within these areas. ~~systems installed in accordance with NFPA 13.~~

CHAPTER 33. FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION

3310 Access for Fire Fighting

3310.1 Required Access

Approved vehicle access for fire fighting shall be provided to all construction or demolition sites. Vehicle access shall be provided to within 100 feet (30 480 mm) of temporary or permanent fire department connections. Vehicle access shall be provided by either temporary or permanent roads, capable of supporting vehicle loading under all weather conditions. Vehicle access shall be maintained until permanent fire apparatus access roads are available.

When fire apparatus access roads are required to be installed for any structure or development, they shall be approved prior to the time of which construction has progressed beyond completion of the foundation of any structure.

CHAPTER 50. HAZORDOUS MATERIALS-GENERAL PROVISIONS

5006 Hazardous Materials Route

5006.1 General

Through vehicles carrying materials determined to be hazardous by the United States Department of Transportation are prohibited from transporting such materials over and upon public streets and thoroughfares of the Town of Lakewood Village except upon a designated Hazardous Materials Route.

CHAPTER 56. EXPLOSIVES AND FIREWORKS

5601 General

5601.1 Scope

5601.1.3 Fireworks

The possession, manufacture, storage, sale, handling and use of fireworks are prohibited.

Exceptions:

1. Only when approved fireworks displays, storage and handling are allowed in Section 5604 and 5608, ~~Storage and handling of fireworks as allowed in Section 5604.~~
2. ~~2.~~ The use of fireworks for approved fireworks displays allowed in Section 5608. ~~Manufacture, assembly and testing of fireworks as allowed in Section 5605.~~
3. ~~3. The use of fireworks for fireworks displays as allowed in Section 5608.~~
4. ~~4. The possession, storage, sale, handling and use of specific types of Division 1.4G fireworks where allowed by applicable laws, ordinances and regulations, provided such fireworks comply with CPSC 16 CFR Parts 1500 and 1507, and DOTn 49 CFR Parts 100–185, for consumer fireworks.~~

5601.1.3.1 Fireworks a Public Nuisance.

The presence or use of any firework within the jurisdiction of the Town of Lakewood Village in violation of this ordinance is hereby declared to be a misdemeanor as well as a common and public nuisance.

5601.3 Prohibited Explosives

Storage of explosive material and blasting agents are prohibited within the incorporated limits of the Town of Lakewood Village.

~~Permits shall not be issued or renewed for possession, manufacture, storage, handling, sale or use of the following materials and such materials currently in storage or use shall be disposed of in an *approved* manner.~~

1. ~~Liquid nitroglycerin.~~
2. ~~Dynamite containing more than 60-percent liquid *explosive* ingredient.~~
3. ~~Dynamite having an unsatisfactory absorbent or one that permits leakage of a liquid *explosive* ingredient under any conditions liable to exist during storage.~~
4. ~~Nitrocellulose in a dry and uncompressed condition in a quantity greater than 10 pounds (4.54 kg) of net weight in one package.~~
5. ~~Fulminate of mercury in a dry condition and fulminate of all other metals in any condition except as a component of manufactured articles not hereinafter forbidden.~~
6. ~~*Explosive* compositions that ignite spontaneously or undergo marked decomposition, rendering the products of their use more hazardous, when subjected for 48 consecutive hours or less to a temperature of 167°F (75°C).~~

~~7. New *explosive materials* until *approved* by DOTn, except that permits are allowed to be issued to educational, governmental or industrial laboratories for instructional or research purposes.~~

~~8. *Explosive materials* condemned by DOTn.~~

~~9. *Explosive materials* containing an ammonium salt and a chlorate.~~

~~10. *Explosives* not packed or marked as required by DOTn 49 CFR Parts 100–185.~~

~~**Exception:** Gelatin dynamite.~~

CHAPTER 57. FLAMMABLE AND COMBUSTIBLE LIQUIDS

5703 General Requirements

5703.6 Piping System

Piping systems, and their component parts, for flammable and *combustible liquids* shall be in accordance with Sections 5703.6.1 through 5703.6.11. An approved method of secondary containment shall be provided for underground tank and piping systems.

5704 Storage

5704.2 Tank Storage

5704.2.9 Above Ground Tanks

5704.2.9.5 Above-Ground Tanks Inside of Buildings

Above-ground tanks inside of buildings shall comply with Sections 5704.2.9.5.1 through ~~and~~ 5704.2.9.5.3. ~~5704.2.9.5.2.~~

5704.2.9.5.3 Combustible Liquid Storage Tanks Inside of Buildings

The maximum aggregate allowable quantity limit shall be 3,000 gallons (11 356 L) of Class II or III combustible liquid for storage in protected aboveground tanks complying with Section 5704.2.9.7 when all of the following conditions are met:

1. The entire 3,000 gallon (11 356 L) quantity shall be stored in protected above-ground tanks;
2. The 3,000 gallon (11 356 L) capacity shall be permitted to be stored in a single tank or multiple smaller tanks;
3. The tanks shall be located in a room protected by an automatic sprinkler system complying with Section 903.3.1.1; and
4. Tanks shall be connected to fuel-burning equipment, including generators, utilizing an approved closed piping system.

The quantity of combustible liquid stored in tanks complying with this section shall not be counted towards the maximum allowable quantity set forth in Table 5003.1.1(1), and such tanks shall not be required to be located in a control area. Such tanks shall not be located more than two stories below grade.

5704.2.11 Underground Tanks

5704.2.11.5 Leak Prevention

Leak prevention for underground tanks shall comply with Sections 5704.2.11.5.1 through ~~and~~ 5704.2.11.5.3. ~~5704.2.11.5.2.~~ An approved method of secondary containment shall be provide for underground tank and piping systems.

5704.2.11.5.3 Observation Wells

Approved sampling tubes of a minimum 6 inches in diameter shall be installed in the backfill material of each underground flammable or combustible liquid storage tank. The tubes shall extend from a point 12 inches below the average grade of the excavation to ground level and shall be provided with suitable surface access caps. Each tank site shall provide a sampling tube at the corners of the excavation with a minimum of 4 tubes. Sampling tubes shall be placed in the product line excavation within 10 feet of the tank excavation and one every 50 feet routed along product lines towards the dispensers, a minimum of two are required.

5706 Special Operations

5706.5 Bulk Transfer and Process Transfer Operations

5706.5.4 Dispensing from Tank Vehicles and Tank Cars

5706.5.4.5 Commercial, Industrial, Governmental or Manufacturing

Dispensing of Class II and III motor vehicle fuel from tank vehicles into the fuel tanks of motor vehicles located at commercial, industrial, governmental or manufacturing establishments is allowed where permitted, provided such dispensing operations are conducted in accordance with Sections 5706.5.4.5.1 through 5706.5.4.5.3.

~~Dispensing of Class II and III motor vehicle fuel from tank vehicles into the fuel tanks of motor vehicles located at commercial, industrial, governmental or manufacturing establishments is allowed where permitted, provided such dispensing operations are conducted in accordance with the following:~~

~~1. Dispensing shall occur only at sites that have been issued a permit to conduct mobile fueling.~~
~~2. The *owner* of a mobile fueling operation shall provide to the jurisdiction a written response plan which demonstrates readiness to respond to a fuel spill and carry out appropriate mitigation measures, and describes the process to dispose properly of contaminated materials.~~
~~3. A detailed site plan shall be submitted with each application for a permit. The site plan shall indicate: all buildings, structures and appurtenances on site and their use or function; all uses adjacent to the lot lines of the site; the locations of all storm drain openings, adjacent waterways or wetlands; information regarding slope, natural drainage, curbing, impounding and how a spill will be retained upon the site property; and the scale of the site plan.~~

Provisions shall be made to prevent liquids spilled during dispensing operations from flowing into buildings or off site. Acceptable methods include, but shall not be limited to, grading driveways, raising doorsills or other *approved* means.

4. The *fire code official* is allowed to impose limits on the times and days during which mobile fueling operations is allowed to take place, and specific locations on a site where fueling is permitted.
5. Mobile fueling operations shall be conducted in areas not accessible to the public or shall be limited to times when the public is not present.
6. Mobile fueling shall not take place within 15 feet (4572 mm) of buildings, property lines, combustible storage or storm drains.

Exceptions:

1. The distance to storm drains shall not apply where an *approved* storm drain cover or an *approved* equivalent that will prevent any fuel from reaching the drain is in place prior to fueling or a fueling hose being placed within 15 feet (4572 mm) of the drain. Where placement of a storm drain cover will cause the accumulation of excessive water or difficulty in conducting the fueling, such cover shall not be used and the fueling shall not take place within 15 feet (4572 mm) of a drain.
2. The distance to storm drains shall not apply for drains that direct influent to *approved* oil interceptors.
7. The tank vehicle shall comply with the requirements of NFPA 385 and local, state and federal requirements. The tank vehicle's specific functions shall include that of supplying fuel to motor vehicle fuel tanks. The vehicle and all its equipment shall be maintained in good repair.
8. Signs prohibiting smoking or open flames within 25 feet (7620 mm) of the tank vehicle or the point of fueling shall be prominently posted on three sides of the vehicle including the back and both sides.
9. A portable fire extinguisher with a minimum rating of 40:BC shall be provided on the vehicle with signage clearly indicating its location.
10. The dispensing nozzles and hoses shall be of an *approved* and *listed* type.
11. The dispensing hose shall not be extended from the reel more than 100 feet (30 480 mm) in length.
12. Absorbent materials, nonwater-absorbent pads, a 10-foot-long (3048 mm) containment boom, an *approved* container with lid and a nonmetallic shovel shall be provided to mitigate a minimum 5-gallon (19 L) fuel spill.
13. Tank vehicles shall be equipped with a "fuel limit" switch such as a count-back switch, to limit the amount of a single fueling operation to a maximum of 500 gallons (1893 L) before resetting the limit switch.

Exception: Tank vehicles where the operator carries and can utilize a remote emergency shutoff device which, when activated, immediately causes flow of fuel from the tank vehicle to cease.

14. Persons responsible for dispensing operations shall be trained in the appropriate mitigating actions in the event of a fire, leak or spill. Training records shall be maintained by the dispensing company and shall be made available to the *fire code official* upon request.
15. Operators of tank vehicles used for mobile fueling operations shall have in their possession at all times an emergency communications device to notify the proper authorities in the event of an emergency.
16. The tank vehicle dispensing equipment shall be constantly attended and operated only by designated personnel who are trained to handle and dispense motor fuels.
17. Fuel dispensing shall be prohibited within 25 feet (7620 mm) of any source of ignition.
18. The engines of vehicles being fueled shall be shut off during dispensing operations.
19. Nighttime fueling operations shall only take place in adequately lighted areas.
20. The tank vehicle shall be positioned with respect to vehicles being fueled to prevent traffic from driving over the delivery hose.
21. During fueling operations, tank vehicle brakes shall be set, chock blocks shall be in place and warning lights shall be in operation.
22. Motor vehicle fuel tanks shall not be topped off.
23. The dispensing hose shall be properly placed on an *approved* reel or in an *approved* compartment prior to moving the tank vehicle.
24. The *fire code official* and other appropriate authorities shall be notified when a reportable spill or unauthorized discharge occurs.
25. Operators shall place a drip pan or an absorbent pillow under each fuel fill opening prior to and during dispensing operations. Drip pans shall be liquid tight. The pan or absorbent pillow shall have a capacity of not less than 3 gallons (11.36 L). Spills retained in the drip pan or absorbent pillow need not be reported. Operators, when fueling, shall have on their person an absorbent pad capable of capturing diesel fuel overfills. Except during fueling, the nozzle shall face upward and an absorbent pad shall be kept under the nozzle to catch drips. Contaminated absorbent pads or pillows shall be disposed of regularly in accordance with local, state and federal requirements.

5706.5.4.5.1 Site Requirements

1. Dispensing may occur at sites that have been permitted to conduct mobile fueling.
2. A detailed site plan shall be submitted with each application for a permit. The site plan must indicate: a. all buildings, structures, and appurtenances on site and their use or function; b. all uses adjacent to the property lines of the site; c. the locations of all storm drain openings, adjacent waterways or wetlands; d. information regarding slope, natural drainage, curbing, impounding and how a spill will be retained upon the site property; and, e. The scale of the site plan.
3. The Fire Code Official is authorized to impose limits upon: the times and/or days during which mobile fueling operations are allowed to take place and specific locations on a site where fueling is permitted.
4. Mobile fueling operations shall be conducted in areas not generally accessible to the public.

5. Mobile fueling shall not take place within 15 feet (4.572 m) of buildings, property lines, or combustible storage.

5706.5.4.5.2 Refueling Operator Requirements

1. The owner of a mobile fueling operations shall provide to the jurisdiction a written response plan which demonstrates readiness to respond to a fuel spill, carry out appropriate mitigation measures, and to indicate its process to properly dispose of contaminated materials when circumstances require.
2. The tank vehicle shall comply with the requirements of NFPA 385 and Local, State and Federal requirements. The tank vehicle's specific functions shall include that of supplying fuel to motor vehicle fuel tanks. The vehicle and all its equipment shall be maintained in good repair.
3. Signs prohibiting smoking or open flames within 25 feet (7.62 m) of the tank vehicle or the point of fueling shall be prominently posted on 3 sides of the vehicle including the back and both sides.
4. A fire extinguisher with a minimum rating of 40:BC shall be provided on the vehicle with signage clearly indicating its location.
5. The dispensing nozzles and hoses shall be of an approved and listed type.
6. The dispensing hose shall not be extended from the reel more than 100 feet (30.48m) in length.
7. Absorbent materials, non-water absorbent pads, a 10 foot (3.048 m) long containment boom, an approved container with lid, and a non-metallic shovel shall be provided to mitigate a minimum 5-gallon fuel spill.
8. Tanker vehicles shall be equipped with a fuel limit switch such as a count-back switch, limiting the amount of a single fueling operation to a maximum of 500 gallons (1893 L) between resetting of the limit switch. Exception: Tankers utilizing remote emergency shut-off device capability where the operator constantly carries the shut-off device which, when activated, immediately causes flow of fuel from the tanker to cease.
9. Persons responsible for dispensing operations shall be trained in the appropriate mitigating actions in the event of a fire, leak, or spill. Training records shall be maintained by the dispensing company and shall be made available to the fire code official upon request.
10. Operators of tank vehicles used for mobile fueling operations shall have in their possession at all times an emergency communications device to notify the proper authorities in the event of an emergency.

5706.5.4.5.3 Operations Requirements

1. The tank vehicle dispensing equipment shall be constantly attended and operated only by designated personnel who are trained to handle and dispense motor fuels.
2. Prior to beginning dispensing operations, precautions shall be taken to assure ignition sources are not present.
3. The engines of vehicles being fueled shall be shut off during dispensing operations.
4. Night time fueling operations shall only take place in adequately lighted areas.

5. The tank vehicle shall be positioned with respect to vehicles being fueled so as to preclude traffic from driving over the delivery hose and between the tank vehicle and the motor vehicle being fueled.
6. During fueling operations, tank vehicle brakes shall be set, chock blocks shall be in place and warning lights shall be in operation.
7. Motor vehicle fuel tanks shall not be topped off.
8. The dispensing hose shall be properly placed on an approved reel or in an approved compartment prior to moving the tank vehicle.
9. The Code Official and other appropriate authorities shall be notified when a reportable spill or unauthorized discharge occurs.

CHAPTER 61. LIQUIFIED PETROLEUM GASES

6103 Installation of Equipment

6103.2 Use of LP-Gas Containers in Buildings

6103.2.1 Portable Containers

6103.2.1.8 Jewelry Repair, Dental Labs and Similar Occupancies

Where natural gas service is not available and where approved by the fire code official, portable LP-Gas containers are allowed to be used to supply approved torch assemblies or similar appliances. Such containers shall not exceed 20-pound (9.0 kg) water capacity. Aggregate capacity shall not exceed 60-pound (27.2 kg) water capacity. Each device shall be separated from other containers by a distance of not less than 20 feet.

6104 Location of LP-Gas Containers

6104.2 Maximum Capacity within Established Limits

Within the limits established by law restricting the storage of liquefied petroleum gas for the protection of heavily populated or congested areas, the aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons (7570 L) (see Section 3 of the Sample Legislation for Adoption of the *International Fire Code* on page xxi).

Exception:

1. In particular installations, this capacity limit shall be determined by the *fire code official,* after consideration of special features such as topographical conditions, nature of occupancy, and proximity to buildings, capacity of proposed LP-gas containers, degree of fire protection to be provided and capabilities of the local fire department.
2. Except as permitted in 308 and 6104.3.2, LP-gas containers are not permitted in residential areas.

6104.3 Container Location

6104.3.2 Spas, Pool Heaters and other Listed Devices

Where natural gas service is not available and where approved by the fire code official, an LP-Gas container is allowed to be used to supply spa and pool heaters or other listed devices. Such container shall not exceed 250-gallon water capacity per lot. See Table 6104.3 for location of containers.

Exception:

Lots where LP can be off loaded wholly on the property where the tank is located may install 500 gallon above ground or 1,000 gallon underground approved containers.

End of Exhibit A

ADOPTION AND SUMMARY OF AMENDMENTS

Ordinance Number	Date	Summary
16-xx	October 13, 2016	• Removed ETJ
15-16	December 10, 2015	• Amended to match Little Elm adopted Fire Code.
11-06 98-04A	May 12, 2011	REPEALED

TOWN OF LAKEWOOD VILLAGE
ENERGY CONSERVATION CODE 16-xx

AN ORDINANCE TO ADOPT THE 2012 INTERNATIONAL ENERGY CONSERVATION CODE, WITHIN THE TOWN OF LAKEWOOD VILLAGE ~~AND THE TOWN OF LAKEWOOD VILLAGE EXTRATERRITORIAL JURISDICTION~~; PROVIDING A SAVINGS/REPEALING CLAUSE, PROVIDING A PENALTY CLAUSE, PROVIDING A SEVERABILITY CLAUSE, PROVIDING AN EFFECTIVE DATE.

WHERAS, the Town Council of the Town of Lakewood Village, Texas ("Town Council") has investigated and determined that it would be advantageous and beneficial to the citizens of the Town of Lakewood Village, Texas ~~and the citizens inside the Town of Lakewood village Extraterritorial Jurisdiction (collectively "Lakewood Village")~~ to adopt the 2012 Edition of the International Energy Conservation Code, save and except the deletions and amendments set forth below.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF LAKEWOOD VILLAGE, TEXAS, THAT:

Section 1: Findings

The findings set forth above are incorporated into the body of this Ordinance as if fully set forth herein.

Section 2: Adoption of the 2012 International Energy Conservation Code

The International Energy Conservation Code, 2012 Edition, copyrighted by the International Code Council, Inc., save and except the deletions and amendments set forth in Exhibit "A", attached hereto and incorporated herein for all purposes, is hereby adopted as the Energy Conservation code for Lakewood Village, regulating the design of building and selection of mechanical, electrical, service water-heating and illumination systems and equipment which will enable effective use of energy in new building construction located within Lakewood Village (the "2012 International Energy Conservation Code"). The 2012 International Energy Conservation Code is made a part of this Ordinance as if fully set forth herein.

Section 3: Repeal

Energy Conservation Code 15-08~~11-17~~ ordinance is hereby repealed in its entirety.

Section 4: Penalty Clause

A. Violation

A person who knowingly violates any provision of this chapter is guilty of separate offenses for each day during which the violation is continued after notification. Neither allegation nor evidence of a culpable mental state is required for the proof of an offense defined by this ordinance.

B. Fine

Each offense is punishable by a fine of not more than two-thousand ($2,000) nor less than two-hundred ($200). The minimum fine established in this paragraph shall be doubled for the second conviction of the same offense within any 24-month period and tripled for the third and subsequent convictions of the same offense within any 24-month period. At no time shall the minimum fine exceed the maximum fine established in this paragraph.

Section 5: Legal Rights

The penal provision imposed under this Ordinance shall not preclude the Town of Lakewood Village from filing suit to enjoin the violation. The Town of Lakewood Village retains all legal rights and remedies available to it pursuant to local, state, and federal law.

Section 6: Severability

A. Unconstitutional or Invalid Section

Should any section, subsection, sentence, clause or phrase of this Ordinance be declared unconstitutional or invalid by a court of competent jurisdiction, it is expressly provided that any and all remaining portions of this Ordinance shall remain in full force and effect.

B. Independent Sections

The Town hereby declares that it would have passed this Ordinance, and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses and/or phrases be declared unconstitutional or invalid.

Section 7: Estoppel / Waiver

The failure of the Town to enforce any term or condition of this Ordinance shall not constitute a waiver or estoppel or any subsequent violation of this Ordinance.

Section 8: <u>Effective Date</u>

The amendments to this Ordinance shall become effective from and after its date of passage and publication as provided by law.

PASSED AND APPROVED by the Town Council of the Town of Lakewood Village, Texas this the 14th day of May, 2015.

Mark Vargus
Mayor

ATTEST:

Linda Asbell
Town Secretary, TRMC

Exhibit A

Town of Lakewood Village Amendments

2012 International Energy Conservation Code

ENERGY CONSERVATION CODE

Adopted: October 13th, 2016~~May 14, 2015~~

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CHAPTER 1. SCOPE AND ADMINISTRATION

The following additions, deletions and amendments to the 2012 International Energy Conservation Code adopted herein and herby and adopted.

C101 General

General of the 2012 International Energy Conservation Code is amended as follows:

C101.1 Title

These regulations shall be known as the *International Energy Conservation Code* of The Town of Lakewood Village hereinafter referred to as "this code."

C106 Applicability

Applicability of the 2012 International Energy Conservation Code is amended as follows:

C106.1 Referenced Codes and Standards

The codes, when specifically adopted, and standards referenced in this code shall be those listed in Chapter 5, and such codes and standards shall be considered as part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections C106.1.1 and C106.1.2. Whenever amendments have been adopted to the reference codes and standards, each reference to said code and standard shall be considered to reference the amendments as well. Any reference made to NFPA 70 or the ICC Electrical Code shall mean the Electrical Code as adopted.

Exception

Where enforcement of a code provision would violate the conditions of the *listing* of the *equipment* or *appliance,* the conditions of the *listing* and manufacturer's instructions shall apply.

C107 Fees

Fees of the 2012 International Energy Conservation Code is amended as follows:

C107.2 Schedule of Permit Fees

The fees for all energy conservation work shall be as indicated in the Consolidated Fee Ordinance for the Town of Lakewood Village.

C107.3 Work Commencing Before Permit Issuance

Any person who commences any work before obtaining the necessary permits shall be subject to a penalty of 100% of the usual permit fee ~~an additional fee established by the *code official,* which shall be~~ in addition to the required permit fees.

C107.5 Refunds

The code official shall authorize the refunding of fees as follows:

1. The full amount of any fee paid hereunder that was erroneously paid or collected.

2. Not more than 80 percent of the permit fee paid when no work has been done under a permit issued in accordance with this code.
3. Not more than 50 percent of the plan review fee paid when an application for a permit for which a plan review fee has been paid is withdrawn or canceled before any plan review effort has been expended.

The code official shall not authorize the refunding of any fee paid except upon written application filed by the original permittee not later than 180 days after the date of fee payment.

C108 Stop Work Order

Stop Work Order of the 2012 International Energy Conservation Code is amended as follows:

C108.4 Failure to Comply

Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be guilty of separate offenses for each day during which the violation is continued after notification. ~~liable to a fine of not less than [AMOUNT] dollars or more than [AMOUNT] dollars.~~

CHAPTER 2. DEFINITIONS

The following additions, deletions and amendments to the 2012 International Energy Conservation Code adopted herein and herby and adopted.

C202 General Definitions

Glazing Area. Total area of the glazed fenestration measured using the rough opening and including sash, curbing or other framing elements that enclose conditions space. Glazing area includes the area of glazed fenestration assemblies in walls bounding conditions basements. For doors where the daylight opening area is less than 50 percent of the door area. The glazing area is the daylight opening area for the door including the door and the frame.

CHAPTER 4. RESIDENTIAL ENERGY EFFICIENCY

The following additions, deletions and amendments to the 2012 International Energy Conservation Code adopted herein and herby and adopted.

Table R402.1.1 Insulation and Fenestration Requirements by Component[a]

WOOD FRAME WALL R-VALUE for CLIMATE ZONE 3 = 13

Table R402.1.3 Equivalent U-Factors

WOOD FRAME WALL U-FACTOR for CLIMATE ZONE 3 = 0.082

R402.2 Specific Insulation Requirements (Prescriptive)

In addition to the requirements of Section R402.1, insulation shall meet the specific requirements of Sections R402.2.1 through R402.2.12.

Insulation Installed in Walls

To ensure that insulation remains in place, insulation batts installed in walls shall be totally secured by an enclosure on all sides consisting of framing lumber, gypsum, sheathing, wood structural panel sheathing, netting or other equivalent material approved by the building official.

End of Exhibit A

ADOPTION AND SUMMARY OF AMENDMENTS

Ordinance Number	Date	Summary
16-xx	October 13, 2016	• Removed ETJ
15-08	May 14, 2015	• Removed amendments to R304 • Removed amendments to Chapter 5 • Removed amendments to Chapter 6
11-17	April 14, 2011	REPEALED

TOWN OF LAKEWOOD VILLAGE
ELECTRICAL CODE 16-xx

AN ORDINANCE TO ADOPT THE 2011 NATIONAL ELECTRICAL CODE, WITHIN THE TOWN OF LAKEWOOD VILLAGE ~~AND THE TOWN OF LAKEWOOD VILLAGE EXTRATERRITORIAL JURISDICTION~~; PROVIDING A SAVINGS/REPEALING CLAUSE, PROVIDING A PENALTY CLAUSE, PROVIDING A SEVERABILITY CLAUSE, PROVIDING AN EFFECTIVE DATE.

WHERAS, the Town Council of the Town of Lakewood Village, Texas ("Town Council") has investigated and determined that it would be advantageous and beneficial to the citizens of the Town of Lakewood Village, Texas ~~and the citizens inside the Town of Lakewood village Extraterritorial Jurisdiction (collectively "Lakewood Village")~~ to adopt the 2011 Edition of the National Electrical Code, save and except the deletions and amendments set forth below.

NOW, THEREFORE, BE IT ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF LAKEWOOD VILLAGE, TEXAS, THAT:

Section 1: Findings

The findings set forth above are incorporated into the body of this Ordinance as if fully set forth herein.

Section 2: Adoption of the 2011 National Electrical Code

The National Electrical Code, 2011 Edition, copyrighted by the National Fire Protection Association, including Annex H, save and except the deletions and amendments set forth in Exhibit "A", attached hereto and incorporated herein for all purposes, is hereby adopted as the Electrical Code for Lakewood Village, regulating the construction, alteration, removal, use and/or maintenance of any electrical wiring, apparatus, device or system within Lakewood Village (the "2011 National Electrical Code"). The 2011 National Electrical Code is made a part of this Ordinance as if fully set forth herein.

Section 3: Repeal

Electrical Code 15-13~~11-08~~ ordinance is hereby repealed in its entirety.

Section 4: Penalty Clause

A. Violation

A person who knowingly violates any provision of this chapter is guilty of separate offenses for each day during which the violation is continued after notification. Neither allegation nor evidence of a culpable mental state is required for the proof of an offense defined by this ordinance.

B. Fine

Each offense is punishable by a fine of not more than two-thousand ($2,000) nor less than two-hundred ($200). The minimum fine established in this paragraph shall be doubled for the second conviction of the same offense within any 24-month period and tripled for the third and subsequent convictions of the same offense within any 24-month period. At no time shall the minimum fine exceed the maximum fine established in this paragraph.

Section 5: Legal Rights

The penal provision imposed under this Ordinance shall not preclude the Town of Lakewood Village from filing suit to enjoin the violation. The Town of Lakewood Village retains all legal rights and remedies available to it pursuant to local, state, and federal law.

Section 6: Severability

A. Unconstitutional or Invalid Section

Should any section, subsection, sentence, clause or phrase of this Ordinance be declared unconstitutional or invalid by a court of competent jurisdiction, it is expressly provided that any and all remaining portions of this Ordinance shall remain in full force and effect.

B. Independent Sections

The Town hereby declares that it would have passed this Ordinance, and each section, subsection, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses and/or phrases be declared unconstitutional or invalid.

Section 7: Estoppel / Waiver

The failure of the Town to enforce any term or condition of this Ordinance shall not constitute a waiver or estoppel or any subsequent violation of this Ordinance.

Section 8: Effective Date

The amendments to this Ordinance shall become effective from and after its date of passage and publication as provided by law.

PASSED AND APPROVED by the Town Council of the Town of Lakewood Village, Texas this the 13th day of October~~August~~, 2016~~2015~~.

Mark Vargus
Mayor

ATTEST:

Linda Asbell
Town Secretary, TRMC

Exhibit A

Town of Lakewood Village Amendments

2011 National Electrical Code

ELECTRICAL CODE

Adopted: October 13th, 2016~~August 13, 2015~~

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CHAPTER 2. WIRING AND PROTECTION

The following additions, deletions and amendments to the 2011 National Electrical Code adopted herein and herby and adopted.

ARTICLE 230 SERVICES

The following additions, deletions and amendments to the 2011 National Electrical Code adopted herein and herby and adopted.

230.71 Maximum Number of Disconnects

(A) General. The service disconnecting means for each service permitted by 230.2, or for each set service-entrances conductors permitted by 230.40. Exception No. 1, 3, 4, or 5, shall consist of not more than six switches or sets of circuit breakers, or a combination of not more than six switches and sets of circuit breakers, or a combination of not more than six switches and sets of circuit breakers, mounted in a single enclosure, in a group of separate enclosures, or in or on a switchboard. There shall be not more than six sets of disconnects per service grouped in any one location.

For the purpose of this section, disconnecting means installed as part of listed equipment and used solely for the following shall not be considered a service disconnecting means:

(1) Power monitoring equipment
(2) Surge-protective devices(s)
(3) Control circuit of the ground-fault protection system
(4) Power-operable service disconnecting means

Exception: Multi-occupant buildings. Individual service disconnecting means is limited to six for each occupant. The number of individual disconnects at one location may exceed six.

CHAPTER 3. WIRING METHODS AND MATERIALS

The following additions, deletions and amendments to the 2011 National Electrical Code adopted herein and herby and adopted.

ARTICLE 310 CONDUCTORS FOR GENERAL WIRING

The following additions, deletions and amendments to the 2011 National Electrical Code adopted herein and herby and adopted.

310.106 Conductors

(A) Minimum Size of Conductors. The minimum size of conductors shall be as shown in Table 310.106(A), except as permitted elsewhere in this Code.

(B) Conductor Material. Conductors is this article shall be ~~of aluminum, cooper clad aluminum, or~~ copper unless otherwise specified.

Table 310.106(A) Minimum Size of Conductors

Conductor Voltage Rating (Volts)	Minimum Conductor Size (AWG) Copper
0 - 2,000	12
2,001 - 5,000	8
5,001 - 8,000	6
8,001 - 15,000	2
15,001 – 28,000	1
28,001 – 35,000	1/0

ARTICLE 334 NONMETALLIC-SHEATHED CABLE: TYPES NM, NMC AND NMS

The following additions, deletions and amendments to the 2011 National Electrical Code adopted herein and herby and adopted.

334.12 Uses Not Permitted

(A) Types NM, NMC and MNS. Types NM, NMC and NMS cables hall not be permitted as follows:

(1) In any dwelling or structure not specifically permitted in 334.10(1), (2) and (5).
(2) Exposed in dropped or suspended ceilings in other than one- and tow-family and multifamily dwellings.
(3) As service-entrance cable.
(4) In commercial garages having hazardous (classified) locations as defined in 511.3.
(5) In theaters and similar locations, except where permitted in 518.4(B).
(6) In motion picture studious
(7) In storage battery rooms
(8) In hoist ways or on elevators or escalators
(9) Embedded in poured cement, concrete or aggregate.
(10) In hazardous (classified) locations, except where specifically permitted by other articles in this Code.
(11) In structures where it would be required to pass through either factory or filed punched, cut or drilled slots or holes in metal members.

(B) Types NM and NMS. (*No edits*)

ANNEX H. ADMINISTRATION AND ENFORCEMENT

The 2011 National Electrical Code is amended by deleting the entire article and replacing it with the following:

[H] 101 GENERAL

[H] 101.1 Title

These regulations shall be known as the *National Electrical Code* of The Town of Lakewood Village hereinafter referred to as "this code."

[H] 101.2 Scope

The provision of this code shall apply to the erection, installation, alteration, repairs, relocation, replacement, addition to, use or maintenance of electrical systems within this jurisdiction. This code shall also regulate the installation of electrical conductors, equipment, and raceways; signaling and communications conductors equipment, and raceways; and optical fiber cables and raceways as identified in Article 90 of this code. Provisions in the appendices shall not apply unless specifically adopted.

Exception

Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories high with separate means of egress and their accessory structures shall comply with the International Residential Code.

[H] 101.3 Intent

The purpose of this code is to provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling the design, construction, installation, quality of materials, location, operation and maintenance or use of electrical systems and equipment.

[H] 102 APPLICABILITY

[H] 102.1 General

Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.

[H] 102.2 Existing Installations

Electrical systems lawfully in existence at the time of the adoption of this code shall be permitted to have their use and maintenance continue if the use, maintenance or repair is in accordance with the original design and no hazard to life, health or property is created by such electrical system.

[H] 102.3 Maintenance

All electrical systems, materials and appurtenances, both existing and new, and all parts thereof, shall be maintained in proper operating condition in accordance with the original design in a safe condition. All devices or safeguards required by this code shall be maintained in compliance with the code edition under which they were installed. The owner or the owner's designated agent shall be responsible for maintenance of electrical systems. To determine compliance with this provision, the code official shall have the authority to require any electrical system to be reinspected.

[H] 102.4 Additions, Alterations or Repairs

Additions, alterations, renovations or repairs to any electrical system shall conform to that required for a new electrical system without requiring the existing electrical system to comply with all the

requirements of this code unless otherwise determined by the code official that it is necessary to change part of or all of the existing electrical system to safeguard life or limb, health, property and public welfare. Additions, alterations or repairs shall not cause an existing system to become unsafe, insanitary or overloaded. Minor additions, alterations, renovations and repairs to existing electrical systems shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is approved.

[H] 102.5 Change in Occupancy

It shall be unlawful to make any change in the occupancy of any structure that will be subject the structure to any special provision of this code applicable to the new occupancy without approval of the code official. The code official shall certify that such structure meets the intent of the provisions of the law governing building construction for the proposed new occupancy and that such change of occupancy does not result in any hazard to the public health, safety or welfare.

[H] 102.6 Moved Buildings

Except as determined by section 102.2, electrical systems that are a part of buildings or structures moved into or within the jurisdiction shall comply with the provisions of this code for new installations.

[H] 102.7 Referenced Codes and Standards

The codes and standards referenced in this code, when specifically adopted, shall be considered as part of the requirements of this code to the prescribed extent of each such reference. Where the differences occur between provisions of this code and the referenced standards, the provisions of this code shall be the minimum requirements. Whenever amendments have been adopted to the referenced codes and standards, each reference to said code and standard shall be considered to reference the amendments as well.

[H] 102.7.1 Conflicts

Where conflicts occur between provisions of this code and the referenced standards, the provision of this code shall apply.

[H] 107.2 Provision in Referenced Codes and Standards

Where the extent of the reference to a referenced code or standard includes subject matter that is within the scope of this code, the provision of this code, as applicable, shall take precedence over the provisions in the 'referenced code or standard.

[H] 102.8 Requirements not Covered by Code

Any requirements necessary for the strength, stability or proper operation of an existing or proposed electrical system, or for public safety, health and general welfare, not specifically covered by this code shall be determined by the code official.

[H] 102.9 Other Laws

The provisions of this code shall not be deemed to nullify any provisions of local, state or federal law.

[H] 102.10 Application of References

Reference to chapter section numbers, or provision not specifically identified by number, shall be construed to refer to such chapter, section or provision of this code.

[H] 103 DEPARTMENT OF ELECTRICAL INSPECTION

[H] 103.1 General

The department of electrical inspection is hereby created and the executive official in charge thereof shall be known as the code official.

[H] 103.2 Appointment

The code official shall be appointed by the chief appoint authority of the jurisdiction.

[H] 103.3 Deputies

In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appoint authority, the code official shall have the authority to appoint a deputy code official, other related technical officers, inspectors and other employees. Such employees shall powers as delegated by the code official.

[H] 103.4 Liability

The code official, member of the board of appeals or employee charged with the enforcement of this code, while acting for the jurisdiction in good faith and without malice in the discharge of the duties required by this code or other pertinent law or ordinance, shall not thereby be rendered liable personally, and is hereby relieved from all personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties. Any suit instituted against any officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of this code shall be defended by the legal representative of the jurisdiction until the final terminate of the proceedings. The code official or any subordinate shall not be liable for costs in any action, suit or proceeding that is instituted in pursuance of the provisions of this code.

[H] 104 DUTIES AND POWERS OF THE CODE OFFICIAL

[H] 104.1 General

The code official is hereby authorized and directed to enforce the provision of this code. The code official shall have the authority to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and

procedures shall be in compliance with the intent and purpose of this code. Such policies and procedures shall not have the effect of waiving requirements specifically provided for in this code.

[H] 104.2 Applications and Permits

The code official shall receive applications, review construction documents and issue permits for the installation and alteration of electrical systems, inspect the premises for which such permits have been issued, and enforce compliance with the provisions of this code.

[H] 104.3 Inspections

The code official shall make all the required inspections, or shall accept reports of inspection by approved agencies or individuals. All reports of such inspections shall be in writing and be certified by a responsible officer of such approved agency or by the responsible individual. The code official is authorized to engage such expert opinion as deemed necessary to report on unusual technical issues that arise, subject to the approval of the appoint authority.

[H] 104.4 Right of Entry

Whenever it is necessary to make an inspection to enforce the provisions of this code, or whenever the code official has reasonable cause to believe that there exists in any building or upon an premises any conditions or violations of this code that make the building or premises unsafe, dangerous or hazardous, the code official shall have the authority to enter the building or premises at all reasonable times to inspect or to perform the duties imposed upon the code official by this code. If such building or premises is occupied, the code official shall be present credentials to the occupant and request entry. If such building or premises is unoccupied, the code official shall first make a reasonable effort to locate the owner or other person having charge or control of the building or premises and request entry. If entry is refused, the code official shall have recourse to every remedy provided by law to secure entry. When the code official shall have first obtained a proper inspection warrant or other remedy provided by law to secure entry, no owner or occupant or person having charge, care or control of any building or premises shall fail or neglect, after proper request is made as herein provided, to promptly permit entry therein by the code official for the purpose of inspection and examination pursuant to this code.

[H] 104.5 Identification

The code official shall carry proper identification when inspecting structures or premises in the performance of duties under this code.

[H] 104.6 Notices and Orders

The code official shall issue all necessary notices or orders to ensure compliance with this code.

[H] 104.7 Department Records

The code official shall keep official records of applications received, permits and certificates issued, fees collected, reports of inspections, and notices and orders issued. Such records shall be retained in the official records for the period required for the retention of public records.

[H] 105 APPROVAL

[H] 105.1 Modifications

Whenever there are practical difficulties involved in carrying out the provisions of this code, the code official shall have the authority to grant modifications for individual cases, upon application of the owner or owner's representative, provided the code official shall first find that special individual reason makes the strict letter of this code impractical and the modification conforms to the intent and purpose of this code and that such modification does not lessen health, life and fire safety requirements. The details of action granting modifications shall be recorded and entered in the files of the electrical inspection department.

[H] 105.2 Alternative Materials, Methods and Equipment

The provisions of this code of this code are not intended to prevent the installation of any material or to prohibit any method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material or method of construction shall be approved where the code official finds that the proposed alternative material, method or equipment complies with the intent of the provision of this code and is at least the equivalent of that prescribed in this code.

[H] 105.2.1 Research Reports

Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall consist of valid research reports from approved sources.

[H] 105.3 Required Testing

Whenever there is insufficient evidence of compliance with the provisions of this code, or evidence that a material or method does not conform to the requirements of this code, or in order to substantiate claims for alternate materials or methods, the code official shall have the authority to require tests as evidence of compliance to be made at no expense to the jurisdiction.

[H] 105.3.1 Test Methods

Test methods shall be as specified in this code or by other recognized test standards. In the absence of recognized and accepted test methods, the code official shall approve the testing procedures.

[H] 105.3.2 Testing Agency

All tests shall be performed by an approved agency.

[H] 105.4 Approved materials and Equipment

Materials, equipment and devices approved by the code official shall be constructed and installed in accordance with such approval.

[H] 105.4.1 Material and Equipment Reuse

Materials, equipment and devices shall not be reused unless such elements have been reconditions, tested, placed in good and proper working condition and approved.

[H] 106 PERMITS

[H] 106.1 When Required

Any owner, authorized agent or contractor who desires to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structure, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical system, the installation of which is regulated by this code, or to cause any such work to be done, shall first make application to the code official and obtain the required permit for the work.

[H] 106.2 Exempt Work

The following work shall be exempt from the requirements for a permit:

1. The work identified in Article 90.2(B) as not being covered by this Code.

[H] 106.3 Application for Permit

Each application for a permit, with the required fee, shall be filed with the code official on a form furnished for that purpose and shall contain a general description of the proposed work and its location. The application shall be signed by the owner or an authorized agent. The permit application shall indicate the proposed occupancy of all parts of the building and of that portion of the site or lot, if any, not covered by the building or structure and shall contain such other information required by the code official.

[H] 106.3.1 Construction Documents

Construction documents, engineering calculations, diagrams and other such data shall be submitted, as required by the code official, with each application for a permit. The code official shall require construction documents, computations and specifications to be prepared and designed by a registered design professional when required by state law. Construction documents shall be drawn to scale and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that the work conforms to the provisions of this code. Construction documents for buildings more than two stories in height shall indicate where penetrations will be made for pipes, conduits, wiring, equipment, fittings and components and shall indicate the materials and methods for maintaining required structural safety, fire-resistance rating and fire blocking.

Exception

The code official shall have the authority to waive the submission of construction documents, calculations or other date if the nature of the work applied for is such reviewing of the construction documents is not necessary to determine compliance with this code.

[H] 106.3.2 Preliminary Inspection

Before a permit is issued, the code official is authorized to inspect and evaluate the systems, equipment, buildings, devices, premises and spaces or areas to be used.

[H] 106.3.3 Time Limitation of Application

An application for a permit for any proposed work shall be deemed to have been abandoned 90 days after the date of filing, unless such application has been pursued in good faith or a permit has been issued: except that the code official shall have the authority to grant one or more extensions of time for additional periods not exceeding 90 days each. The extension shall be requested in writing and justifiable cause demonstrated.

[H] 106.4 By Whom Application is Made

Application for a permit shall be made by the person or agent to install all or part of any electrical system. The applicant shall meet all qualifications established by statute, or by rules promulgated by this code, or by ordinance or by resolution. The full name and address of the applicant shall be stated in the application.

[H] 106.5 Permit Issuance

The application, construction documents and other data filed by an applicant for permit shall be reviewed by the code official. If the code official finds that the proposed work conforms to the requirements of this code and all laws and ordinances applicable thereto, and that the fees specified in Section [H] 106.6 have been paid, a permit shall be issued to the applicant.

[H] 106.5.1 Approved Construction Documents

When the code official issues the permit where construction documents are required, the construction documents shall be endorsed in writing and stamped "APPROVED." Such approved construction documents shall not be changed, modified or altered without authorization from the code official. All work shall be done in accordance with the approved construction documents. The code official shall have the authority to issue a permit for the construction of a part of a electrical system before the entire construction documents for the whole system have been submitted or approved, provided adequate information and detailed statements have been filed complying with all pertinent requirements of this code. The holders of such permit shall proceed at their own risk without assurance that the permit for the entire electrical system will be granted.

[H] 106.5.2 Validity

The issuance of a permit or approval of construction documents shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this code or any other ordinance of the jurisdiction. Not permit presuming to give authority to violate or cancel the provisions of this code shall be valid. The issuance of a permit based upon construction documents and other data shall not prevent the code official from thereafter required the correction of errors in said construction documents and other data or from preventing building

operations being carried on thereunder when in violation of this code of other ordinances of this jurisdiction.

[H] 106.5.3 Expiration

Every permit issued shall become invalid unless the work authorized by such permit is commenced within 180 days after the issuance, or if the work authorized by such permit is suspended, abandoned or lacks any required inspection for a period of 180 days after the time the work is commenced. The code official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

[H] 106.5.4 When Extensions

Any permittee holding an unexpired permit shall have the right to apply for an extension of the time within which the permittee will commence work under that permit when work is unable to be commenced within the time required by this section for good and satisfactory reasons. The code official shall extend the time for action by the permittee for a period not exceeding 180 days if there is reasonable cause. Not permit shall be extended more than once. The fee for an extension shall be one-half the amount required for a new permit for such work.

[H] 106.5.5 Suspension or Revocation of Permit

The code official shall have the authority to suspend or revoke a permit issued under the provisions of this code wherever the permit is issued in error or on the basis on incorrect, inaccurate or incomplete information, or in violation of any ordinance or regulation or any of the provisions of this code.

[H] 106.5.6 Retention of Construction Documents

One set of approved construction documents shall be retained by the code official for a period of not less than 180 days from date of completion of the permitted work, or as required by state or local laws. Once set of approved construction documents shall be returned to the applicant, and said set shall be kept on the site of the building or work at all times during which the work authorized thereby is in progress.

[H] 106.5.7 Previous Approvals

This code shall not require changes in the construction documents, construction or designated occupancy of a structure for which a lawful permit has been heretofore issued or otherwise lawfully authorized, and the construction of which has been pursued in good faith within 180 days after the effective date of this code and has not been abandoned.

[H] 106.5.8 Posting of Permit

The permit or a copy shall be kept on the site of the work until the completion of the project.

[H] 106.6 Fees

A permit shall not be issued until the fees prescribed in Section 106.6.2 have been paid, and an amendment to a permit shall not be released until the additional fee, if any, due to an increase of the electrical systems, has been paid.

[H] 106.6.1 Work Commencing before Permit Issuance

Any person who commences any work on an electrical system before obtaining the necessary permits shall be subject to 100 percent of the usual permit fee in addition to the required permit fees.

[H] 106.6.2 Fee Schedule

The fees for all electrical work shall be as indicated in the Consolidated Fee Ordinance for the Town of Lakewood Village.

[H] 106.6.3 Fee Refunds

The code official shall authorize the refunding of fees as follows:

1. The full amount of any fee paid hereunder that was erroneously paid or collected.
2. Not more than 80 percent of the permit fee paid when no work has been done under a permit issued in accordance with this code.
3. Not more than 50 percent of the plan review fee paid when an application for a permit for which a plan review fee has been paid is withdrawn or canceled before any plan review effort has been expended.

The code official shall not authorize the refunding of any fee paid except upon written application filed by the original permittee not later than 180 days after the date of fee payment.

[H] 107 INSPECTIONS AND TESTING

[H] 107.1 General

The code official is authorized to conduct such inspections as are deemed necessary to determine compliance with the provisions of this code. Construction or work for which a permit is required shall be subject to inspection by the code official, and such construction or work shall remain accessible and exposed for inspection purposes until approved. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid. It shall be the duty of the permit applicant to cause the work to remain accessible and exposed for inspection purposes. Neither the code official nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.

[H] 107.2 Required Inspections and Testing

The code official, upon notification form the permit holder or the permit holder's agent, shall make the following inspections and such other inspections as necessary, and shall either release that portion of the construction or shall notify the permit holder or an agent of any violations that must be corrected. The holder of the permit shall be responsible for the scheduling of such inspections.

1. Underground inspection shall be made after trenches or ditches are excavated and bedded, piping and conduit installed, and before any backfill is put in place.
2. Rough-in inspection shall be made after the roof, framing, fire blocking, fire stopping, draft stopping and bracing is in place and all electrical systems are rough-in, and prior to the installation of wall or ceiling membranes.
3. Final inspection shall be made after the building is complete, all electrical fixtures are in place and properly connected, and the structure is ready for occupancy.

[H] 107.2.1 Other Inspections

In addition to the inspections specified above, the code official is authorized to make or require other inspections of any construction work to ascertain compliance with the provisions of this code and other laws that are enforced.

[H] 107.2.2 Inspection Requests

It shall be the duty of the holder of the permit or their duly authorized agent to notify the code official when work is ready for inspection. It shall be the duty of the permit holder to provide access to and means for inspections of such work that are required by this code.

[H] 107.2.3 Approval Required

Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the code official. The code official, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or his or agent wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portion shall not covered or concealed until authorized by the code official.

[H] 107.2.4 Approved Agencies

The code official is authorized to accept reports of approved inspection agencies, provided that such agencies satisfy the requirements as to qualifications and reliability.

[H] 107.2.5 Evaluation and Follow-up Inspection Services

Prior to the approval of a closed, prefabricated, electrical system and the issuance of an electrical permit, the code official may require submittal of an evaluation report on each prefabricated electrical system indicating the complete details of the electrical system, including a description of the system and its components, the basis upon which the electrical system is being evaluated, test

results and similar information, and other data as necessary for the code official to determine conformance to this code.

[H] 107.2.5.1 Evaluation Service

The code official shall designate the evaluation service of an approved agency as the evaluation agency, and review such agency's evaluation report for adequacy and conformance to this code.

[H] 107.2.5.2 Follow-up Inspection

Except where ready access is provided to all electrical systems, service equipment and accessories for complete inspection at the site without disassembly or dismantling, the code official shall conduct the frequency of in-plant inspections necessary to ensure conformance to the approved evaluation report or shall designate an independent, approved inspection agency to conduct such inspections. The inspection agency shall furnish the code official with the follow up inspection manual and a report of inspections upon request, and the electrical system shall have an identifying label permanently affixed to the system indicating that factory inspection shave been performed.

[H] 107.2.5.3 Test and Inspection Records

All required test and inspection records shall be available to the code official at all times during the fabrication of the electrical system and the erection of the building, or such records as the code official designates shall be filed.

[H] 107.3 Special Inspections

Special inspections of alternative engineered design electrical systems shall be conducted in accordance with Sections 107.3.1 and 107.3.2.

[H] 107.3.1 Periodic Inspection

The registered design professional or designated inspector shall periodically inspect and observe the alternative engineered design to determine that the installation is in accordance with the approved construction documents. All discrepancies shall be brought to the immediate attention of the electrical contractor for correction. Records shall be kept of all inspections.

[H] 107.3.2 Written Report

The registered design professional shall submit a final report in writing to the code official upon completion of the installation, certifying that the alternative engineered design conforms to the approved construction documents. A notice of approval for electrical system shall not be issued until a written certification has been submitted.

[H] 107.4 Testing

Electrical work and systems shall be tested as required by this code and in accordance with Sections 107.4.1 through 107.4.3. Tests shall be made by the permit holder and observed by the code official.

[H] 107.4.1 new, Altered, Extended or Repaired Systems

New electrical systems and parts of existing systems that have been altered, extended or repaired shall be inspected and tested as required by the code official.

[H] 107.4.2 Equipment, Material and Labor for Tests

All equipment, material and labor required for testing a electrical system or part thereof shall be furnished by the permit holder.

[H] 107.4.3 Reinspection and Testing

Where any work or installation does not pass any initial test or inspection, the necessary corrections shall be made to comply with this code. The work or installation shall then be resubmitted to the code official for inspection and testing.

[H] 107.5 Approval

After the prescribed tests and inspections indicate that the work complies in all respects with this code, a notice of approval shall be issued by the code official.

[H] 107.5.1 Revocation

The code official is authorized to, in writing, suspend or revoke a notice of approval issued under the provisions of this code wherever the notice is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure, premise or portion thereof is in violation of any ordinance or regulation or any of the provision of this code.

[H] 107.6 Temporary Connection

The code official is authorized to, in writing, suspend or revoke a notice of approval issued under the provision of this code wherever the notice issued in error, or on the basis of incorrect information supplied, or where it is determined that the build or structure, premise or portion thereof is in violation of any ordinance or regulation or any of the provision of this code.

[H] 107.7 Connection of Service Utilities

A person shall not make connections from a utility, source of energy, or power system to any building or system that is regulated by this code for with a permit is required until authorized by the code official.

[H] 108 VIOLATIONS

[H] 108.1 Unlawful Acts

It shall be unlawful for any person, firm or corporation to erect, construct, alter, repair, remove, demolish or utilize any electrical system, or cause same to be done, in conflict with or in violation of any of the provisions of this code.

[H] 108.2 Notice of Violation

The code official shall serve a notice of violation or order to the person responsible for the erection, installation, alteration, extension, repair, removal or demolition of electrical work in violation of the provisions of this code, or in violation of a detail statement or the approved construction documents thereunder, or in violation of a permit or certificate issued under the provisions of this code. Such order shall direct the discontinuance of the illegal action or condition and the abatement of the violation.

[H] 108.3 Prosecution of Violation

If the notice of violation is not complied with promptly, the code official shall request the legal counsel of the jurisdiction to institute the appropriate proceeding at law or in equity to restrain, correct or abate such violation, or to require the removal or termination of the unlawful occupancy of the structure in violation of the provisions of this code or of the order or direction made pursuant thereto.

[H] 108.4 Violation Penalties

Any person who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter or repair electrical work in violation of the *approved* construction documents or directive of the code official, or of a permit or certificate issued under the provisions of this code, shall be guilty of separate offenses for each day during which the violation is continued after notification.

[H] 108.5 Stop Work Orders

Upon notice form the code official, work on any electrical system that is being done contrary to the provision of this code or in a dangerous or unsafe manner shall immediately cease. Such notice shall be in writing and shall be given to the owner of the property, or that owner's agent, or to the person doing the work. The notice shall state the conditions under which work is authorized to resume. Where an emergency exists, the code official shall not be required to give a written notice prior to stopping the work. Any person who shall continue any work in or about the structure after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be liable to a fine as required herein by this code.

[H] 108.6 Abatement of Violation

The imposition of the penalties herein prescribed shall not preclude the legal officer of the jurisdiction from instituting appropriate action to prevent unlawful construction or to restrain, correct or abate a violation, or to prevent illegal occupancy of a building, structure or premise, or to stop an illegal act, conduct, business or utilization of the electrical system on or about an premises.

[H] 108.7 Unsafe Electrical Systems

Any electrical system regulated by this code that is unsafe or that constitutes a fire or health hazard, or is otherwise dangerous to human life is hereby declared unsafe. Any use of electrical systems regulated by this code constituting a hazard to safety, health or public welfare by reason of

inadequate maintenance, dilapidation, obsolescence, fire hazard, disaster, damage or abandonment is hereby declared an unsafe used. Any such unsafe electrical system is hereby declared to be a public nuisance and shall be abated by repair, rehabilitation, demolition or removal.

[H] 108.7.1 Authority to Condemn Equipment

Whenever the code official determines that any electrical system, or portion thereof, regulated by this code has become hazardous to life, health or property the code official shall order in writing that such electrical system either be removed or restored to a safe conditions. A time limit for compliance with such order shall be specified in the written notice. No person shall use or maintain a defective electrical system after receiving such notice. When such electrical system is to be disconnected, written notice as prescribed in Section 108.2 shall be given. In cases of immediate danger to life or property, such disconnection shall be made immediately without notice.

[H] 108.7.2 Authority to Disconnect Service Utilities

The code official shall have the authority to authorize disconnection to utility service to the building, structure or system regulated by the technical codes in case of an emergency, where necessary, to eliminate an immediate danger to life or property. Where possible, the owner or occupant of the building, structure or service system shall be notified of the decision to disconnect utility service prior to taking such action. If not notified prior to disconnecting, the owner or occupant of the building, structure or service systems shall be notified in writing, as soon as practical thereafter.

[H] 108.7.3 Connection after Order to Disconnect

No person shall make connections from any energy or power supply system or supply energy or power supply to any equipment regulated by this code that has been disconnected or ordered to be disconnected by the code official or the use of which has been ordered to be discontinued by the code official until the code official authorizes the reconnection and use of such equipment. When any electrical system is maintained in violation of this code, and in violation of any notice issued pursuant to the provisions of this section, the code official shall institute any appropriate action to prevent, restrain, correct or abate the violation.

[H] 109 MEANS OF APPEAL

[H] 109.1 Application for Appeal

Any person shall have the right to appeal a decision of the code official to the board of appeals established by ordinance. The bard shall be governed by the Town of Lakewood Village's enabling ordinance.

End of Exhibit A

ADOPTION AND SUMMARY OF AMENDMENTS

Ordinance Number	Date	Summary
16-xx	October 13, 2016	• Removed ETJ
15-13	August 13, 2015	• Removed amendments to Article 680 • Removed amendments to Annex G • Added Annex H
11-08	April 14, 2011	REPEALED

RESOLUTION NO. 16-XX

A RESOLUTION OF THE TOWN COUNCIL OF THE TOWN OF LAKEWOOD VILLAGE, TEXAS, ESTABLISHING PROCEDURES FOR REQUESTING AND RECEIVING OFFICIAL OPINIONS OF THE TOWN ATTORNEY.

Whereas, Local Government Code §51.012 authorizes the town council to adopt regulations that are necessary for the reasonable and prudent operation of government and, good order of the municipality; and

Whereas, Rule 1.12 of the Texas Disciplinary Rules of Professional Conduct establishes that the Town Attorney represents the Town of Lakewood Village and not individual members of the council, officers of the town, or town employees; and

Whereas, the Town Secretary is the custodian of all documents of the Town of Lakewood Village and is responsible for retaining documents in a manner consistent with the Local Government Records Act; and

Whereas, the Town Council wishes to adopt procedures for obtaining and retaining official opinions of the Town Attorney; and

NOW, THEREFORE, BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF LAKEWOOD, TEXAS:

Section 1. Eligible Requestors - All requests for an official opinion of the Town Attorney may only be made by the Mayor, Town Councilmembers, or the Town Secretary.

Section 2. Procedures - The Town Attorney shall provide the official opinion via email to the Town Secretary. Upon receipt, the Town Secretary shall promptly notify the Mayor and each Councilmember of the receipt of an opinion. Hard copies of the opinion shall be maintained at town hall.

Section 3. Attorney/Client Confidentiality – In order to maintain confidentiality, as required by law, the opinions of the Town Attorney shall only be available for review at Town Hall.

PASSED, APPROVED, AND RESOLVED this the 13th day of October, 2016.

_____
Dr. Mark E. Vargus
Mayor

ATTEST:

_____
Linda Asbell, TRMC
Town Secretary

LAKEWOOD VILLAGE TOWN COUNCIL

COUNCIL MEETING

SEPTEMBER 8, 2016

Council Members:
Dr. Mark Vargus, Mayor
Ed Reed – Mayor Pro-Tem
Clint Bushong
Gary Newsome
Ray Duff
Dan Tantalo

Town Staff:
Linda Asbell, TRMC, Town Secretary

REGULAR SESSION - 7:00 P.M.

With a quorum of the Council Members present, Mayor Vargus called the Regular Session of the Town Council to order at 7:00 p.m. on Thursday, September 8, 2016, in the Council Chambers of the Lakewood Village Town Hall, 100 Highridge Drive, Lakewood Village, Texas.

PLEDGE TO THE FLAG: (Agenda Item A)

Mayor Vargus led the Pledge of Allegiance

PRESENTATION: (Agenda Item B)

Mayor Vargus presented a proclamation designating September 17 – 23, 2016 as Constitution week. The presentation was received by a representative of the Prestonwood Chapter of the Daughters of the American Revolution

PUBLIC HEARING: (Agenda Item C)

A public hearing was held to provide an opportunity for citizens to comment on the proposed combined property tax rate of $0.30/$100. Mayor Vargus opened the public hearing at 7:02 p.m.

Citizens thanked council for keeping the taxes low. Mayor Vargus explained the difference between the effective, actual, and roll-back tax rates. Both Mayor Vargus and Councilman Duff stressed the importance of citizens being diligent about identifying their billing addresses to show Lakewood Village so the sales taxes collected are directed to the Town of Lakewood Village rather than the Town of Little Elm.

MOTION: Upon a motion made by Councilman Newsome and seconded by Councilman Bushong, council voted five (5) "ayes", no (0) "nays" to close the public hearing at 7:10pm. *The motion carried.*

PUBLIC HEARING: **(Agenda Item D)**

A public hearing was held to provide an opportunity for citizens to comment on the proposed nuisance ordinance restricting the placement of bulk trash for pick-up earlier than 10 days prior to the date of bulk trash collection. Mayor Vargus opened the public hearing at 7:03.

Mayor Vargus stated that the council has adopted an unofficial policy to discuss a proposed ordinance at one council meeting, and hold a public hearing at a second council meeting prior to adopting the ordinance. Mayor Vargus reviewed the proposed restrictions on placement of bulk trash.

Mr. Bill Schoknect asked about a provision that would allow some exception for special conditions. Council indicated that special conditions like storm damage would be enforced on a case by case basis.

MOTION: Upon a motion made by Mayor Pro-Tem Reed and seconded by Councilman Duff, council voted five (5) "ayes", no (0) "nays" to close the public hearing at 7:16pm. *The motion carried.*

PUBLIC HEARING: **(Agenda Item E)**

A public hearing was held to provide an opportunity for citizens to comment on the proposed water and wastewater impact fees. Mayor Vargus opened the public hearing at 7:03.

Mayor Vargus reviewed the Capital Improvement Action Committees progress in reviewing the components that go into determining the impact fees.

Councilman Newsome explained what impact fees are. Councilman Bushong reported the difference between impact fees and tap fees.

No one asked to speak.

MOTION: Upon a motion made by Councilman Bushong and seconded by Councilman Tantalo, council voted five (5) "ayes", no (0) "nays" to close the public hearing at 7:23pm. *The motion carried.*

VISITOR/CITIZENS FORUM: **(Agenda Item F)**

Joni Lehan, 750 Carrie Lane, asked for an update on the status of development by LandPlan. Mayor Vargus reported that LandPlan has not indicated that they are ready to start.

Michael Neal, 530 Highridge, asked about the status of the sewer line repair on Highridge Lane. Mayor Vargus reported that the sewer line in that area has collapsed and the town is coordinating equipment and setting up to make the repair.

CONSENT AGENDA: (Agenda Item G)

1. Minutes of August 11, 2016 Council Meeting (Asbell)
2. Extension of Contract with Patterson Professional Services through September 30, 2019 (Asbell)

MOTION: Upon a motion made by Councilman Newsome and seconded by Councilman Ray Duff, council voted five (5) "ayes", no (0) "nays" to approve consent items as presented. *The motion carried.*

REGULAR AGENDA: (Agenda Item H)

Consideration of Minutes of the July 14, 2016 Council Meeting (Asbell) (Agenda Item H.1)

Mayor Vargus reported that the Town Secretary was not in attendance at the July 14, 2016 meeting. Council members took their own minutes, which resulted in the Town Secretary trying to piece the minutes together from the notes of several people. Councilman Bushong stated that the minutes the Town Secretary provides is over and above the minimum legal requirements. Councilman Bushong stated he recommends the minutes for the July 14, 2016 be "action only" minutes. Mayor Vargus reported that the Town Secretary currently composes minutes with abbreviated notes on the discussions to provide context for historical purposes. Most municipalities are working with minutes that are limited to only the actual actions taken by the council. There was some discussion about the possibility of recording meetings. Councilman Tantalo asked council if they would have approved the minutes as they were presented. There was some discussion about the circumstances of the minutes of the meeting being unusual due to the Town Secretary being absent.

MOTION: Upon a motion made by Councilman Duff and seconded by Mayor Pro-Tem Reed, council voted four (4) "ayes", one (1) "nays" (Councilman Tantalo) to approve the minutes showing only council actions. *The motion carried.*

Consideration of Variance Request for Lot 4, Block F, Section 1 (412 Hillside Drive) for Garage Location (Asbell) (Agenda Item H.2)

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Mayor Vargus reviewed the variance requested. Mayor Vargus reported on the requirements of side entry and garage door setback requirements. Mr. Baalman, property owner, stated that the drainage issues and the size of the lot makes it a challenge to accommodate a side entry garage. There was some discussion about the town desiring side entry garages and the opposition of neighbors to a front entry garage.

MOTION: Upon a motion made by Councilman Bushong and seconded by Councilman Newsome, council voted five (5) "ayes", no (0) "nays" to approve the variance request and allow the side entry garage to be no less than twenty-five feet from the property line and to disallow the request for a front entry garage. *The motion carried.*

Consideration of Ordinance Adopting the 2016 Property Tax Rate of $0.30/$100 (Asbell) **(Agenda Item H.3)**

There was some discussion about the difference between the effective tax rate and the actual tax rate. There was some discussion about any additional funds being spent on paying down the bond debt and other town expenses like playground improvements.

MOTION: Upon a motion made by Councilman Newsome and seconded by Councilman Duff, council voted four (4) "ayes", one (1) "nays" (Councilman Tantalo) to approve the combined tax rate of $0.30/$100. *The motion carried.*

Consideration of Ratification of Ordinance 16-08 Adopting the Fiscal Year 2016-2017 Budget (Asbell) **(Agenda Item H.4)**

Mayor Vargus explained the adoption process for tax rate and the budget. Mayor Vargus reviewed the components of the revenue raised by the ad valorem tax rate.

MOTION: Upon a motion made by Councilman Bushong and seconded by Mayor Pro-Tem Reed, council voted five (5) "ayes", no (0) "nays" to ratify Ordinance 10-08 adopting the Fiscal Year 2016-2017 budget. *The motion carried.*

Consideration of Authorizing Expenditures for Road Repairs (Vargus) **(Agenda Item H.5)**

Mayor Vargus reported that the town council has been working on compiling information needed to reconstruct Melody and Carrie Lanes. Councilman Newsome reviewed the proposals received and reported that Walt's Paving has provided the best option. Walt's Paving will remove damaged areas of the road, grind the road, install road base, compact, and then pave with asphalt providing a much better finished road. Action Paving's bid was to clean out damaged areas and fill with asphalt which would provide only a short-term repair. Mayor Vargus reported that the town has approximately $36,000 available in the Road Maintenance Fund which would allow the project to begin right away. There was some discussion about reconstructing Carrie Lane and Melody Lane only and return to address Highridge Lane at a later date. There was some discussion about the timing of ultimately reconstructing Melody Lane and Carrie Lane as concrete roads. There was some discussion about the longevity of the reconstruction. Council discussed having Walt's Paving mark the road to make clear the areas to be reconstructed.

MOTION: Upon a motion made by Mayor Pro-Tem Reed and seconded by Councilman Newsome, council voted five (5) "ayes", no (0) "nays" to authorize Mayor Vargus to engage Walt's Paving to reconstruct Melody and Carrie Lane's for an amount not to exceed $25,000. *The motion carried.*

Consideration of Nuisance Ordinance Related to Bulk Trash (Vargus) **(Agenda Item H.6)**

Mayor Vargus reviewed the proposed changes. There was some discussion about unusual circumstances like storm damage to trees. It was noted that a correction to the footer is required as well as the insertion of a reference to Exhibit A in the body of the ordinance.

MOTION: Upon a motion made by Councilman Bushong and seconded by Mayor Pro-Tem Reed, council voted five (5) "ayes", no (0) "nays" to approve the nuisance ordinance as discussed. *The motion carried.*

Consideration of Expenditure for Park Improvements (Vargus) **(Agenda Item H.7)**

Mayor Vargus reviewed a proposal to install a decorative fence around the playground area at Town Hall to provide an obstacle to slow children from freely running into the road. There was also some discussion on installing screening around the air conditioner at Town Hall. The total cost would be approximately $2,000. There was some discussion about getting bids on other styles and types of fencing.

Mayor Vargus reviewed a quote received for three 100-gallon Red Oak trees, which would be installed in the Town Hall park. There was some discussion about the need to have a site plan for the park and playground area before deciding on planting locations.

Discussion of Policy for Town Attorney Opinions (Vargus) **(Agenda Item H.8)**

Mayor Vargus reported that after discussions with the Town Attorney this is an issue that needs some clarification. There was discussion about the Town Attorney's client being the town and not individual council member or other officers of the town. Mayor Vargus reported that there is no attorney/client privilege between the town attorney and individual councilmembers. Councilman Tantalo stated he believe it is proper that any opinions the town attorney gives should be copied to the Town Secretary and each council member. Mayor Vargus reported that the Town Attorney needs direction from the town council on the policy council wants him to follow. There was some discussion about recent requests for attorney opinions and a length of time between when a requestor receives the opinion and when the town council receives a copy. There was some discussion on what distribution the council wants to adopt as a policy on attorney opinions received in the future. Town Secretary, Linda Asbell, reported that all documents/emails/etc. between the town and the town attorney are covered under attorney/client privilege and cannot be publically disclosed without specific permission.

Discussion of Policy for Accounting and Finance (Tantalo) **(Agenda Item H.9)**

Councilman Tantalo stated that he is very happy that steps have been taken to disclose our finances. Councilman Tantalo stated that he has been approached by citizens who have asked about terms like "financial engineering" which have been used. Councilman Tantalo reported that he would like to see more disclosure and clarity surrounding the use of those terms.

EXECUTIVE SESSION: **(Agenda Item I)**

Councilman Tantalo asked about the inclusion of 551.071 when the Town Attorney is not present. Mayor Vargus reported that often an exclusion is listed in the event that council needs to talk about an issue with the attorney but it does not necessarily indicate that every item listed will be discussed.

At 9:04 p.m. Mayor Vargus recessed into executive session in compliance with (1) § 551.071 Texas Government Code to wit: Consultation with the Town Attorney regarding pending or contemplated litigation, re: Town of Lakewood Village V. Harry Bizios; (2) § 551.072 Texas

Government Code to wit: deliberations about real property; and (3) § 551.087 Texas Government Code to wit: Economic Development Negotiations

RECONVENE: (Agenda Item J)

Mayor Vargus reconvened the regular session of the Lakewood Village Town Council at 9:21 pm. No action was taken.

COUNCIL AND STAFF COMMENTS (Agenda Item K)

Mayor Vargus reported that the town will be closing on the 665 Woodcrest property on September 9, 2016.

Mayor Vargus reported that the impact fee public hearing will be on September 22nd. There will be discussion on the Well Feasibility Study at that council meeting.

Councilman Newsome reported that he understands that Councilman Tantalo has a concern about councilmen discussing town business together. Councilman Newsome stated that legally there is not a problem with two councilmembers talking together. Councilman Newsome reported that he would like to see a future agenda item about providing a "mentor councilmember" to assist new councilmembers.

Mayor Vargus reported that the Town Attorney has recommended the town remove all references to the extra territorial jurisdiction from all building ordinances.

Councilman Tantalo stated that he appreciates the council meeting only lasting two hours and reported that he has been talking with Town Secretary, Linda Asbell, about a process for making all ordinances available online.

ADJOURNMENT (Agenda Item L)

MOTION: Upon a motion made by Councilman Bushong and seconded by Councilman Duff council voted five (5) "ayes" and no (0) "nays" to adjourn the Regular Session of the Lakewood Village Town Council at 9:27 p.m. on Thursday, September 8, 2016. The motion carried.

These minutes approved by the Lakewood Village Town Council on the 13th day of October 2016.

APPROVED

_____
Dr. Mark E. Vargus
MAYOR

ATTEST:

_____
Linda Asbell, TRMC
TOWN SECRETARY

LAKEWOOD VILLAGE TOWN COUNCIL

COUNCIL MEETING

SEPTEMBER 22, 2016

Council Members:
Dr. Mark Vargus, Mayor - ABSENT
Ed Reed – Mayor Pro-Tem
Clint Bushong
Gary Newsome
Ray Duff
Dan Tantalo

Town Staff:
Linda Asbell, TRMC, Town Secretary

SPECIAL SESSION - 7:00 P.M.

With a quorum of the Council Members present, Mayor Pro-Tem Reed called the Special Session of the Town Council to order at 7:00 p.m. on Thursday, September 22, 2016, in the Council Chambers of the Lakewood Village Town Hall, 100 Highridge Drive, Lakewood Village, Texas.

PLEDGE TO THE FLAG: **(Agenda Item A)**

Mayor Pro-Tem Reed led the Pledge of Allegiance

PUBLIC HEARING: **(Agenda Item B)**

A public hearing was held to provide an opportunity for citizens to comment on the Land Use Assumptions and Capital Improvements Plan for the Development of Water and Wastewater Impact Fees. Mayor Pro-Tem Reed opened the public hearing at 7:02 p.m.

Mr. Danny Cook, Carrie Lane, reported that the CIAC committee meeting went well. The next meeting is scheduled for October 7, 2016.

MOTION: Upon a motion made by Councilman Bushong and seconded by Councilman Newsome, council voted five (5) "ayes", no (0) "nays" to close the public hearing at 7:03pm. *The motion carried.*

VISITOR/CITIZENS FORUM: **(Agenda Item C)**

No one requested to speak.

REGULAR AGENDA: **(Agenda Item D)**

Consideration of Resolution Approving the Capital Improvements Plan and Land Use Assumptions for the Development of Water and Wastewater Impact Fees (Asbell) **(Agenda Item D.1)**

Councilman Bushong stated Kimley Horn did a good job preparing the study and providing accurate information. Councilman Tantalo asked how the population assumptions were calculated. Todd Strauss reported that he assumed three people per house which is a standard calculation. Councilman Tantalo asked if the Capital Improvement Plan will need to be changed if the proposed location of the sewer line needs to move due to development. Mr. Strauss stated the map indicates planned "trunk lines" and movement in one direction or another would not require a re-adoption of the impact fees. There was some discussion on different development possibilities. Councilman Bushong clarified that the council is required to review the impact fees every five years which would require involvement by the town engineers and participation by the Capital Improvement Plan Committee.

MOTION: Upon a motion made by Councilman Bushong and seconded by Councilman Duff, council voted five (5) "ayes", no (0) "nays" to approve the Resolution approving the Capital Improvements Plan and Land Use Assumptions for the Development of Water and Wastewater Impact Fees. *The motion carried.*

Consideration of Resolution setting November 10, 2016 for a Public Hearing on Impact Fees for Water and Wastewater Impact Fees (Asbell) **(Agenda Item D.2)**

MOTION: Upon a motion made by Councilman Bushong and seconded by Councilman Tantalo, council voted five (5) "ayes", no (0) "nays" to approve the resolution setting November 10, 2016 for a public hearing on impact fees for water and wastewater impact fees. *The motion carried.*

Discussion of Well Feasibility Study (Asbell) **(Agenda Item D.3)**

Councilman Bushong reported that council requested Kimley Horn to prepare a well feasibility study. Mr. Todd Strauss stated that the town will need another source of water and the town grows. Mr. Strauss reviewed the current well capacity of approximately 190 gallons per minute. Mr. Strauss reported that another well in the Woodbine aquifer is not recommended due to anticipated draw-down on the aquifer over the next 50 years. Another Paluxy well could be

located inside the current water plant confines but there is concern about draw-down due to three wells pulling from the same aquifer in such close proximity. The Trinity aquifer is very deep in this area and the water quality is not as good as the Paluxy aquifer. The capacity of a new Paluxy well would likely not provide enough water to meet the anticipated maximum water demand. The approximate cost of construction of a well on the current water system site is $740,000 for a Paluxy well and $1,300,0000 for a Trinity well. The approximate cost of construction of a well on the Town's property located at 665 Woodcrest is approximately $1,200,000 for a Paluxy well and $1,500,000 for a Trinity well. There was some discussion about the data used to complete the well study.

COUNCIL AND STAFF COMMENTS (Agenda Item E)

Town Secretary Linda Asbell reported that the Texas Municipal League conference is October 4th through October 7th, 2016.

ADJOURNMENT (Agenda Item F)

MOTION: Upon a motion made by Councilman Bushong and seconded by Councilman Duff council voted five (5) "ayes" and no (0) "nays" to adjourn the Special Session of the Lakewood Village Town Council at 8:27 p.m. on Thursday, September 22, 2016. The motion carried.

These minutes approved by the Lakewood Village Town Council on the 13th day of October 2016.

APPROVED

_____
Dr. Mark E. Vargus
MAYOR

ATTEST:

_____
Linda Asbell, TRMC
TOWN SECRETARY