DRAINAGE PLAN

LONG-HAYES COMMERCIAL ADDITION

TO

WICHITA, SEDGWICK COUNTY, KANSAS

PREPARED BY

Baughman
ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

26 SEPTEMBER 2008

ENGINEERING | SURVEYING | PLANNING
LANDSCAPE ARCHITECTURE

DRAINAGE PLAN
LONG-HAYES COMMERCIAL ADDITION

FINAL REPORT

Prepared by Baughman Company, P.A.
26 September 2008

By N. Brent Wooten, P.E.
Trevor R. Kurth, P.E.
Nicholas H. Jefferson, P.E.

REPORT CONTENTS

EXISTING CONDITIONS

The site is located at the southeast corner of 45th Street North and Ridge Road in Wichita, Kansas. The property is approximately 1.5 acres and currently is accessed off of Ridge Road. There is a house and a metal storage building located on the property as of this report. The site is relatively flat and sheet flows to the frontage roads as well as to the southeast corner. There are some existing trees located near the southeast corner of the property.

The site location is depicted on the USGS Quadrangle Sheet as Exhibit 1. The aerial photograph with existing topography can be seen as Exhibit 2.

There is no FEMA SFHA located on the property as of this report.

PROPOSED CONDITIONS

The proposed Long-Hayes Commercial Addition will consist of 2 lots with direct access to Ridge Road. The development will continue to sheet flow into the existing ROW as it does today. To our knowledge, Sedgwick County Public Works is currently designing a major improvement to Ridge Road which will include curb and gutter sections as well as storm water sewer pipe.

Due to the size of the proposed development – 1.5 acres – no detention is proposed on the site. There is also no discernable outlet for any planned detention facility and in our opinion, any detention area would create mosquito and ponding issues to surrounding properties.

There is no FEMA SFHA located on this property as of this report.

For a half scale copy of the Plat, see Exhibit 3.

OFFSITE CONDITIONS

The site is relatively flat, but tends to sheet flow its frontage to the adjacent ROW and approximately half the site to the southeast corner. There are currently ditch sections along both adjacent roadways. There does not appear to be any offsite runoff encroaching the property.

EXISTING CONDITIONS RUNOFF CALCULATIONS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in calculating the existing conditions runoff values.

- Ø STORM SERIES
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 100-yr Storm Events Modeled
  - 2-yr Rainfall Depth = 3.5 in
  - 5-yr Rainfall Depth = 4.5 in
  - 10-yr Rainfall Depth = 5.3 in
  - 25-yr Rainfall Depth = 6.1 in
  - 100-yr Rainfall Depth = 7.9 in

- Ø FLOW DATA
  - Existing Conditions runoff utilizing Rational Method
  - Areas per USGS Quadrangle Sheet, Aerial Photos, and Site Visits
  - Rational Method used for all flows
  - Rational Coefficient: 'C' = 0.61 (Type C Soils, Open Space – Good Condition)
  - Time of Concentration: Lag Method (15 min minimum)

SITE CHARACTERISTICS

The current site is a single-family residence with a metal storage building located to the east. The site is considered fair condition with grass and tree ground cover. The site is relatively flat and appears to sheet flow to the adjacent ROWs and to the southeast corner of the site. There does not appear to be any drainage problems currently with the site.
The Aerial Exhibit can be seen as Exhibit 2.

EXISTING CONDITIONS HYDROLOGIC ANALYSIS

The site was analyzed for pre-development conditions using the Rational Method for the 2, 5, 10, 25, and 100-year storm events. The Rational 'C' Coefficient of 0.61 was used due to the site currently being residential with existing structures. The site has ground cover that is considered in fair condition. The time of concentration was calculated using the Lag Method with a minimum time of concentration of 15 minutes.

DOWNSTREAM DRAINAGE CAPACITY

The site ultimately drains to the south in the Ridge Road ROW. There is a RCBC under K96 downstream and ROW ditch sections that convey the runoff to the south.

POST-DEVELOPMENT HYDROLOGIC ANALYSIS

DRAINAGE METHODS & STANDARDS

The following methods and standards, although not a complete list, were used in developing the drainage and grading plans.

- Ø STORM SERIES
  - 24-hour; 2-yr, 5-yr, 10-yr, 25-yr, 100-yr Storm Events Modeled
  - HydraFlow Hydrographs software for existing flows
  - Rational Method; 'C' = 0.80 (Type C Soils, Neighborhood Commercial)
  - Time of Concentration; Lag method, minimum Tc = 15min

- Ø GRADING CONSTRAINTS
  - Match grades along site perimeter
  - Emergency Overflows for 24-hr, 100-yr Storm Event

DETENTION FACILITIES

There is no detention proposed on this site. The site is 1.5 acres in total area and will only increase runoff by approximately 2 cfs in the 100-year storm event. We feel a detention facility would be pose maintenance issues in the future. A detention pond to serve this property would be very small and would likely have a natural overflow as an outlet. This facility would have to be maintained frequently as any weed or brush growth would hinder any detention.

DETENTION SUMMARY

No detention is proposed on this site. The site will increase runoff, mainly to the Ridge Road ROW by approximately 2 cfs in the 100-year storm event.

DISCHARGE POINTS SUMMARY

The site will increase the runoff to the southeast as well as the west in the Ridge Road ROW. The increase in runoff in the 100-year storm event is approximately 2 cfs.

POTENTIAL UPSTREAM/DOWNSTREAM IMPACTS

There does not appear to be any negative drainage impacts with the development of this property. The site will increase runoff directly offsite by 2 cfs. This does not appear to affect any neighboring properties or inundate any existing SWS systems in the area. This increase in runoff appears to be inconsequential to the overall drainage in the area.

SOURCE OF FLOODPLAIN INFORMATION

There is no FEMA SFHA located on this property as of this report. The location of the property, on FEMA FIRM Panel 195 of 700 for Sedgwick County, Kansas, effective date February 2, 2007 is attached as Exhibit 5.

FEDERAL, STATE, & LOCAL PERMITTING

US ARMY CORPS OF ENGINEERS
We do not expect any USACOE permitting at this time.

KANSAS DEPT OF AGRICULTURE – DWR PERMITTING
We do not expect any DWR permitting at this time.

FEMA
No FEMA SFHA exists on this property and we do not expect any FEMA permitting at this time.

KANSAS DEPT OF TRANSPORTATION
There does not appear to be any KDOT permitting needed on the proposed project.

SEDGWICK COUNTY ROW
A permit for runoff to discharge into the County ROW will need to be provided at the time of development.

EXHIBIT 1: Site Location Map

EXHIBIT 2: Aerial Photo Exhibit with Topography

EXHIBIT 3: Plat – Half Scale

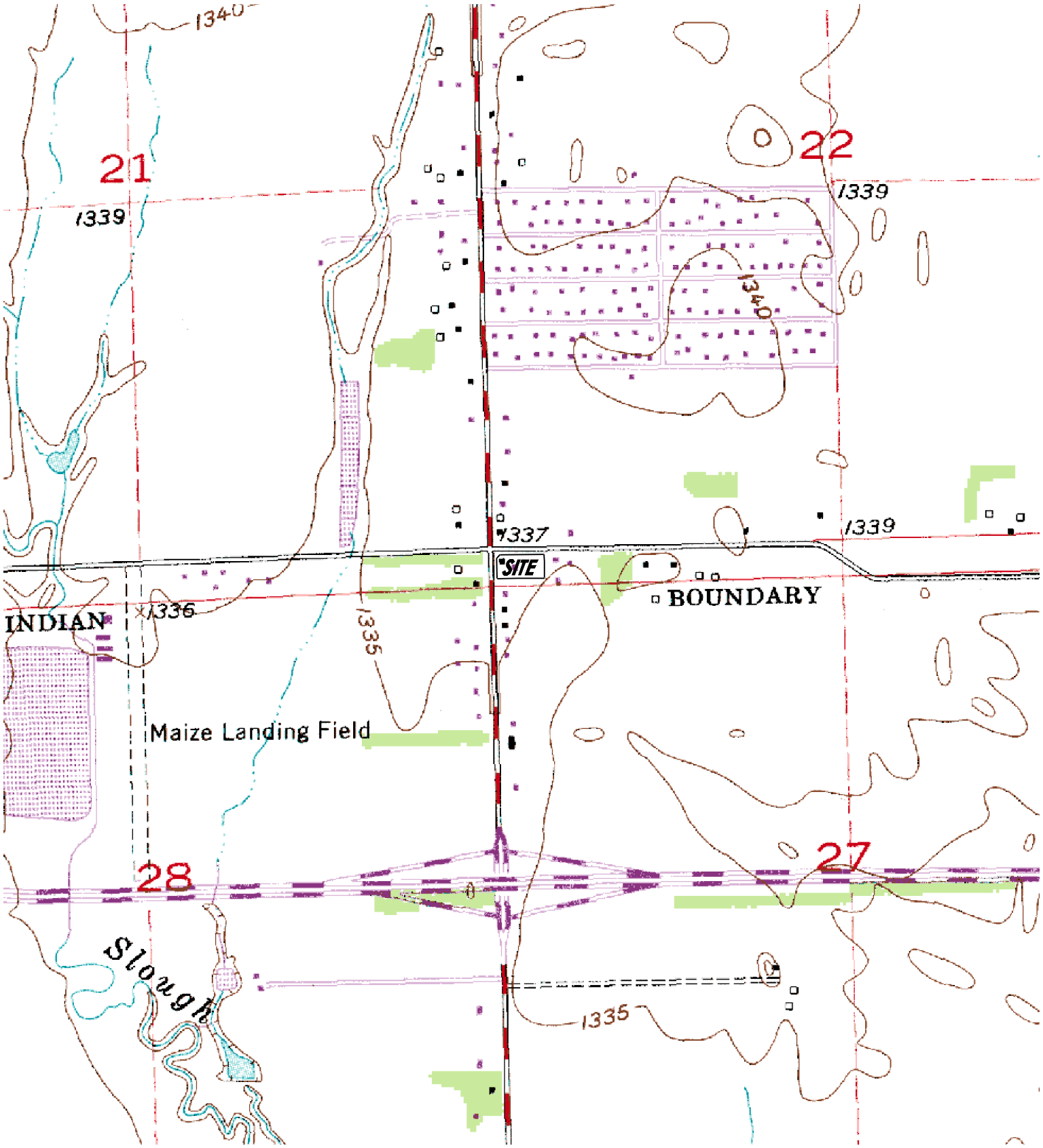
EXHIBIT 4: Drainage & Grading Plan – Half Scale

EXHIBIT 5: Floodplain Location (FIRM)

SITE LOCATION EXHIBIT

LONG-HAYES COMMERCIAL ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS



0 500 1000

DATE OF PREPARATION: 26 SEPT 2008

EXHIBIT 1
LONG-HAYES COMMERCIAL ADDITION
26 SEPT 2008

Baughman Company, P.A.
315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

AERIAL EXHIBIT

LONG-HAYES COMMERCIAL ADDITION

WICHITA, SEDGWICK COUNTY, KANSAS

0 50 100

DATE OF PREPARATION: 26 SEPT 2008

EXHIBIT 2
LONG-HAYES COMMERCIAL ADDITION
26 SEPT 2008

Baughman Company, P.A.
315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
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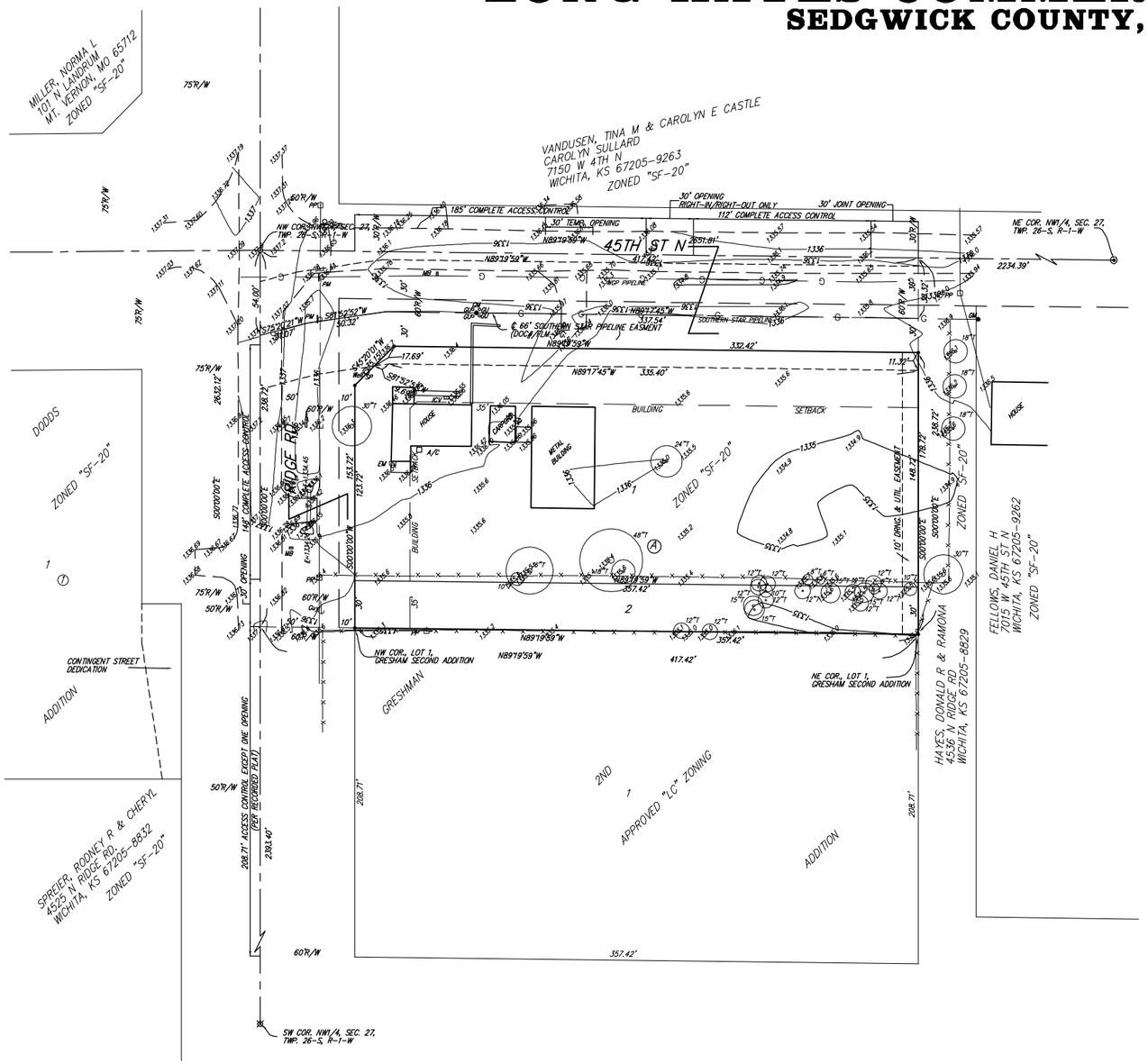
ONE-STEP FINAL PLAT

LONG-HAYES COMMERCIAL ADDITION

SEDGWICK COUNTY, KANSAS



0 40 80

DATE OF PREPARATION: 15 SEPTEMBER 2008
DATE OF TOPOGRAPHY: 18 JUNE 2008
CONTOUR INTERVALS = 1 FOOT

NOTE:
A drainage plan has been developed for this subdivision and is on file with the City of Wichita, Kansas. Drainage intent shall remain as depicted or as modified with the approval of the City Engineer of the City of Wichita, Kansas. No obstructions which impede the flow of this drainage plan shall be allowed.

OWNERS:
JAMES LONG
4530 N RIDGE RD
WICHITA, KS 67205
316-722-8655

DONALD R. & RAMONA HAYES
4536 N. RIDGE ROAD
WICHITA, KS 67205
316-721-3259

• = #4 REBAR W/ "BAUGHMAN" CAP (SET)
◉ = STONE (FOUND)
⊠ = "CROSS" (FOUND)
○ = 1/2" IRON (FOUND)

(M) = MEASURED
(D) = DESCRIBED
(P) = PLATTED
(C) = CALCULATED

VICINITY MAP
SEC. 27, T26S, R1W

State of Kansas)
Sedgwick County) SS

We, Baughman Company, P.A., Surveyors in aforesaid county and state do hereby certify that we have surveyed and platted "LONG-HAYES COMMERCIAL ADDITION", Sedgwick County, Kansas and that the accompanying plat is a true and correct exhibit of the property surveyed, described as a tract beginning at the NW corner of the NW1/4, also known as the NW corner of Government Lot 6 in Sec. 27, Twp. 26-S, R-1-W of the 6th P.M., Sedgwick County, Kansas; thence east, 417.42 feet; thence south, 208.72 feet; thence west, 417.42 feet; thence north, 208.72 feet to the point of beginning, together with that part of Government Lot 6 in Sec. 27, Twp. 26-S, R-1-W of the 6th P.M., Sedgwick County, Kansas described as follows: Commencing at the NW corner of said Government Lot 6; thence southerly along the west line of Government Lot 6, 208.72 feet to the SW corner of a tract of land described in Kansas Warranty Deed, (Film 2800, Page 1664); thence easterly along the south line of said tract of land, 417.42 feet to the SE corner of said tract of land; thence southerly, 30.00 feet to the NE corner of Lot 1, Gresham Second Addition, Sedgwick County, Kansas; thence westerly along the north line of said Lot 1, and as extended westerly, 417.42 feet to a point on the west line of said Government Lot 6; thence northerly along the west line of Government Lot 6, 30.00 feet to the point of beginning, subject to road rights-of-way of record.

Existing public easements and dedications being vacated by virtue of K.S.A. 12-512(b).

Baughman Company, P.A.

_____, Surveyor
Michael G. Conrey

Know all men by these presents that we, the undersigned, have caused the land in the surveyors certificate to be platted into Lots, A Block, and Streets, to be known as "LONG-HAYES COMMERCIAL ADDITION", Sedgwick County, Kansas. The utility easements are hereby granted as indicated for the construction and maintenance of all public utilities. The drainage and utility easements are hereby granted as indicated for drainage purposes and for the construction and maintenance of all public utilities. The drainage easements are hereby granted as indicated for drainage purposes. The streets are hereby dedicated to and for the use of the public. Access controls shall be as depicted on the face of the plat and are hereby granted to the City of Wichita, Kansas. The permitted opening locations shall be as determined by the City Engineer of the City of Wichita, Kansas. The 30 foot temporary access opening shall expire at such time as Lot 1, Block A is re-developed for commercial use.

_____
James Long

_____ _____
Donald R. Hayes Ramona Hayes

State of Kansas)
Sedgwick County) SS

The foregoing instrument acknowledged before me, this____day of _____, 2008, by James Long, a single person.

_____ Notary Public

My App't. Exp. _____

State of Kansas)
Sedgwick County) SS

The foregoing instrument acknowledged before me, this____day of _____, 2008, by Donald R. Hayes and Ramona Hayes, husband and wife.

_____ Notary Public

My App't. Exp. _____

This plat of "LONG-HAYES COMMERCIAL ADDITION", Sedgwick County, Kansas has been submitted to and approved by the Wichita-Sedgwick County Metropolitan Area Planning Commission, Wichita, Kansas.

Dated this ____ day of _____, 2008.
Wichita-Sedgwick County Metropolitan Area Planning Commission

_____, Chair
Darrell Downing

_____, Secretary
John L. Schlegel

This plat approved and all dedications shown hereon accepted by the Board of Commissioners of Sedgwick County, Kansas, this____day of_____, 2008.

_____, Chairman
Tom Winters

ATTEST: _____, County Clerk
Don Brace

This plat approved and all dedications shown hereon accepted by the City Council of the City of Wichita, Kansas, this____day of _____, 2008.

_____, Mayor
Carl Brewer

_____, City Clerk
Karen Sublett

Reviewed in accordance with K.S.A. 58-2005 on this_____day of _____, 2008.

_____
Tricia L. Robello, L.S. #1246
Deputy County Surveyor
Sedgwick County, Kansas

Entered on transfer record this_____day of _____, 2008.

_____, County Clerk
Don Brace

State of Kansas)
Sedgwick County) SS

This is to certify that this plat has been filed for record in the office of the Register of Deeds, this____day of_____, 2008 at_____o'clock___M; and is duly recorded.

_____, Register of Deeds
Bill Meek

_____, Deputy
Tonya Buckingham

LONG-HAYES COMMERCIAL ADDITION
15 SEPTEMBER 2008

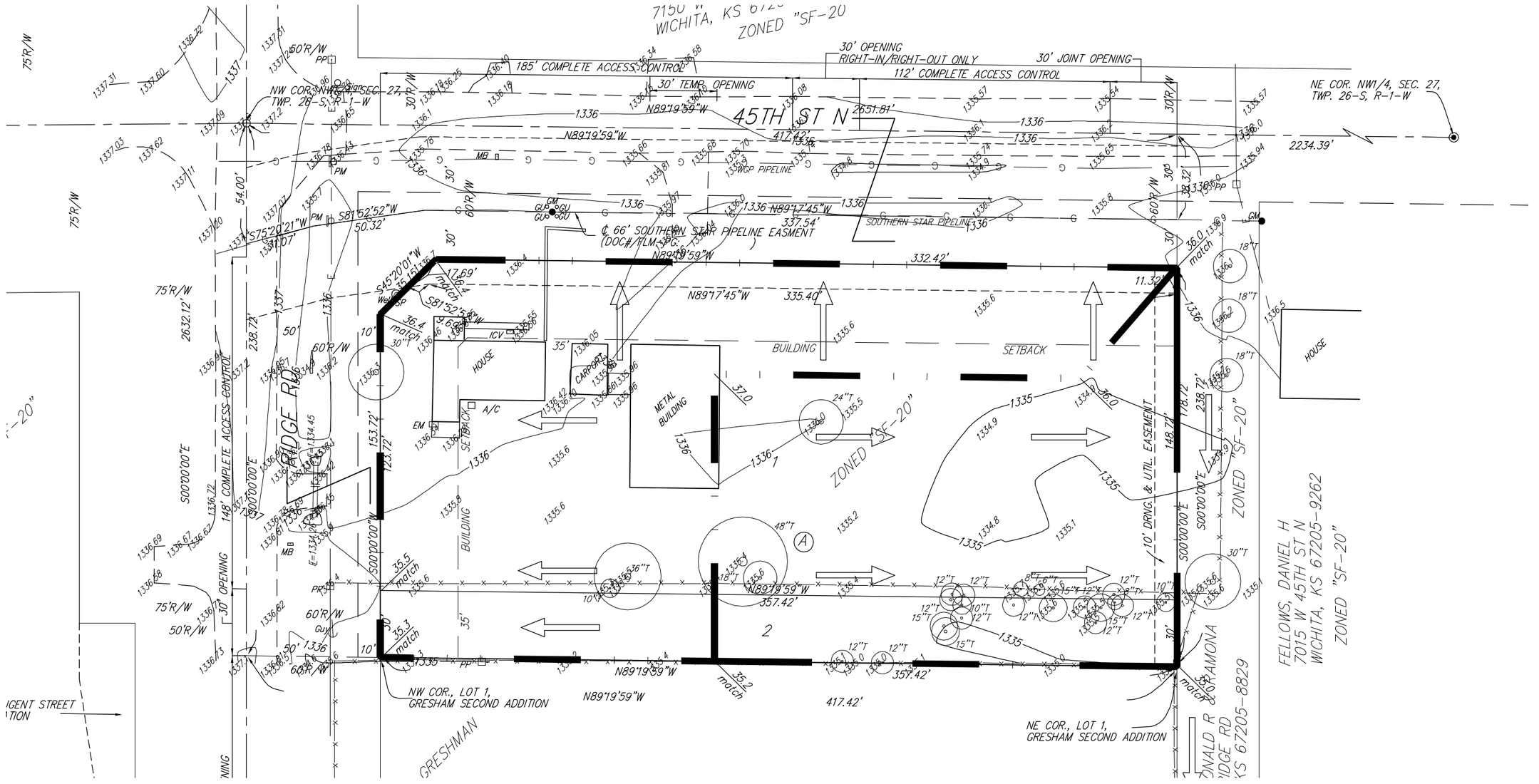
Baughman Company, P.A.
315 Ellis St. Wichita, KS 67211 P 316-262-7271 F 316-262-0149
Baughman ENGINEERING | SURVEYING | PLANNING | LANDSCAPE ARCHITECTURE

F:/PLAT/LONGCOMMERCIAL ADD/DWG/LONGP.DWG-RKR

DRAINAGE & GRADING PLAN

LONG-HAYES COMMERCIAL ADDITION

SEDGWICK COUNTY, KANSAS


7150 WICHITA, KS 6720
ZONED "SF-20
30' OPENING
RIGHT-IN/RIGHT-OUT ONLY
30' JOINT OPENING
185' COMPLETE ACCESS CONTROL
112' COMPLETE ACCESS CONTROL
30' TEMP. OPENING
NW COR. NW1/4, SEC. 27, TWP. 26-S, R-1-W
NE COR. NW1/4, SEC. 27, TWP. 26-S, R-1-W
45TH ST N
N89°19'59"W 2651.81'
N89°19'59"W 417.42'
2234.39'
75'R/W
50'R/W
60'R/W
30'R/W
MB
PM
PP
GM
GUY
OHP PIPELINE
SOUTHERN STAR PIPELINE
℄ 66' SOUTHERN STAR PIPELINE EASEMENT (DOC# /FILM-PG:)
S87°52'52"W 50.32'
S75°20'21"W 337.07'
S45°20'01"W 17.69'
N89°17'45"W 337.54'
N89°17'45"W 332.42'
N89°17'45"W 335.40'
11.32'
26.32.12'
238.72'
153.72'
123.72'
54.00'
50'
10'
35'
30'
36.4 match
30"T
ICV
HOUSE
CARPORT
BUILDING
SETBACK
METAL BUILDING
37.0
24"T
A/C
EM
SETBACK
RIDGE RD
S00°00'00"E
148' COMPLETE ACCESS CONTROL
30' OPENING
75'R/W
50'R/W
60'R/W
PR
Guy
35.5 match
35.3 match
35.2 match
N89°19'59"W 357.42'
N89°19'59"W 417.42'
NW COR., LOT 1, GRESHAM SECOND ADDITION
GRESHAM
NE COR., LOT 1, GRESHAM SECOND ADDITION
10' DRNG. & UTIL. EASEMENT
36.0 match
18"T
18"T
HOUSE
30"T
48"T
36"T
12"T
15"T
10"T
1335
1336
1337
1334.9
1335.6
1336.6
1337.6
1338.6
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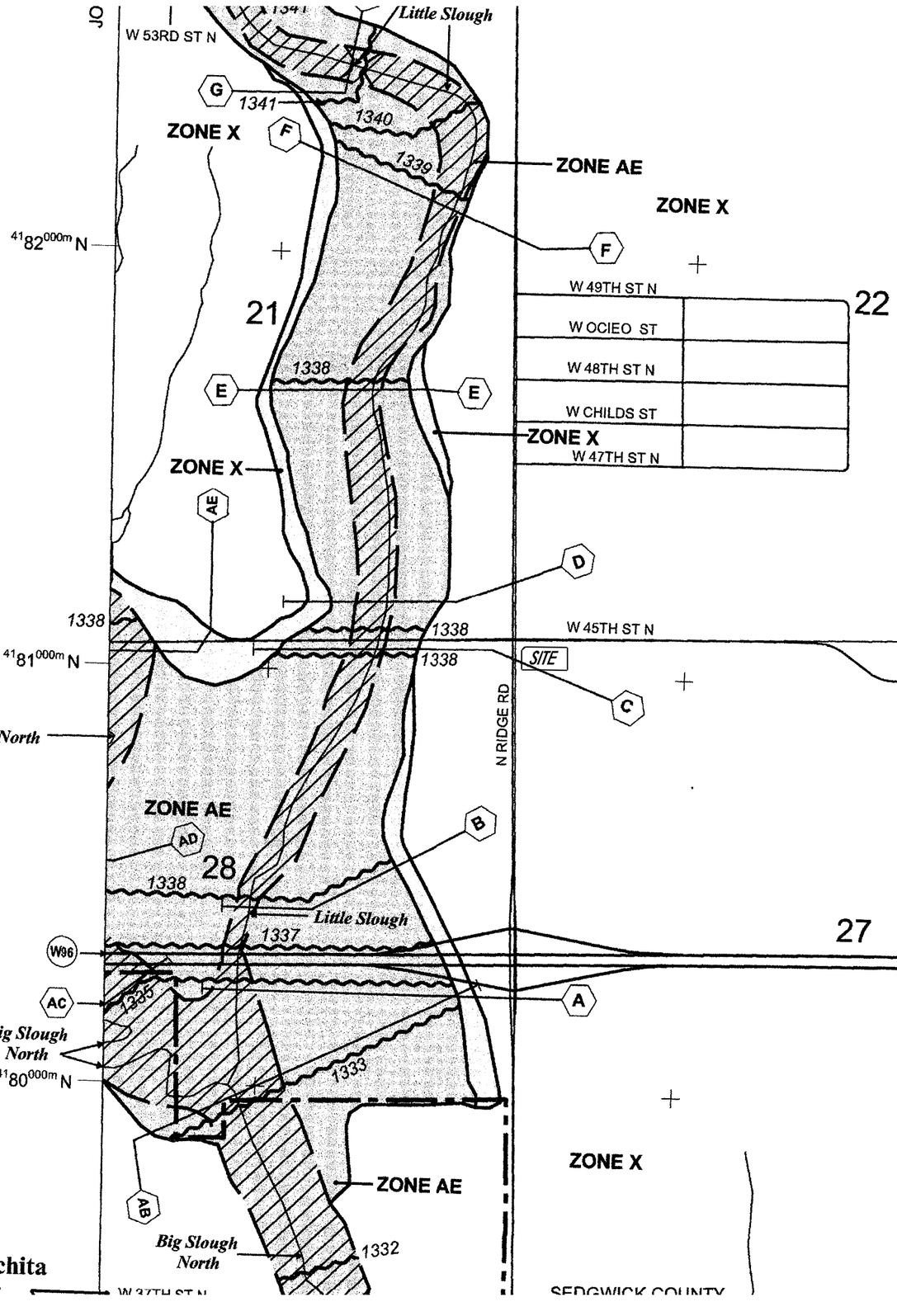
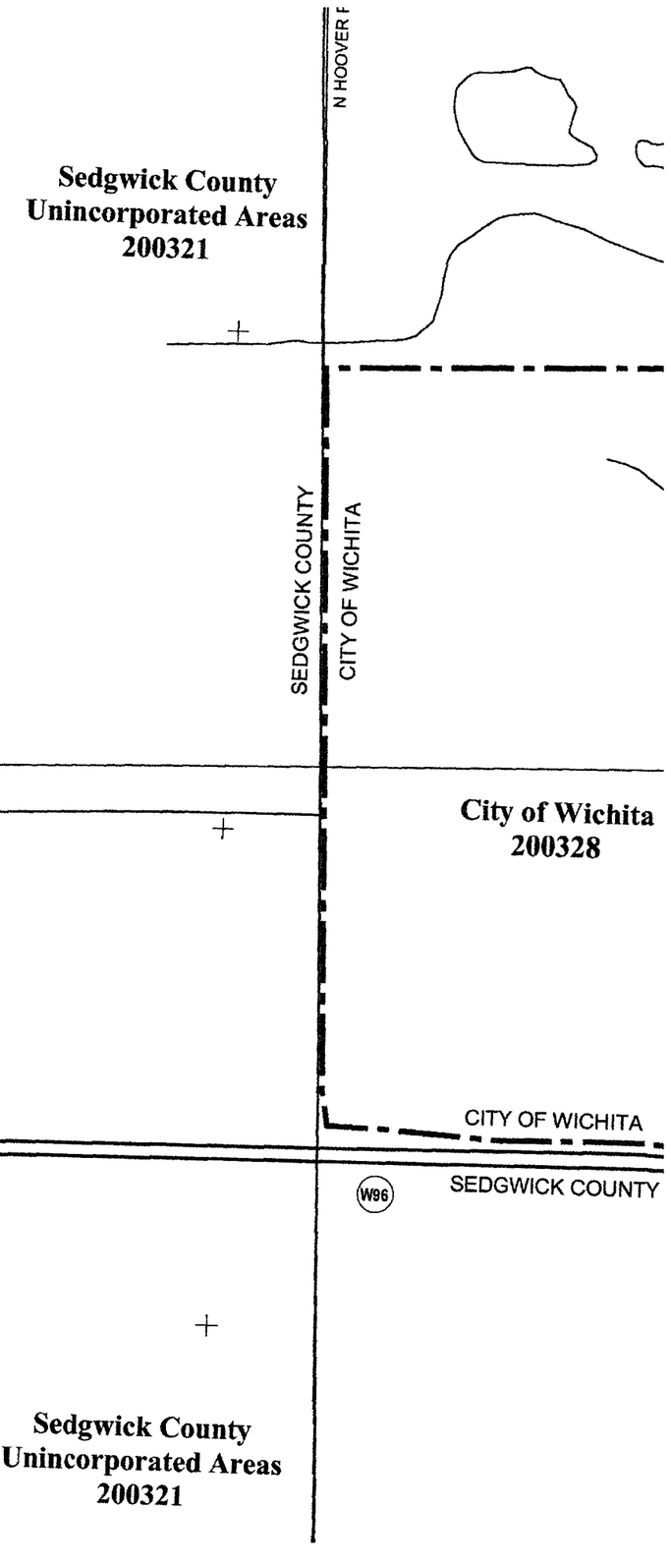
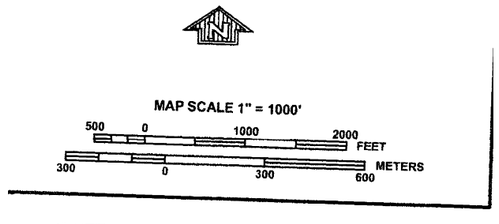






NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0195E

FIRM

FLOOD INSURANCE RATE MAP

SEDGWICK COUNTY, KANSAS
AND INCORPORATED AREAS

PANEL 195 OF 700

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SEDGWICK COUNTY	200321	0195	E
WICHITA, CITY OF	200328	0195	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

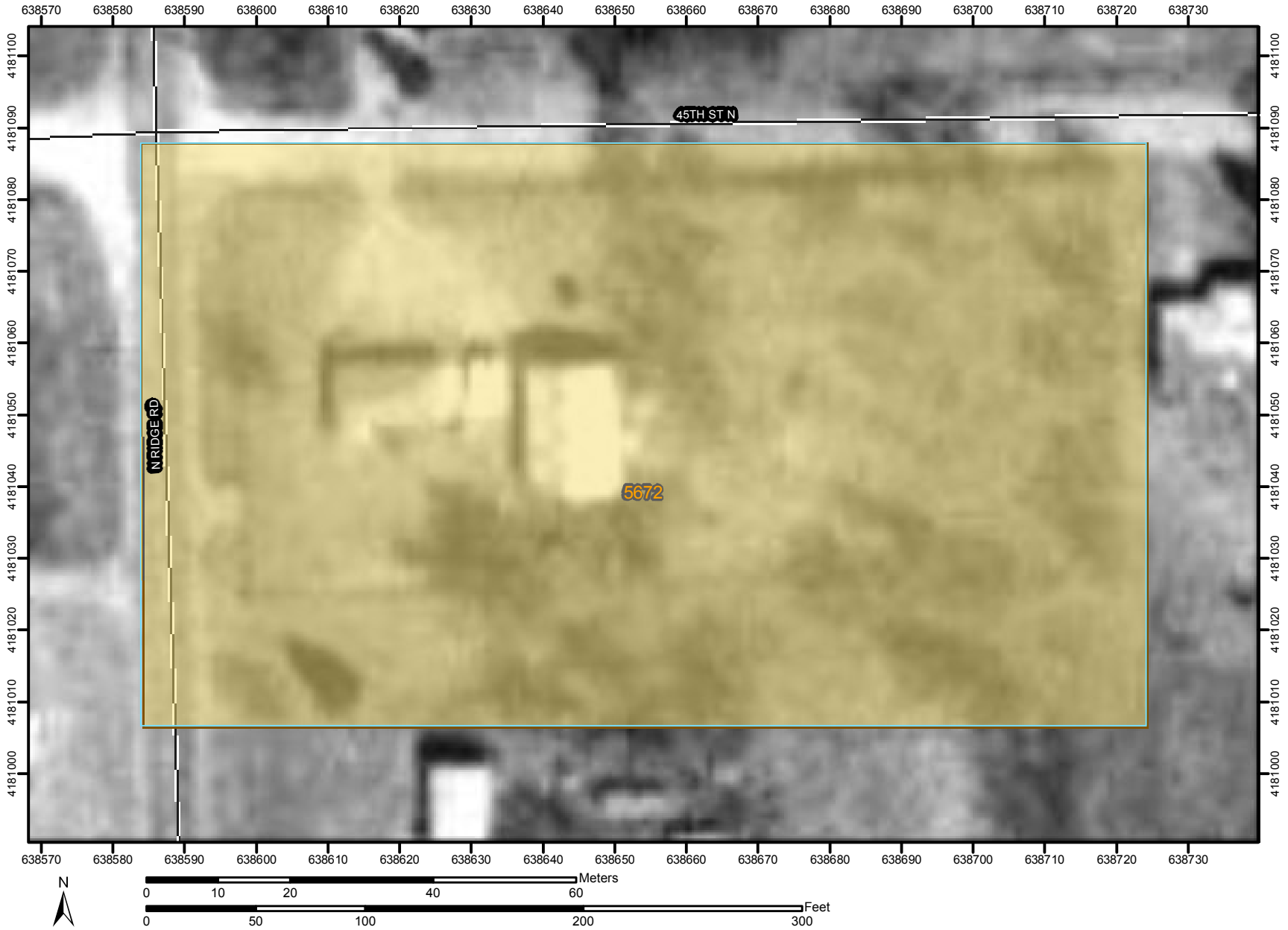
MAP NUMBER
20173C0195E

EFFECTIVE DATE
FEBRUARY 2, 2007

Federal Emergency Management Agency

APPENDIX A: USGS Soils Survey

USGS Soils Survey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638700
638710
638720
638730
4181100
4181090
4181080
4181070
4181060
4181050
4181040
4181030
4181020
4181010
4181000
45TH ST N
N RIDGE RD
5672
N
Meters
0
10
20
40
60
Feet
0
50
100
200
300

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Soil Ratings
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Political Features

Municipalities
- Cities
- Urban Areas

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails

Roads
- Interstate Highways
- US Routes
- State Highways
- Local Roads
- Other Roads

MAP INFORMATION

Original soil survey map sheets were prepared at publication scale. Viewing scale and printing scale, however, may vary from the original. Please rely on the bar scale on each map sheet for proper map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 14N

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Sedgwick County, Kansas
Survey Area Data: Version 4, Dec 29, 2007

Date(s) aerial images were photographed: 3/20/1996; 3/31/1996

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Sedgwick County, Kansas				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
5672	Waldeck sandy loam, occasionally flooded	C	2.8	100.0%
Totals for Area of Interest (AOI)			2.8	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Lower

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

DRAINAGE & GRADING PLAN Scale 1:120