



FRANKOMA CREEK AND INDUSTRIAL TRIBUTARY DRAINAGE SYSTEM

SAPULPA CITYWIDE MASTER DRAINAGE PLAN

JUNE 2010

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GEOGRAPHIC INFORMATION SYSTEMS

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SECTION 14. FRANKOMA AND INDUSTRIAL TRIBUTARY DRAINAGE SYSTEM

14.1. EXISTING CONDITIONS HYDROLOGY

The Frankoma Creek and Industrial Tributary Drainage System is generally located west of Brenner Road, north of E. Bird Avenue, east of N. Park Street and south of W. 68th Street. It is intersected by several important transportation routes, including U.S. Highway 44 and Old Sapulpa Road and New Sapulpa Road.

The Frankoma Creek and Industrial Tributary Drainage System were modeled together, since Industrial Tributary intersects with Frankoma Creek in the southeasterly part of the drainage system. Frankoma Creek then continues flowing southeasterly to join with North Polecat Creek. This drainage system with its subbasins is pictured in **FIGURE 14-1**.

The hydrologic soil groups for the Frankoma Creek and Industrial Tributary Drainage System are shown in **FIGURE 14-2**. Additional information on hydrologic soil groups can be found in **SECTION 2.1 HYDROLOGIC ANALYSIS**.

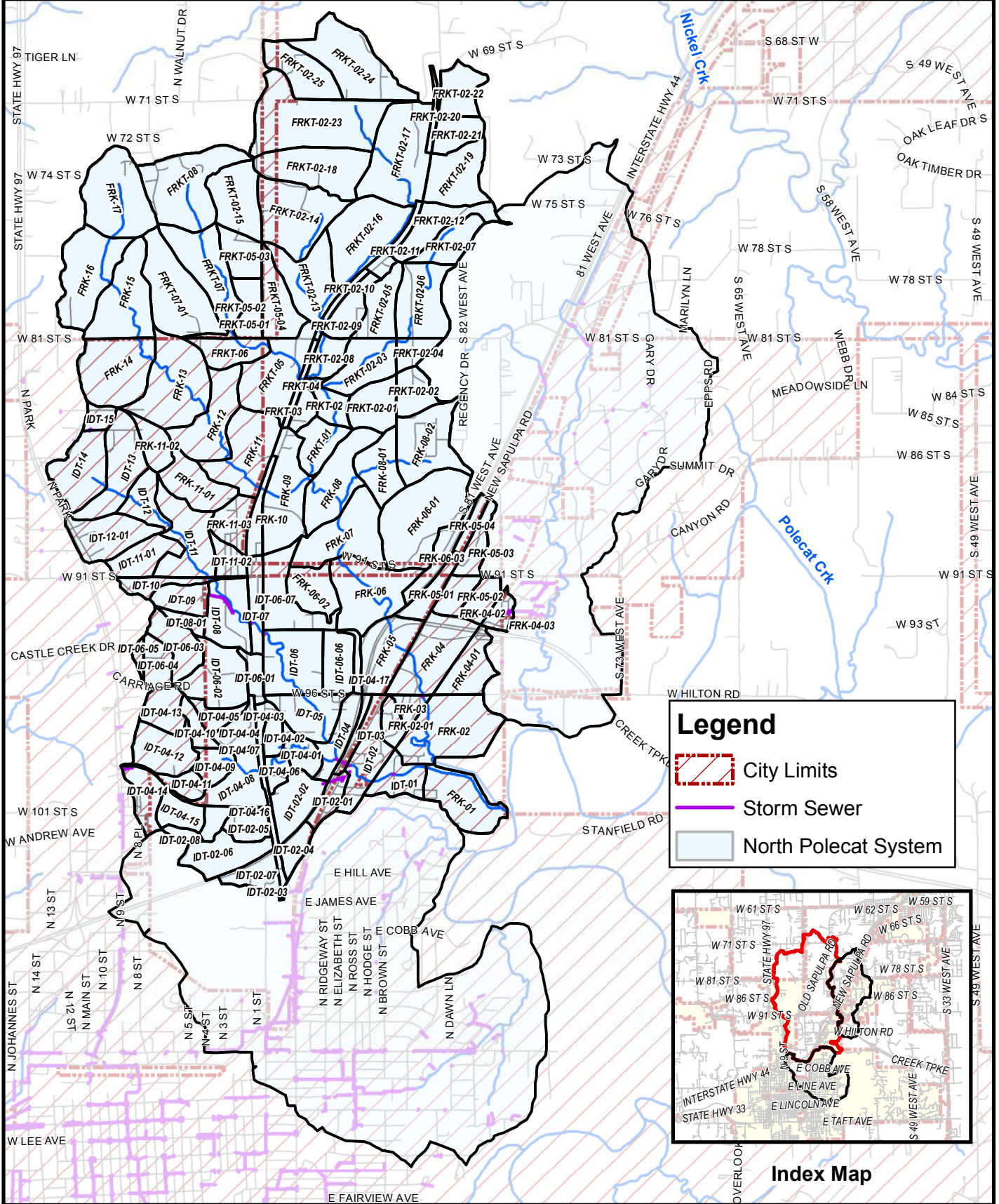
The existing land use for the Frankoma Creek and Industrial Tributary Drainage System has been identified in **FIGURE 14-3**. In general, the majority of the drainage system is under developed and is currently used as open space, such as pastureland, woods and forests. Industrial sites compose the next largest category of land use with residential usage after that. Residential lots vary in size from about one acre to about 0.25 acre. Finally, a few small commercial uses exist in the drainage system in that area mainly bound by U.S. Highway 44, E. Hilton Road, S. 97th West Avenue and what would be the Creek Turnpike if the turnpike extended further west.

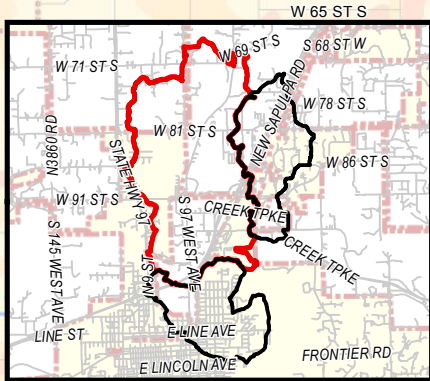
The hydrologic coefficients used for input in the HEC-HMS model include the drainage area, the lag time and the soil complex curve number (CN). A summary of hydrologic coefficients is tabulated in **TABLE 14-1** with more detailed data available in **APPENDIX 14-A**.

This drainage system was modeled using HEC-HMS to develop the flow rates for the existing conditions. The HEC-HMS schematic can be found in **APPENDIX 14-B**. A complete list of the flow rates for the existing conditions is available in **APPENDIX 14-C**. **TABLE 14-2** shows the resulting flow rates at major junctions for the drainage system.

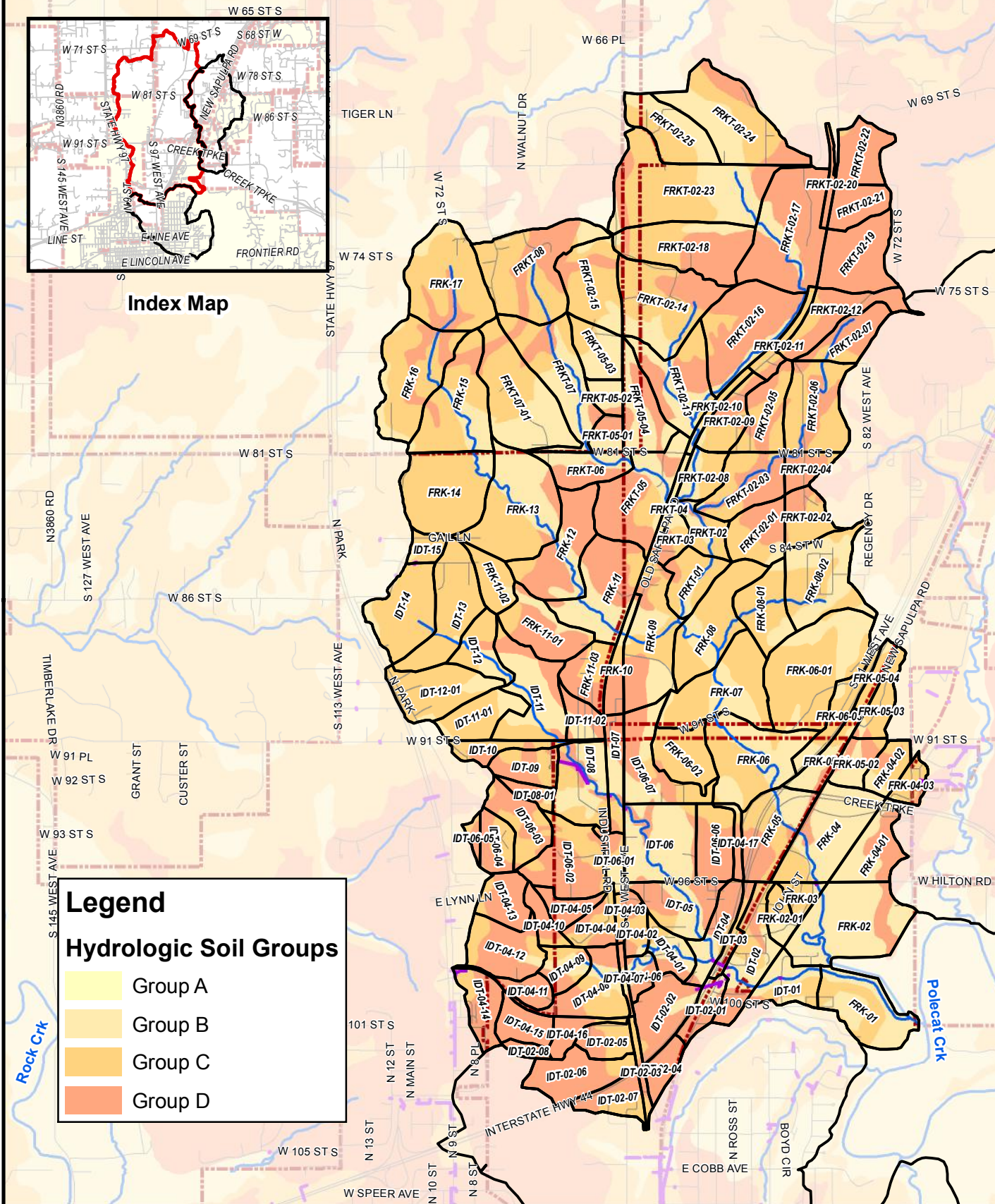
14.2. EXISTING CONDITIONS HYDRAULICS

Because this drainage system is largely undeveloped, a HEC-RAS model was used to study the floodplains. The 2-, 10-, 100- and 500-year floodplains for the drainage area were mapped and can be found in **FIGURE 14-4** with a greater level of detail available in **APPENDIX 14-D**. The resulting water surface profiles for each frequency for this drainage system are presented in **APPENDIX 14-E**.





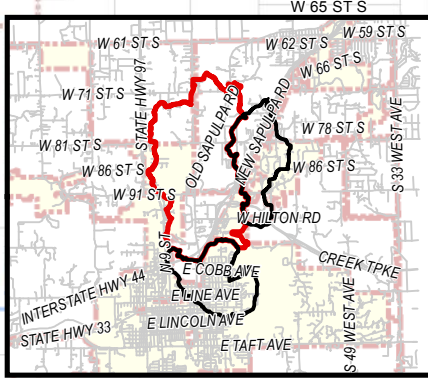
Index Map



Legend

Hydrologic Soil Groups

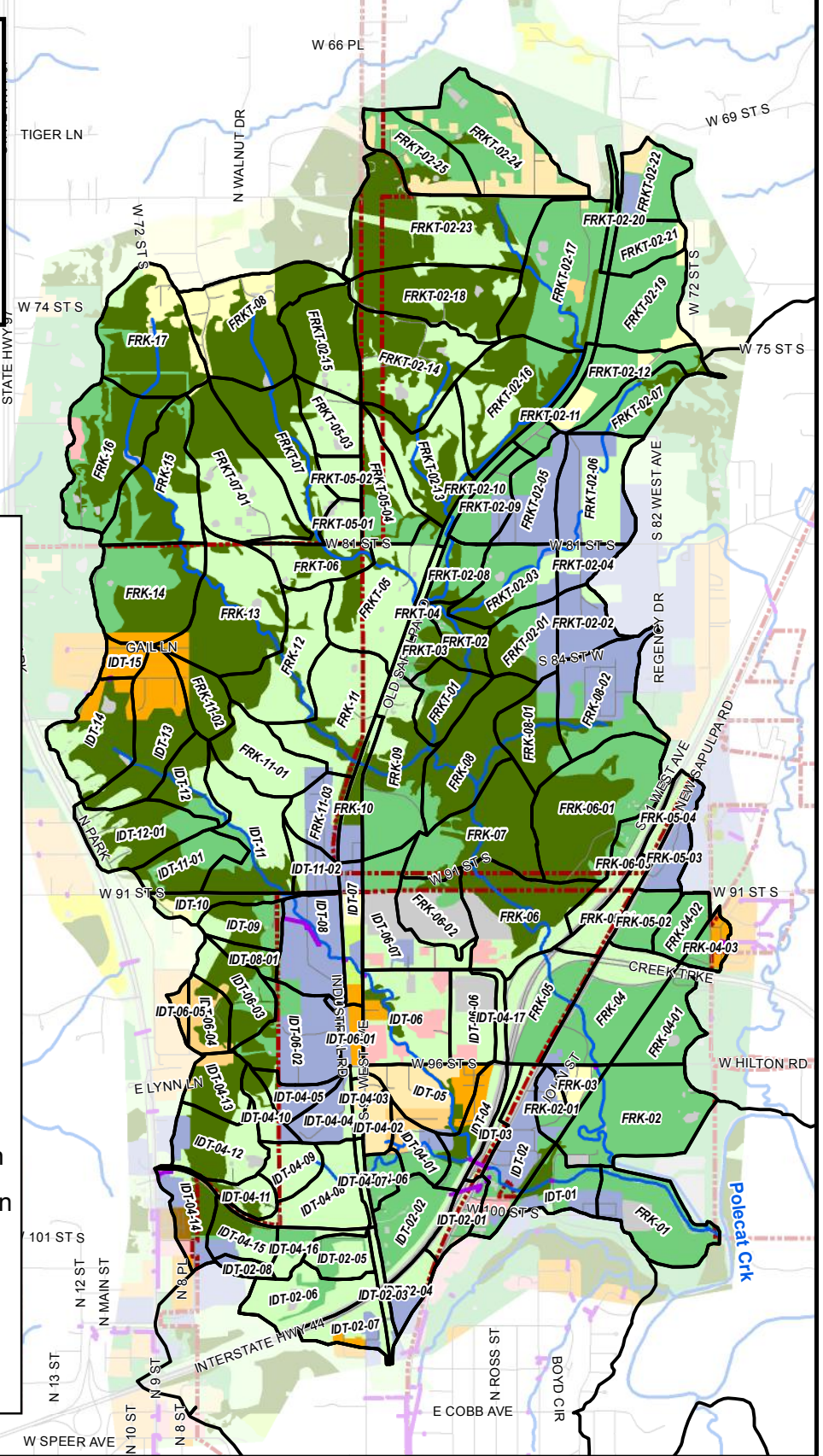
	Group A
	Group B
	Group C
	Group D



Index Map

Legend

- City Limits
- Storm Sewer
- Existing Land Use**
- Commercial
- Industrial
- Impervious
- Residential 5 Acre
- Residential 2 Acre
- Residential 1 Acre
- Residential 1/2 Acre
- Residential 1/4 Acre
- Residential 1/8 Acre
- Pasture: Poor Condition
- Pasture: Good Condition
- Woods-Grass: Good
- Woods: Good
- Forest: Poor Cover
- Forest: Good Cover



**TABLE 14-1. FRANKOMA CREEK AND INDUSTRIAL TRIBUTARY DRAINAGE SYSTEM –
SUMMARY OF HYDROLOGIC COEFFICIENTS FOR EXISTING CONDITIONS**

Sub-Area	Drainage Area, Acres	Lag Time Minutes	Composite CN
FRK-01	37.8	8.1	71.2
FRK-02	59.6	13.6	62.8
FRK-02-01	9.9	5.9	78.4
FRK-03	8.3	11.5	75.8
FRK-04	47.2	9.0	66.7
FRK-04-01	26.9	11.1	71.2
FRK-04-02	13.4	3.7	70.7
FRK-04-03	9.0	4.4	78.5
FRK-05	36.4	3.5	77.9
FRK-05-01	14.6	7.0	71.1
FRK-05-02	13.8	3.8	69.5
FRK-05-03	14.8	5.0	91.8
FRK-05-04	7.4	7.3	79.0
FRK-06	50.9	7.7	68.3
FRK-06-01	69.7	9.7	66.4
FRK-06-02	23.9	5.8	88.7
FRK-06-03	17.5	12.2	78.6
FRK-07	48.8	6.8	65.5
FRK-08	41.9	10.3	67.2
FRK-08-01	26.6	5.2	69.7
FRK-08-02	44.7	10.4	79.6
FRK-09	47.0	10.1	70.3
FRK-10	11.8	9.0	79.8
FRK-11	46.0	11.8	70.4
FRK-11-01	29.4	5.5	76.4
FRK-11-02	15.5	5.6	71.0
FRK-11-03	18.8	5.9	85.8
FRK-12	41.2	9.4	74.5
FRK-13	60.0	10.6	66.7
FRK-14	51.2	4.3	71.0
FRK-15	48.5	6.9	68.3

Sub-Area	Drainage Area, Acres	Lag Time Minutes	Composite CN
FRK-16	51.6	3.8	72.9
FRK-17	55.7	5.5	72.1
FRKT-01	20.7	4.5	68.6
FRKT-02	13.9	4.5	67.2
FRKT-02-01	24.7	6.2	79.9
FRKT-02-02	17.7	4.7	90.5
FRKT-02-03	31.0	6.8	77.7
FRKT-02-04	11.3	7.1	89.0
FRKT-02-05	24.6	11.1	89.2
FRKT-02-06	41.0	12.7	84.1
FRKT-02-07	20.4	5.3	77.9
FRKT-02-08	14.5	5.1	66.3
FRKT-02-09	18.3	9.5	79.1
FRKT-02-10	5.9	9.1	71.8
FRKT-02-11	9.5	9.6	75.9
FRKT-02-12	27.4	5.0	79.0
FRKT-02-13	39.2	7.9	67.7
FRKT-02-14	54.3	5.6	71.1
FRKT-02-15	35.8	6.1	70.0
FRKT-02-16	53.1	7.6	74.9
FRKT-02-17	64.0	10.1	76.4
FRKT-02-18	47.8	6.7	72.6
FRKT-02-19	35.9	6.3	79.4
FRKT-02-20	4.8	15.4	79.7
FRKT-02-21	17.3	6.6	79.9
FRKT-02-22	21.9	6.6	82.3
FRKT-02-23	80.6	13.4	68.6
FRKT-02-24	56.2	13.0	71.5
FRKT-02-25	30.2	17.1	67.5
FRKT-03	9.3	4.7	71.6
FRKT-04	5.8	9.8	69.1
FRKT-05	47.4	5.3	73.2
FRKT-05-01	8.6	5.6	70.4
FRKT-05-02	8.5	4.4	64.6
FRKT-05-03	19.1	3.6	66.6
FRKT-05-04	27.3	9.9	66.7
FRKT-06	20.5	6.1	69.0

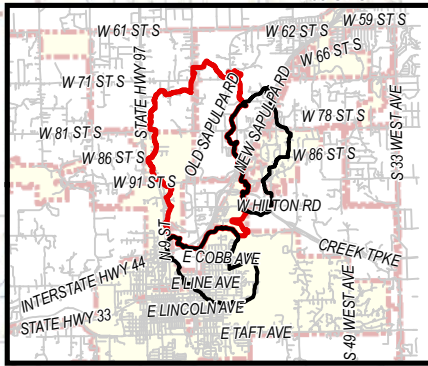
Sub-Area	Drainage Area, Acres	Lag Time Minutes	Composite CN
FRKT-07	46.4	8.9	65.9
FRKT-07-01	55.7	6.6	68.1
FRKT-08	60.6	8.0	73.7
IDT-01	20.0	4.3	69.9
IDT-02	32.5	10.7	84.0
IDT-02-01	11.6	5.4	84.6
IDT-02-02	27.4	5.1	80.7
IDT-02-03	5.7	9.4	81.2
IDT-02-04	11.2	5.5	86.1
IDT-02-05	13.8	5.1	76.1
IDT-02-06	29.0	7.8	81.4
IDT-02-07	15.8	6.7	83.5
IDT-02-08	4.4	2.9	84.3
IDT-03	7.4	6.7	84.0
IDT-04	19.6	8.0	79.5
IDT-04-01	14.5	6.5	73.1
IDT-04-02	8.5	3.9	80.1
IDT-04-03	5.8	7.0	81.8
IDT-04-04	14.9	8.0	88.2
IDT-04-05	10.6	4.5	89.4
IDT-04-06	8.7	4.3	72.8
IDT-04-07	3.4	4.7	75.0
IDT-04-08	29.4	10.4	75.1
IDT-04-09	13.8	2.9	71.0
IDT-04-10	9.5	5.0	80.7
IDT-04-11	10.7	3.6	79.2
IDT-04-12	29.8	4.5	79.1
IDT-04-13	18.3	2.8	77.8
IDT-04-14	19.1	5.5	71.2
IDT-04-15	15.6	3.8	81.5
IDT-04-16	10.1	6.9	79.9
IDT-04-17	5.5	6.9	81.7

Sub-Area	Drainage Area, Acres	Lag Time Minutes	Composite CN
IDT-05	29.1	6.4	77.3
IDT-06	44.1	10.5	75.5
IDT-06-01	9.3	10.1	84.8
IDT-06-02	37.7	6.1	87.0
IDT-06-03	23.1	5.5	75.3
IDT-06-04	14.8	2.1	77.5
IDT-06-05	3.6	2.4	83.5
IDT-06-06	22.2	8.0	87.7
IDT-06-07	34.9	9.2	81.4
IDT-07	15.6	12.8	82.8
IDT-08	32.9	7.5	89.1
IDT-08-01	6.9	2.7	72.8
IDT-09	17.2	3.4	75.6
IDT-10	12.3	6.5	75.9
IDT-11	41.5	12.7	67.0
IDT-11-01	21.6	6.2	67.8
IDT-11-02	11.7	7.1	84.8
IDT-12	18.2	4.2	66.0
IDT-12-01	33.4	5.5	70.5
IDT-13	40.0	6.9	74.7
IDT-14	36.7	3.4	73.8
IDT-15	7.8	5.4	82.4

Finally, in the Frankoma and Industrial Tributary Drainage System, bridges and culverts were studied to determine the level of overtopping during certain storm frequencies. During a 1% annual chance storm event, 10 roads and/or bridges in this drainage system would be overtopped by flood depths ranging from about 0.40 feet of water to 4.50 feet. The existing capacity of the culverts and bridges vary in frequency from a 10% annual chance storm event to that of a 100% annual chance. Roadway overtoppings and the frequency of overtoppings are depicted in **FIGURE 14-5**.

TABLE 14-2. FRANKOMA CREEK AND INDUSTRIAL TRIBUTARY DRAINAGE SYSTEM - EXISTING FLOW RATES AT MAJOR JUNCTIONS (CFS)

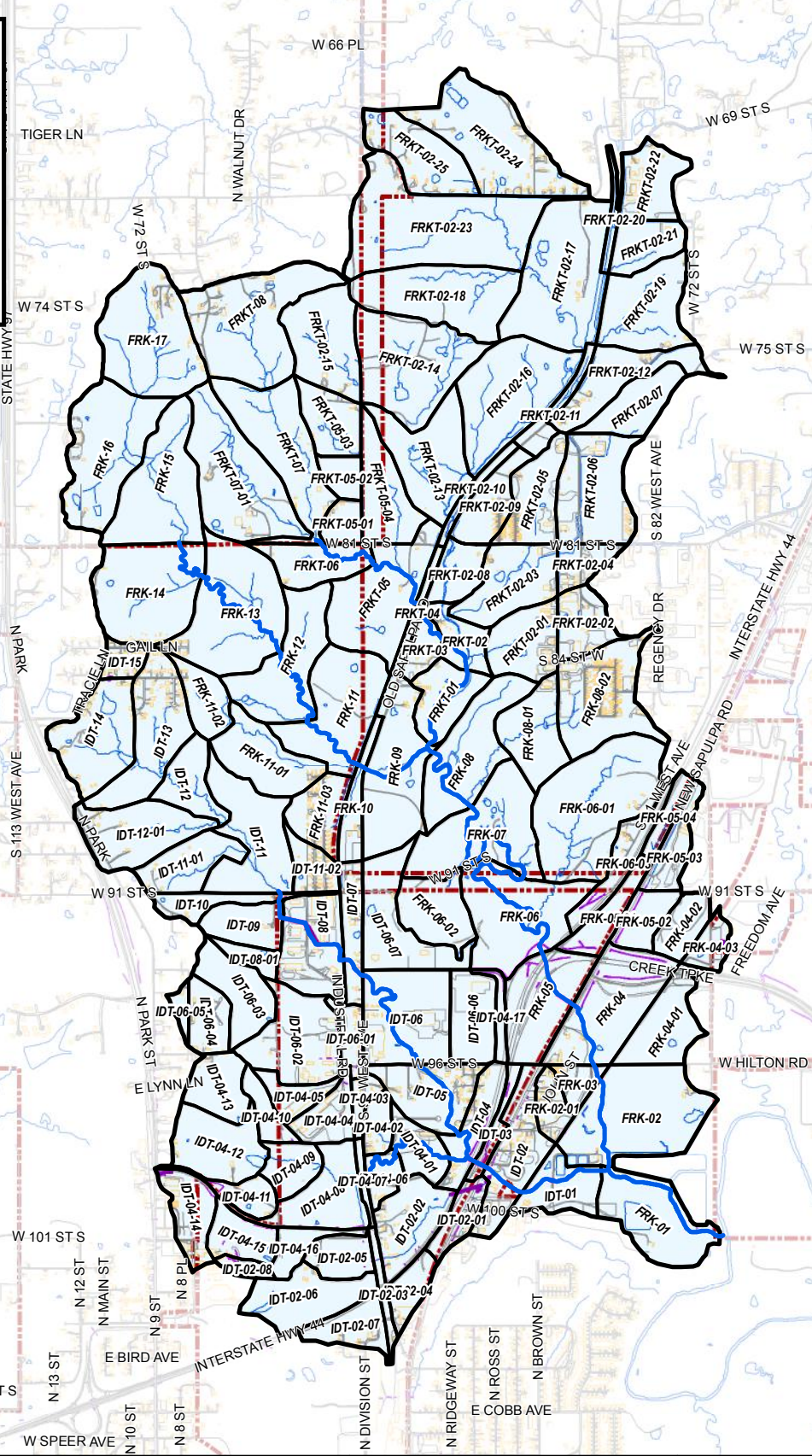
HMS Junction	Street Intersection	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year
J-FRK-01	Outfall of North Polecat	638	1105	2546	3349	4545	5347	6259	7242
J-FRK-03	Railroad Tracks	534	957	2022	2710	3544	4229	4912	5709
J-FRK-04	E. Hilton Rd	533	957	2020	2707	3540	4226	4906	5702
J-FRK-05	New Sapulpa Road	535	956	2010	2739	3555	4221	4890	5690
J-FRK-06	Turner Turnpike	531	953	1992	2717	3539	4210	4882	5690
J-FRK-07	W. 91st Street	527	946	1979	2676	3489	4166	4822	6072
J-FRK-10	Old State Highway 66	108	222	462	578	720	872	1056	1533
J-FRK-11	Railroad Tracks	120	231	474	594	736	897	1074	1532
J-FRKT-01	Confluence of Tributary	460	768	1492	1978	2571	3061	3535	4512
J-FRKT-04	Old State Highway 66	54	108	236	312	389	458	505	600
J-FRKT-05	Railroad Tracks	52	107	237	319	396	469	517	615
J-FRKT-07	W. 81st Street South	65	125	262	356	477	578	679	889
J-IDT-02	Railroad Tracks	515	739	1177	1453	1741	2003	2222	2835
J-IDT-03	New Sapulpa Road	405	572	938	1186	1489	1714	1899	2294
J-IDT-04	Turner Turnpike	402	568	931	1180	1488	1712	1921	2409
J-IDT-06	W. 96th Street South	250	408	750	979	1241	1440	1649	2058
J-IDT-07	Old State Highway 66	147	276	480	528	587	634	679	763
J-IDT-08	Railroad Tracks	141	266	469	521	588	645	691	759
J-IDT-11	W. 91st Street	114	214	427	568	750	898	1046	1343



Index Map

Legend

- City Limits
- Subbasin Boundaries
- Studied Streams



14.3. PROBLEM AREAS

The Frankoma Creek and Industrial Tributary Drainage System is generally undeveloped so there are only a few isolated drainage problems. One of these is located in the Frankoma Creek Drainage Basin and two located in the Industrial Tributary Drainage Basin.

In addition, as was previously discussed, a number of bridges and culverts would be overtopped in this drainage system. During a 1% annual chance storm event, 10 structures would be overtopped by flood depths ranging from 0.4 feet to 4.5 feet of water. The storm frequency of the overtoppings would vary from a 10% annual chance occurrence to that of a 100% annual chance. The location of these overtoppings and the frequency of overtoppings are shown in **FIGURE 14-5** along with the locations of the individual Problem Areas by basin.

The Problem Areas identified in the **Industrial Tributary Drainage Basin** are as follows:

A. Problem Area 1: 9700 New Sapulpa Road

The driveway at Carl's Coney Island is eroding.

B. Problem Area 2: 2310 Surrey Lane

The riprap grout and seal needs to be re-established in the existing drainage ditch in this area.

14.4. EVALUATION OF ALTERNATIVES

The alternatives and the accompanying exhibits for the Problem Areas for the Industrial Tributary Drainage System are discussed below. Cost estimates can be found in **APPENDIX 14-F**. No Problem Areas were identified in the Frankoma Creek Drainage Basin. No alternatives were considered for the overtopped structures.

A discussion of the Problem Areas identified in the **Industrial Tributary Drainage Basin** follows below.

A. **Problem Area 1: 9700 New Sapulpa Road**

This erosion problem is a private problem and the owner's responsibility.

B. **Problem Area 2: 2310 Surrey Lane**

Since the date of the Public Meeting when this problem was first identified, the City has addressed it, and no further study was determined necessary.

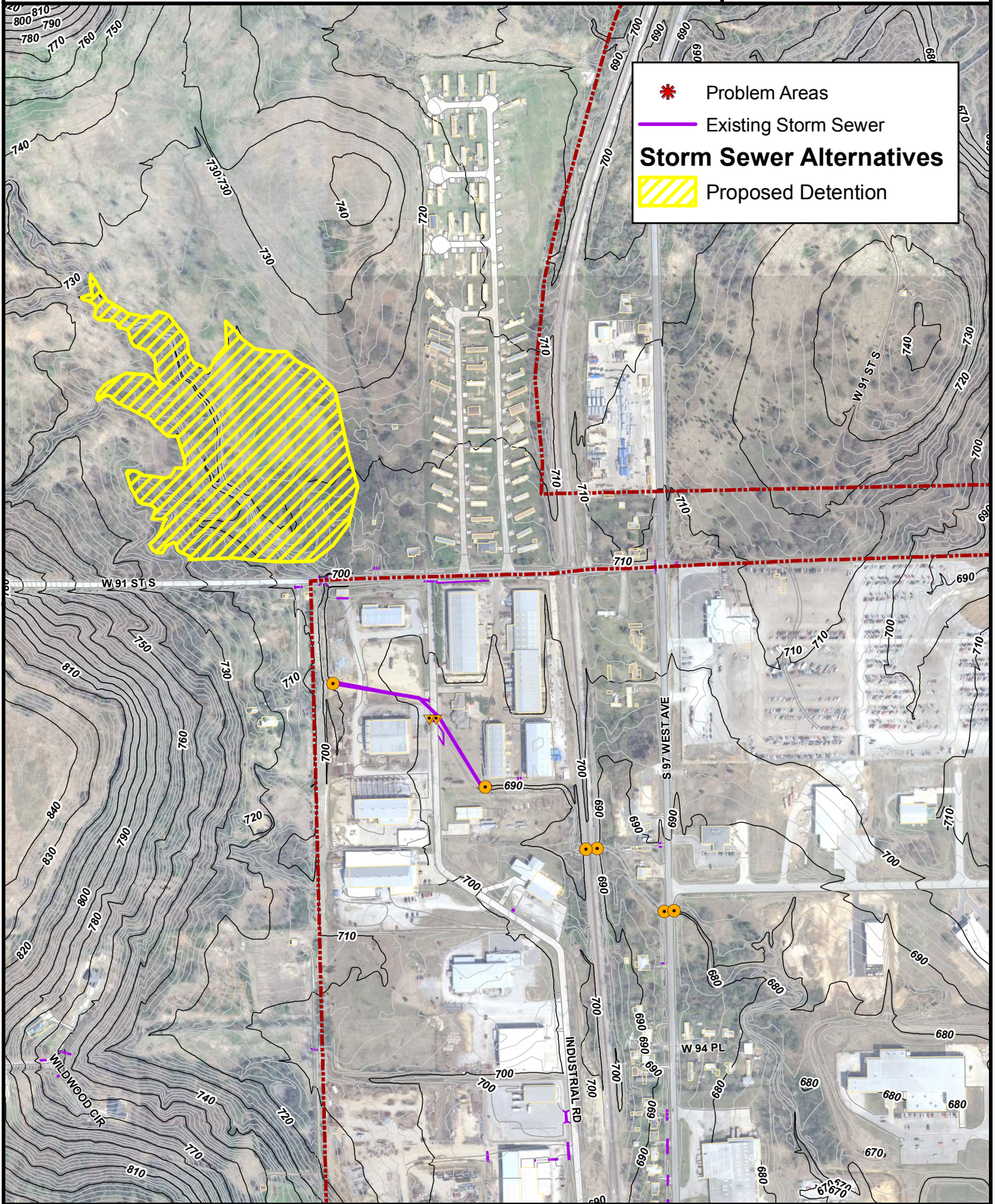
C. **Regional Detention Basin Upstream of 91st Street**

Because this basin is relatively undeveloped, an alternative for a regional detention facility was developed to handle stormwater resulting from future development upstream of W. 91st Street.

Alternative 1 – Construct a regional detention pond. This alternative proposes a regional detention site upstream of 91st Street in the Industrial Tributary Drainage Basin. The construction of this detention would allow downstream structures to pass at least a 10% annual chance storm event.

The detention was sized assuming a fully developed condition upstream of the area draining into the pond. It would have a surface area of 13.35 acres with an elevation of 721 feet and would provide 28.8 acre-feet of storage. The pond's outflow structure would consist of 50 feet of 18 - inch RCP with a flow line elevation of 710 feet.

The cost for this alternative is estimated to be \$913,000 and is shown in **FIGURE 14-6**.



14.5. RECOMMENDED PLAN

Using the prioritization criteria from **SECTION 1 INTRODUCTION** and based on discussions with City staff, the following alternatives were selected for the Industrial Tributary Drainage System. In some cases, “No Action” was the selected course. For more details, please refer to the text and exhibits in **SECTION 14-4 EVALUATION OF ALTERNATIVES** and **APPENDIX 14-F**.

The Recommended Plan for the Industrial Tributary Drainage System is:

PROBLEM AREA	RECOMMENDED ALTERNATIVE	RATIONALE FOR SELECTION	ESTIMATED COST
Problem Area 1	No Action	This is a private problem and the owner’s responsibility.	-0-
Problem Area 2	No Action	The City has addressed this issue.	-0-
Regional Detention Facility	No Action	This will be constructed by private development cost at a later date.	-0-
		TOTAL COST	-0-

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)		
										A	B	C	D	A	B	C	D	A	B	C	D					
FRK-01		2932																								
	Overland	145	3.49	1.31	1.84			Forest (good cover)	0	25	55	70	77	#N/A	0.4	#N/A	#N/A	0.0	0.4	0.0	0.0	22.9	71.2	37.8	0.05903	
	Channel (ditch)	685	6.52	3.85	2.96			Impervious	15	98	98	98	98	#N/A	14.8	0.3	#N/A	0.0	14.8	0.3	0.0	1479.3				
	Paved			0.00	0.00			Industrial	10	81	88	91	93	#N/A	3.7	6.4	#N/A	0.0	3.7	6.4	0.0	909.3				
	Pipe			0.00	0.00			Woods-Grass: Good	74	32	58	72	79	#N/A	46.2	28.2	#N/A	0.0	46.2	28.2	0.0	4708.1				
Stream	2103	0.00	4.00	8.76	8.1	0.14																				
FRK-02		2772																								
	Overland	294	6.08	1.73	2.83			Forest (good cover)	0	25	55	70	77	#N/A	0.3	#N/A	#N/A	0.0	0.3	0.0	0.0	18.4	62.8	59.6	0.09316	
	Channel (ditch)	882	0.57	1.11	13.21			Impervious	6	98	98	98	98	#N/A	5.4	#N/A	0.4	0.0	5.4	0.0	0.4	565.0				
	Paved			0.00	0.00			Woods-Grass: Good	94	32	58	72	79	#N/A	81.9	0.0	11.9	0.0	81.9	0.0	11.9	5697.4				
	Pipe			0.00	0.00																					
Stream	1596	0.00	4.00	6.65	13.6	0.23																				
FRK-02-01		1185																								
	Overland	149	1.61	0.89	2.79			Forest (good cover)	0	25	55	70	77	#N/A	0.3	#N/A	#N/A	0.0	0.3	0.0	0.0	15.0	78.4	9.9	0.01547	
	Channel (ditch)	1036	2.72	2.46	7.02			Industrial	56	81	88	91	93	#N/A	11.9	44.1	#N/A	0.0	11.9	44.1	0.0	5061.5				
	Paved			0.00	0.00			Residential 2 acre	11	46	65	77	82	#N/A	0.6	10.6	#N/A	0.0	0.6	10.6	0.0	856.1				
	Pipe			0.00	0.00			Woods-Grass: Good	33	32	58	72	79	#N/A	31.1	1.4	#N/A	0.0	31.1	1.4	0.0	1904.9				
Stream			0.00	0.00	5.9	0.10																				
FRK-03		861																								
	Overland	182	0.07	0.19	16.09			Impervious	3	98	98	98	98	#N/A	1.7	1.5	#N/A	0.0	1.7	1.5	0.0	315.1	75.8	8.3	0.01304	
	Channel (ditch)	481	5.60	3.56	2.25			Industrial	15	81	88	91	93	#N/A	#N/A	14.6	#N/A	0.0	0.0	14.6	0.0	1328.5				
	Paved			0.00	0.00			Residential 2 acre	59	46	65	77	82	#N/A	4.5	54.6	#N/A	0.0	4.5	54.6	0.0	4495.2				
	Pipe			0.00	0.00			Woods-Grass: Good	23	32	58	72	79	#N/A	15.8	7.3	#N/A	0.0	15.8	7.3	0.0	1442.3				
Stream	198	0.00	4.00	0.83	11.5	0.19																				
FRK-04		2961																								
	Overland	118	13.41	2.58	0.76			Impervious	12	98	98	98	98	#N/A	8.6	1.5	2.2	0.0	8.6	1.5	2.2	1208.7	66.7	47.2	0.07372	
	Channel (ditch)			0.00	0.00			Industrial	2	81	88	91	93	#N/A	#N/A	2.3	#N/A	0.0	0.0	2.3	0.0	213.8				
	Paved	1844	2.33	3.05	10.08			Pasture: Good Condition	20	39	61	74	80	#N/A	20.2	#N/A	0.0	0.0	20.2	0.0	0.0	1234.9				
	Pipe			0.00	0.00			Woods-Grass: Good	65	32	58	72	79	#N/A	49.7	11.8	3.6	0.0	49.7	11.8	3.6	4015.3				
Stream	999	0.00	4.00	4.16	9.0	0.15																				
FRK-04-01		1941																								
	Overland	296	5.28	1.62	3.05			Impervious	7	98	98	98	98	#N/A	4.8	#N/A	2.2	0.0	4.8	0.0	2.2	685.2	71.2	26.9	0.04203	
	Channel (ditch)	1646	1.42	1.77	15.53			Pasture: Good Condition	2	39	61	74	80	#N/A	1.6	#N/A	0.0	0.0	1.6	0.0	0.0	99.8				
	Paved			0.00	0.00			Woods-Grass: Good	91	32	58	72	79	#N/A	42.2	#N/A	49.2	0.0	42.2	0.0	49.2	6333.3				
	Pipe			0.00	0.00																					
Stream			0.00	0.00	11.1	0.19																				

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)					
										A	B	C	D	A	B	C	D	A	B	C	D								
FRK-04-02		1000																											
	Overland	203	2.62	1.14	2.98			Impervious	1	98	98	98	98	#N/A	0.7	0.6	#N/A	0.0	0.7	0.6	0.0	130.9	70.7	13.4	0.02096				
	Channel (ditch)	797	7.23	4.06	3.27			Woods-Grass: Good	99	32	58	72	79	#N/A	22.5	53.9	22.2	0.0	22.5	53.9	22.2	6943.9							
	Paved				0.00	0.00																							
	Pipe				0.00	0.00																							
Stream				0.00	0.00	3.7	0.06																						
FRK-04-03		947																											
	Overland	211	5.43	1.64	2.15			Impervious	1	98	98	98	98	#N/A	0.5	0.9	#N/A	0.0	0.5	0.9	0.0	144.1	78.5	9.0	0.01410				
	Channel (ditch)	502	2.12	2.17	3.85			Pasture: Good Condition	2	39	61	74	80	#N/A	#N/A	1.7	#N/A	0.0	0.0	1.7	0.0	128.1							
	Paved	233	2.14	2.92	1.33			Residential 1/4 acre	52	61	75	83	87	#N/A	#N/A	41.6	10.6	0.0	0.0	41.6	10.6	4374.0							
	Pipe				0.00	0.00			Woods-Grass: Good	45	32	58	72	79	#N/A	2.1	40.1	2.4	0.0	2.1	40.1	2.4				3199.7			
Stream				0.00	0.00	4.4	0.07																						
FRK-05		1199																											
	Overland	120	19.97	3.15	0.64			Impervious	24	98	98	98	98	#N/A	4.0	8.7	11.6	0.0	4.0	8.7	11.6	2381.8	77.9	36.4	0.05691				
	Channel (ditch)	284	1.88	2.04	2.32			Pasture: Good Condition	24	39	61	74	80	#N/A	5.7	12.6	5.7	0.0	5.7	12.6	5.7	1737.0							
	Paved	307	11.02	6.67	0.77			Woods-Grass: Good	52	32	58	72	79	#N/A	13.0	18.9	19.7	0.0	13.0	18.9	19.7	3676.0							
	Pipe				0.00	0.00																							
Stream	488	0.00	4.00	2.03	3.5	0.06																							
FRK-05-01		1637																											
	Overland	261	3.98	1.40	3.11			Impervious	16	98	98	98	98	#N/A	10.3	0.8	4.4	0.0	10.3	0.8	4.4	1525.2	71.1	14.6	0.02279				
	Channel (ditch)	906	2.36	2.29	6.59			Pasture: Good Condition	84	39	61	74	80	#N/A	55.9	18.7	9.8	0.0	55.9	18.7	9.8	5581.2							
	Paved				0.00	0.00																							
	Pipe				0.00	0.00																							
Stream	470	0.00	4.00	1.96	7.0	0.12																							
FRK-05-02		1424																											
	Overland	164	5.68	1.68	1.63			Impervious	9	98	98	98	98	#N/A	5.7	#N/A	2.8	0.0	5.7	0.0	2.8	833.9	69.5	13.8	0.02161				
	Channel (ditch)	444	13.27	5.54	1.34			Industrial	0	81	88	91	93	#N/A	0.0	0.3	0.2	0.0	0.0	0.3	0.2	42.1							
	Paved				0.00	0.00			Woods-Grass: Good	91	32	58	72	79	#N/A	50.9	7.0	33.2	0.0	50.9	7.0	33.2				6074.1			
	Pipe				0.00	0.00																							
Stream	816	0.00	4.00	3.40	3.8	0.06																							

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)					
										A	B	C	D	A	B	C	D	A	B	C	D								
FRK-05-03		1865																											
	Overland	151	8.15	2.01	1.25			Impervious	11	98	98	98	98	#N/A	1.9	8.1	1.4	0.0	1.9	8.1	1.4	1123.8	91.8	14.8	0.02306				
	Channel (ditch)			0.00	0.00			Industrial	89	81	88	91	93	#N/A	5.2	77.7	5.6	0.0	5.2	77.7	5.6	8052.0							
	Paved			0.00	0.00			Woods-Grass: Good	0	32	58	72	79	#N/A	0.0	#N/A	#N/A	0.0	0.0	0.0	0.0	0.1							
	Pipe			0.00	0.00																								
Stream	1715	0.00	4.00	7.14	5.0	0.08																							
FRK-05-04		1410																											
	Overland	250	0.75	0.60	6.89			Impervious	26	98	98	98	98	#N/A	6.6	19.2	#N/A	0.0	6.6	19.2	0.0	2523.5	79.0	7.4	0.01159				
	Channel (ditch)	254	3.26	2.70	1.57			Pasture: Good Condition	74	39	61	74	80	#N/A	8.9	65.3	#N/A	0.0	8.9	65.3	0.0	5378.6							
	Paved			0.00	0.00																								
	Pipe			0.00	0.00																								
Stream	906	0.00	4.00	3.78	7.3	0.12																							
FRK-06		2549																											
	Overland	252	2.22	1.04	4.03			Commercial	5	89	92	94	95	#N/A	5.1	0.4	#N/A	0.0	5.1	0.4	0.0	500.2	68.3	50.9	0.07958				
	Channel (ditch)	267	20.81	6.97	0.64			Forest (good cover)	61	25	55	70	77	#N/A	40.9	20.4	#N/A	0.0	40.9	20.4	0.0	3678.1							
	Paved	207	10.72	6.57	0.53			Impervious	14	98	98	98	98	#N/A	1.4	12.8	#N/A	0.0	1.4	12.8	0.0	1396.6							
	Pipe			0.00	0.00			Pasture: Good Condition	19	39	61	74	80	#N/A	11.5	7.2	#N/A	0.0	11.5	7.2	0.0	1235.4							
	Stream	1823	0.00	4.00	7.59	7.7	0.13	Woods-Grass: Good	0	32	58	72	79	#N/A	#N/A	0.3	#N/A	0.0	0.0	0.3	0.0	21.3							
FRK-06-01		3244																											
	Overland	235	4.77	1.53	2.55			Forest (good cover)	62	25	55	70	77	#N/A	6.6	55.3	#N/A	0.0	6.6	55.3	0.0	4236.2	66.4	69.7	0.10889				
	Channel (ditch)	569	3.54	2.82	3.37			Impervious	1	98	98	98	98	#N/A	0.2	0.5	#N/A	0.0	0.2	0.5	0.0	69.4							
	Paved			0.00	0.00			Pasture: Good Condition	1	39	61	74	80	#N/A	0.1	0.4	#N/A	0.0	0.1	0.4	0.0	36.7							
	Pipe			0.00	0.00			Woods-Grass: Good	37	32	58	72	79	#N/A	25.5	11.4	#N/A	0.0	25.5	11.4	0.0	2296.4							
	Stream	2440	0.00	4.00	10.17	9.7	0.16																						
FRK-06-02		1578																											
	Overland	285	5.05	1.58	3.01			Commercial	0	89	92	94	95	#N/A	#N/A	0.1	#N/A	0.0	0.0	0.1	0.0	11.8	88.7	23.9	0.03733				
	Channel (ditch)	409	4.57	3.21	2.12			Forest (good cover)	9	25	55	70	77	#N/A	0.7	8.3	#N/A	0.0	0.7	8.3	0.0	618.7							
	Paved	884	2.74	3.30	4.46			Impervious	65	98	98	98	98	#N/A	0.7	61.9	2.3	0.0	0.7	61.9	2.3	6361.5							
	Pipe			0.00	0.00			Pasture: Good Condition	8	39	61	74	80	#N/A	#N/A	8.1	#N/A	0.0	0.0	8.1	0.0	599.6							
	Stream			0.00	0.00	5.8	0.10	Woods-Grass: Good	18	32	58	72	79	#N/A	0.5	17.3	#N/A	0.0	0.5	17.3	0.0	1279.7							

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)				
										A	B	C	D	A	B	C	D	A	B	C	D							
FRK-06-03		2721																										
	Overland	294	1.45	0.84	5.79			Forest (good cover)	3	25	55	70	77	#N/A	1.4	1.7	#N/A	0.0	1.4	1.7	0.0	193.8	78.6	17.5	0.02736			
	Channel (ditch)	1727	2.56	2.39	12.04			Impervious	34	98	98	98	98	#N/A	9.5	24.1	#N/A	0.0	9.5	24.1	0.0	3294.4						
	Paved	472	5.98	4.90	1.60			Pasture: Good Condition	40	39	61	74	80	#N/A	13.5	26.0	#N/A	0.0	13.5	26.0	0.0	2749.1						
	Pipe			0.00	0.00			Woods-Grass: Good	24	32	58	72	79	#N/A	6.5	17.3	#N/A	0.0	6.5	17.3	0.0	1623.0						
Stream	229	0.00	4.00	0.96	12.2	0.20																						
FRK-07		1921																										
	Overland	82	14.03	2.64	0.52			Forest (good cover)	77	25	55	70	77	#N/A	30.3	46.7	#N/A	0.0	30.3	46.7	0.0	4934.7	65.5	48.8	0.07629			
	Channel (ditch)	1088	2.45	2.34	7.77			Woods-Grass: Good	23	32	58	72	79	#N/A	2.6	20.4	#N/A	0.0	2.6	20.4	0.0	1620.1						
	Paved			0.00	0.00																							
	Pipe			0.00	0.00																							
Stream	751	0.00	4.00	3.13	6.8	0.11																						
FRK-08		3034																										
	Overland	291	1.78	0.94	5.19			Forest (good cover)	92	25	55	70	77	#N/A	19.6	72.8	#N/A	0.0	19.6	72.8	0.0	6175.8	67.2	41.9	0.06552			
	Channel (ditch)	349	3.55	2.82	2.06			Industrial	0	81	88	91	93	#N/A	0.1	#N/A	#N/A	0.0	0.1	0.0	0.0	8.3						
	Paved			0.00	0.00			Woods-Grass: Good	7	32	58	72	79	#N/A	0.1	7.4	#N/A	0.0	0.1	7.4	0.0	537.7						
	Pipe			0.00	0.00																							
Stream	2393	0.00	4.00	9.97	10.3	0.17																						
FRK-08-01		1791																										
	Overland	162	4.35	1.47	1.85			Forest (good cover)	73	25	55	70	77	#N/A	6.1	67.1	#N/A	0.0	6.1	67.1	0.0	5031.2	69.7	26.6	0.04155			
	Channel (ditch)	736	6.67	3.90	3.15			Industrial	8	81	88	91	93	#N/A	4.4	3.4	#N/A	0.0	4.4	3.4	0.0	693.4						
	Paved			0.00	0.00			Woods-Grass: Good	19	32	58	72	79	#N/A	9.0	10.0	#N/A	0.0	9.0	10.0	0.0	1246.1						
	Pipe			0.00	0.00																							
Stream	892	0.00	4.00	3.72	5.2	0.09																						
FRK-08-02		2339																										
	Overland	291	2.98	1.21	4.00			Forest (good cover)	7	25	55	70	77	#N/A	1.2	5.9	#N/A	0.0	1.2	5.9	0.0	476.8	79.6	44.7	0.06985			
	Channel (ditch)	1530	2.33	2.27	11.21			Impervious	0	98	98	98	98	#N/A	0.0	0.4	#N/A	0.0	0.0	0.4	0.0	41.6						
	Paved			0.00	0.00			Industrial	60	81	88	91	93	#N/A	35.0	25.2	#N/A	0.0	35.0	25.2	0.0	5367.6						
	Pipe			0.00	0.00			Residential 1/2 acre	0	54	70	80	85	#N/A	0.3	#N/A	#N/A	0.0	0.3	0.0	0.0	19.2						
Stream	518	0.00	4.00	2.16	10.4	0.17	Woods-Grass: Good	32	32	58	72	79	#N/A	18.3	13.8	#N/A	0.0	18.3	13.8	0.0	2055.6							
FRK-09		2690																										
	Overland	295	2.58	1.13	4.36			Forest (good cover)	34	25	55	70	77	#N/A	8.1	24.1	1.5	0.0	8.1	24.1	1.5	2246.0	70.3	47.0	0.07348			
	Channel (ditch)	1221	3.25	2.70	7.54			Impervious	3	98	98	98	98	#N/A	0.5	1.3	1.4	0.0	0.5	1.3	1.4	319.2						
	Paved			0.00	0.00			Industrial	0	81	88	91	93	#N/A	#N/A	#N/A	0.3	0.0	0.0	0.0	0.3	23.3						
	Pipe			0.00	0.00			Pasture: Good Condition	21	39	61	74	80	#N/A	6.4	8.3	6.0	0.0	6.4	8.3	6.0	1484.9						
Stream	1174	0.00	4.00	4.89	10.1	0.17	Woods-Grass: Good	42	32	58	72	79	#N/A	15.7	5.9	20.5	0.0	15.7	5.9	20.5	2955.8							

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)		
										A	B	C	D	A	B	C	D	A	B	C	D					
FRK-10		1674																								
	Overland	292	1.23	0.78	6.25			Forest (good cover)	38	25	55	70	77	#N/A	8.6	13.3	16.2	0.0	8.6	13.3	16.2	2649.1	79.8	11.8	0.01845	
	Channel (ditch)	510	1.28	1.68	5.07			Impervious	5	98	98	98	98	#N/A	3.0	0.5	1.4	0.0	3.0	0.5	1.4	484.0				
	Paved			0.00	0.00			Industrial	40	81	88	91	93	#N/A	#N/A	#N/A	40.1	0.0	0.0	0.0	40.1	3727.4				
	Pipe			0.00	0.00			Pasture: Good Condition	17	39	61	74	80	#N/A	11.3	2.6	3.0	0.0	11.3	2.6	3.0	1122.4				
Stream	873	0.00	4.00	3.64	9.0	0.15																				
FRK-11		2071																								
	Overland	203	5.98	1.72	1.97			Forest (good cover)	15	25	55	70	77	#N/A	14.9	#N/A	0.5	0.0	14.9	0.0	0.5	857.7	70.4	46.0	0.07192	
	Channel (ditch)	1868	1.41	1.76	17.66			Impervious	1	98	98	98	98	#N/A	#N/A	#N/A	0.8	0.0	0.0	0.0	0.8	80.7				
	Paved			0.00	0.00			Industrial	0	81	88	91	93	#N/A	0.1	0.2	#N/A	0.0	0.1	0.2	0.0	29.9				
	Pipe			0.00	0.00			Pasture: Good Condition	83	39	61	74	80	#N/A	29.1	8.7	45.6	0.0	29.1	8.7	45.6	6071.2				
Stream			0.00	0.00	11.8	0.20																				
FRK-11-01		2239																								
	Overland	105	4.93	1.56	1.12			Forest (good cover)	11	25	55	70	77	#N/A	0.3	10.1	0.3	0.0	0.3	10.1	0.3	748.5	76.4	29.4	0.04597	
	Channel (ditch)	435	20.60	6.93	1.05			Industrial	6	81	88	91	93	#N/A	0.0	1.1	5.0	0.0	0.0	1.1	5.0	564.2				
	Paved			0.00	0.00			Pasture: Good Condition	83	39	61	74	80	#N/A	16.2	2.8	64.1	0.0	16.2	2.8	64.1	6328.7				
	Pipe			0.00	0.00			Residential 1/4 acre	0	61	75	83	87	#N/A	#N/A	#N/A	#N/A	0.0	0.0	0.0	0.0	0.0				
Stream	1699	0.00	4.00	7.08	5.5	0.09																				
FRK-11-02		1601																								
	Overland	246	5.25	1.61	2.55			Forest (good cover)	86	25	55	70	77	#N/A	6.0	79.5	0.1	0.0	6.0	79.5	0.1	5898.7	71.0	15.5	0.02414	
	Channel (ditch)	635	3.55	2.82	3.75			Pasture: Good Condition	0	39	61	74	80	#N/A	0.0	#N/A	#N/A	0.0	0.0	0.0	0.0	2.4				
	Paved			0.00	0.00			Residential 1/4 acre	14	61	75	83	87	#N/A	#N/A	14.4	#N/A	0.0	0.0	14.4	0.0	1196.0				
	Pipe			0.00	0.00																					
Stream	720	0.00	4.00	3.00	5.6	0.09																				
FRK-11-03		1761																								
	Overland	173	4.32	1.46	1.97			Forest (good cover)	8	25	55	70	77	#N/A	0.3	7.1	0.5	0.0	0.3	7.1	0.5	547.3	85.8	18.8	0.02937	
	Channel (ditch)	711	3.41	2.77	4.29			Industrial	60	81	88	91	93	#N/A	#N/A	23.8	36.4	0.0	0.0	23.8	36.4	5545.8				
	Paved			0.00	0.00			Pasture: Good Condition	32	39	61	74	80	#N/A	0.2	12.4	19.5	0.0	0.2	12.4	19.5	2484.6				
	Pipe			0.00	0.00																					
Stream	877	0.00	4.00	3.65	5.9	0.10																				

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)			
										A	B	C	D	A	B	C	D	A	B	C	D						
FRK-12		2750																									
	Overland	266	6.12	1.74	2.54			Forest (good cover)	28	25	55	70	77	#N/A	6.5	8.1	13.5	0.0	6.5	8.1	13.5	1960.6	74.5	41.2	0.06437		
	Channel (ditch)	1171	2.97	2.58	7.58			Impervious	0	98	98	98	98	#N/A	#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.2					
	Paved			0.00	0.00			Pasture: Good Condition	72	39	61	74	80	#N/A	14.3	#N/A	57.7	0.0	14.3	0.0	57.7	5484.5					
	Pipe			0.00	0.00																						
Stream	1313	0.00	4.00	5.47		9.4	0.16																				
FRK-13		2760																									
	Overland	300	2.49	1.11	4.51			Forest (good cover)	59	25	55	70	77	#N/A	14.6	40.6	3.9	0.0	14.6	40.6	3.9	3952.0	66.7	60.0	0.09381		
	Channel (ditch)	902	2.28	2.25	6.69			Impervious	1	98	98	98	98	#N/A	0.8	#N/A	0.2	0.0	0.8	0.0	0.2	95.7					
	Paved			0.00	0.00			Pasture: Good Condition	35	39	61	74	80	#N/A	30.5	#N/A	4.5	0.0	30.5	0.0	4.5	2221.9					
	Pipe			0.00	0.00			Residential 1/4 acre	5	61	75	83	87	#N/A	#N/A	4.8	#N/A	0.0	0.0	4.8	0.0	397.8					
Stream	1558	0.00	4.00	6.49		10.6	0.18																				
FRK-14		1796																									
	Overland	152	9.62	2.18	1.16			Forest (good cover)	45	25	55	70	77	#N/A	3.6	40.9	#N/A	0.0	3.6	40.9	0.0	3062.0	71.0	51.2	0.08004		
	Channel (ditch)	945	11.14	5.06	3.11			Impervious	0	98	98	98	98	#N/A	#N/A	0.4	#N/A	0.0	0.0	0.4	0.0	40.2					
	Paved			0.00	0.00			Pasture: Good Condition	4	39	61	74	80	#N/A	4.2	#N/A	#N/A	0.0	4.2	0.0	0.0	254.4					
	Pipe			0.00	0.00			Residential 1/4 acre	7	61	75	83	87	#N/A	#N/A	7.3	#N/A	0.0	0.0	7.3	0.0	606.5					
Stream	698	0.00	4.00	2.91		4.3	0.07	Woods-Grass: Good	44	32	58	72	79	#N/A	0.0	43.6	#N/A	0.0	0.0	43.6	0.0	3138.4					
FRK-15		2824																									
	Overland	152	10.24	2.25	1.13			Forest (good cover)	63	25	55	70	77	#N/A	9.1	44.9	9.0	0.0	9.1	44.9	9.0	4339.9	68.3	48.5	0.07576		
	Channel (ditch)	1023	10.48	4.91	3.47			Impervious	0	98	98	98	98	#N/A	0.0	#N/A	#N/A	0.0	0.0	0.0	0.0	0.5					
	Paved			0.00	0.00			Pasture: Good Condition	19	39	61	74	80	#N/A	16.5	2.6	#N/A	0.0	16.5	2.6	0.0	1198.9					
	Pipe			0.00	0.00			Woods-Grass: Good	18	32	58	72	79	#N/A	1.3	13.5	3.1	0.0	1.3	13.5	3.1	1289.2					
Stream	1649	0.00	4.00	6.87		6.9	0.11																				
FRK-16		1450																									
	Overland	199	6.89	1.85	1.80			Commercial	5	89	92	94	95	#N/A	1.6	3.1	#N/A	0.0	1.6	3.1	0.0	435.7	72.9	51.6	0.08055		
	Channel (ditch)	1250	9.49	4.67	4.47			Forest (good cover)	59	25	55	70	77	#N/A	0.5	38.3	20.0	0.0	0.5	38.3	20.0	4253.2					
	Paved			0.00	0.00			Impervious	3	98	98	98	98	#N/A	0.3	3.0	#N/A	0.0	0.3	3.0	0.0	323.1					
	Pipe			0.00	0.00			Woods-Grass: Good	33	32	58	72	79	#N/A	9.3	21.6	2.3	0.0	9.3	21.6	2.3	2275.0					
Stream			0.00	0.00		3.8	0.06																				

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)			
										A	B	C	D	A	B	C	D	A	B	C	D						
FRK-17		1831																									
	Overland	206	3.76	1.36	2.52			Forest (good cover)	65	25	55	70	77	#N/A	1.2	49.9	14.0	0.0	1.2	49.9	14.0	4631.2	72.1	55.7	0.08706		
	Channel (ditch)	633	8.01	4.28	2.46			Impervious	1	98	98	98	98	#N/A	0.0	0.3	0.9	0.0	0.0	0.3	0.9	116.4					
	Paved			0.00	0.00			Pasture: Good Condition	4	39	61	74	80	#N/A	4.1	0.1	#N/A	0.0	4.1	0.1	0.0	260.1					
	Pipe			0.00	0.00			Residential 2 acre	20	46	65	77	82	#N/A	2.8	17.1	0.5	0.0	2.8	17.1	0.5	1537.5					
Stream	992	0.00	4.00	4.13	5.5	0.09	Woods-Grass: Good	9	32	58	72	79	#N/A	0.0	8.5	0.7	0.0	0.0	8.5	0.7	666.9						
FRKT-01		1707																									
	Overland	139	6.32	1.77	1.31			Forest (good cover)	88	25	55	70	77	#N/A	18.3	67.9	1.6	0.0	18.3	67.9	1.6	5879.8	68.6	20.7	0.03229		
	Channel (ditch)	379	10.98	5.03	1.26			Impervious	2	98	98	98	98	#N/A	#N/A	0.3	1.8	0.0	0.0	0.3	1.8	203.6					
	Paved			0.00	0.00			Pasture: Good Condition	3	39	61	74	80	#N/A	#N/A	2.4	0.5	0.0	0.0	2.4	0.5	217.5					
	Pipe			0.00	0.00			Woods-Grass: Good	7	32	58	72	79	#N/A	#N/A	2.2	5.0	0.0	0.0	2.2	5.0	558.3					
Stream	1189	0.00	4.00	4.95	4.5	0.08																					
FRKT-02		1331																									
	Overland	180	2.66	1.14	2.63			Forest (good cover)	91	25	55	70	77	#N/A	20.7	60.6	10.2	0.0	20.7	60.6	10.2	6163.8	67.2	13.9	0.02178		
	Channel (ditch)	101	3.71	2.89	0.58			Impervious	1	98	98	98	98	#N/A	1.1	#N/A	#N/A	0.0	1.1	0.0	0.0	103.5					
	Paved			0.00	0.00			Woods-Grass: Good	7	32	58	72	79	#N/A	6.8	#N/A	0.7	0.0	6.8	0.0	0.7	448.4					
	Pipe			0.00	0.00																						
Stream	1050	0.00	4.00	4.37	4.5	0.08																					
FRKT-02-01		1945																									
	Overland	213	4.63	1.51	2.35			Forest (good cover)	40	25	55	70	77	#N/A	0.6	36.7	2.8	0.0	0.6	36.7	2.8	2816.2	79.9	24.7	0.03852		
	Channel (ditch)	363	2.94	2.56	2.36			Impervious	1	98	98	98	98	#N/A	#N/A	0.8	0.1	0.0	0.0	0.8	0.1	84.6					
	Paved			0.00	0.00			Industrial	35	81	88	91	93	#N/A	9.2	1.7	24.3	0.0	9.2	1.7	24.3	3228.8					
	Pipe			0.00	0.00			Woods-Grass: Good	24	32	58	72	79	#N/A	#N/A	2.3	21.5	0.0	0.0	2.3	21.5	1865.3					
Stream	1369	0.00	4.00	5.70	6.2	0.10																					
FRKT-02-02		816																									
	Overland	259	3.14	1.24	3.47			Industrial	93	81	88	91	93	#N/A	3.1	65.1	24.4	0.0	3.1	65.1	24.4	8460.2	90.5	17.7	0.02767		
	Channel (ditch)	557	2.03	2.12	4.37			Pasture: Good Condition	7	39	61	74	80	#N/A	#N/A	1.9	5.6	0.0	0.0	1.9	5.6	585.8					
	Paved			0.00	0.00																						
	Pipe			0.00	0.00																						
Stream			0.00	0.00	4.7	0.08																					
FRKT-02-03		2289																									
	Overland	184	3.26	1.27	2.42			Forest (good cover)	23	25	55	70	77	#N/A	0.8	14.9	7.1	0.0	0.8	14.9	7.1	1629.4	77.7	31.0	0.04841		
	Channel (ditch)	388	5.60	3.56	1.81			Impervious	2	98	98	98	98	#N/A	#N/A	0.4	1.1	0.0	0.0	0.4	1.1	147.8					
	Paved			0.00	0.00			Industrial	12	81	88	91	93	#N/A	#N/A	2.0	10.0	0.0	0.0	2.0	10.0	1111.9					
	Pipe			0.00	0.00			Pasture: Good Condition	9	39	61	74	80	#N/A	#N/A	#N/A	8.8	0.0	0.0	0.0	8.8	703.2					
Stream	1718	0.00	4.00	7.16	6.8	0.11	Woods-Grass: Good	55	32	58	72	79	#N/A	#N/A	23.5	31.4	0.0	0.0	23.5	31.4	4178.0						

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)				
										A	B	C	D	A	B	C	D	A	B	C	D							
FRKT-02-04		1079																										
	Overland	300	1.60	0.89	5.63			Industrial	72	81	88	91	93	#N/A	#N/A	15.7	56.7	0.0	0.0	15.7	56.7	6706.2	89.0	11.3	0.01767			
	Channel (ditch)	779	1.95	2.08	6.25			Pasture: Good Condition	28	39	61	74	80	#N/A	#N/A	1.3	26.2	0.0	0.0	1.3	26.2	2196.4						
	Paved				0.00	0.00																						
	Pipe				0.00	0.00																						
Stream				0.00	0.00	7.1	0.12																					
FRKT-02-05		1848																										
	Overland	294	1.41	0.83	5.89			Impervious	0	98	98	98	98	#N/A	#N/A	0.0	0.3	0.0	0.0	0.0	0.3	25.4	89.2	24.6	0.03847			
	Channel (ditch)	878	1.44	1.78	8.21			Industrial	82	81	88	91	93	#N/A	#N/A	52.2	29.9	0.0	0.0	52.2	29.9	7529.9						
	Paved	677	1.69	2.59	4.36			Woods-Grass: Good	18	32	58	72	79	#N/A	#N/A	4.5	13.1	0.0	0.0	4.5	13.1	1362.7						
	Pipe				0.00	0.00																						
Stream				0.00	0.00	11.1	0.18																					
FRKT-02-06		2058																										
	Overland	275	1.80	0.94	4.87			Impervious	0	98	98	98	98	#N/A	#N/A	0.5	#N/A	0.0	0.0	0.5	0.0	47.8	84.1	41.0	0.06405			
	Channel (ditch)	1783	1.50	1.82	16.34			Industrial	50	81	88	91	93	#N/A	#N/A	42.4	7.5	0.0	0.0	42.4	7.5	4556.6						
	Paved				0.00	0.00		Pasture: Good Condition	50	39	61	74	80	#N/A	#N/A	27.4	22.2	0.0	0.0	27.4	22.2	3804.1						
	Pipe				0.00	0.00																						
Stream				0.00	0.00	12.7	0.21																					
FRKT-02-07		1743																										
	Overland	68	23.46	3.42	0.33			Forest (good cover)	18	25	55	70	77	#N/A	#N/A	#N/A	17.7	0.0	0.0	0.0	17.7	1366.1	77.9	20.4	0.03189			
	Channel (ditch)	1675	4.73	3.27	8.54			Impervious	1	98	98	98	98	#N/A	#N/A	0.6	#N/A	0.0	0.0	0.6	0.0	62.0						
	Paved				0.00	0.00		Industrial	4	81	88	91	93	#N/A	#N/A	2.1	2.0	0.0	0.0	2.1	2.0	377.2						
	Pipe				0.00	0.00		Woods-Grass: Good	78	32	58	72	79	#N/A	#N/A	19.8	57.7	0.0	0.0	19.8	57.7	5985.7						
Stream				0.00	0.00	5.3	0.09																					
FRKT-02-08		1390																										
	Overland	267	3.15	1.25	3.57			Forest (good cover)	30	25	55	70	77	#N/A	22.0	7.0	1.4	0.0	22.0	7.0	1.4	1811.6	66.3	14.5	0.02262			
	Channel (ditch)	380	5.75	3.61	1.75			Impervious	3	98	98	98	98	#N/A	2.2	1.0	#N/A	0.0	2.2	1.0	0.0	322.1						
	Paved				0.00	0.00		Woods-Grass: Good	66	32	58	72	79	#N/A	19.8	46.4	0.0	0.0	19.8	46.4	0.0	4493.0						
	Pipe				0.00	0.00																						
Stream	743	0.00	4.00	3.10	5.1	0.08																						
FRKT-02-09		1861																										
	Overland	283	1.32	0.81	5.85			Impervious	4	98	98	98	98	#N/A	1.0	1.4	1.5	0.0	1.0	1.4	1.5	369.9	79.1	18.3	0.02861			
	Channel (ditch)	1578	3.09	2.63	10.00			Industrial	21	81	88	91	93	#N/A	#N/A	13.5	7.6	0.0	0.0	13.5	7.6	1937.0						
	Paved				0.00	0.00		Woods-Grass: Good	75	32	58	72	79	#N/A	3.3	37.5	34.3	0.0	3.3	37.5	34.3	5601.0						
	Pipe				0.00	0.00																						
Stream				0.00	0.00	9.5	0.16																					

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)					
										A	B	C	D	A	B	C	D	A	B	C	D								
FRKT-02-10		1848																											
	Overland	107	6.86	1.84	0.97			Impervious	12	98	98	98	98	#N/A	3.7	6.6	1.7	0.0	3.7	6.6	1.7	1185.9	71.8	5.9	0.00918				
	Channel (ditch)	1408	1.53	1.84	12.76			Woods-Grass: Good	88	32	58	72	79	#N/A	26.3	56.9	4.7	0.0	26.3	56.9	4.7	5993.0							
	Paved				0.00	0.00																							
	Pipe				0.00	0.00																							
Stream	334	0.00	4.00	1.39		9.1	0.15																						
FRKT-02-11		1292																											
	Overland	186	1.29	0.80	3.89			Impervious	8	98	98	98	98	#N/A	#N/A	7.7	0.1	0.0	0.0	7.7	0.1	763.5	75.9	9.5	0.01478				
	Channel (ditch)	1106	1.07	1.53	12.04			Industrial	3	81	88	91	93	#N/A	#N/A	0.1	2.7	0.0	0.0	0.1	2.7	257.1							
	Paved				0.00	0.00			Woods-Grass: Good	89	32	58	72	79	#N/A	0.2	70.1	19.1	0.0	0.2	70.1	19.1				6571.1			
	Pipe				0.00	0.00																							
Stream				0.00	0.00	9.6	0.16																						
FRKT-02-12		2157																											
	Overland	103	26.50	3.63	0.47			Forest (good cover)	4	25	55	70	77	#N/A	#N/A	#N/A	4.1	0.0	0.0	0.0	4.1	315.2	79.0	27.4	0.04276				
	Channel (ditch)	600	13.56	5.60	1.79			Impervious	1	98	98	98	98	#N/A	#N/A	1.4	0.0	0.0	0.0	1.4	0.0	137.4							
	Paved				0.00	0.00			Industrial	1	81	88	91	93	#N/A	#N/A	0.8	0.0	0.0	0.0	0.8	76.8							
	Pipe				0.00	0.00			Pasture: Good Condition	0	39	61	74	80	#N/A	#N/A	#N/A	0.3	0.0	0.0	0.0	0.3				24.9			
	Stream	1455	0.00	4.00	6.06		5.0	0.08	Residential 2 acre	26	46	65	77	82	#N/A	#N/A	8.6	17.1	0.0	0.0	8.6	17.1				2065.6			
									Woods-Grass: Good	68	32	58	72	79	#N/A	#N/A	9.2	58.4	0.0	0.0	9.2	58.4				5279.8			
FRKT-02-13		2267																											
	Overland	284	4.61	1.51	3.13			Forest (good cover)	52	25	55	70	77	#N/A	35.4	3.9	12.3	0.0	35.4	3.9	12.3	3169.3	67.7	39.2	0.06123				
	Channel (ditch)	932	3.32	2.73	5.70			Impervious	0	98	98	98	98	#N/A	0.0	#N/A	#N/A	0.0	0.0	0.0	0.0	0.9							
	Paved				0.00	0.00			Pasture: Good Condition	47	39	61	74	80	#N/A	9.0	13.7	24.2	0.0	9.0	13.7	24.2				3500.3			
	Pipe				0.00	0.00			Woods-Grass: Good	1	32	58	72	79	#N/A	0.4	1.0	#N/A	0.0	0.4	1.0	0.0				96.2			
Stream	1052	0.00	4.00	4.38		7.9	0.13																						
FRKT-02-14		2423																											
	Overland	197	9.55	2.18	1.51			Forest (good cover)	64	25	55	70	77	#N/A	12.5	41.2	10.7	0.0	12.5	41.2	10.7	4398.1	71.1	54.3	0.08490				
	Channel (ditch)	1032	16.11	6.11	2.81			Impervious	2	98	98	98	98	#N/A	1.5	#N/A	0.5	0.0	1.5	0.0	0.5	197.2							
	Paved				0.00	0.00			Pasture: Good Condition	34	39	61	74	80	#N/A	3.9	15.3	14.3	0.0	3.9	15.3	14.3				2517.7			
	Pipe				0.00	0.00																							
Stream	1194	0.00	4.00	4.98		5.6	0.09																						
FRKT-02-15		2277																											
	Overland	182	4.54	1.50	2.03			Forest (good cover)	83	25	55	70	77	#N/A	6.8	58.9	17.4	0.0	6.8	58.9	17.4	5836.5	70.0	35.8	0.05590				
	Channel (ditch)	446	15.65	6.02	1.23			Impervious	1	98	98	98	98	#N/A	0.3	1.1	#N/A	0.0	0.3	1.1	0.0	138.3							
	Paved				0.00	0.00			Pasture: Good Condition	15	39	61	74	80	#N/A	9.3	5.5	0.6	0.0	9.3	5.5	0.6				1028.3			
	Pipe				0.00	0.00																							
Stream	1648	0.00	4.00	6.87		6.1	0.10																						

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)				
										A	B	C	D	A	B	C	D	A	B	C	D				hide			
FRKT-02-16		2850																										
	Overland	78	16.63	2.88	0.45			Forest (good cover)	56	25	55	70	77	#N/A	10.2	3.5	42.7	0.0	10.2	3.5	42.7	4092.0	74.9	53.1	0.08296			
	Channel (ditch)	1419	5.79	3.62	6.53			Pasture: Good Condition	31	39	61	74	80	#N/A	0.3	6.7	23.6	0.0	0.3	6.7	23.6	2408.2						
	Paved				0.00	0.00			Woods-Grass: Good	13	32	58	72	79	#N/A	0.8	1.9	10.3	0.0	0.8	1.9	10.3				992.3		
	Pipe				0.00	0.00																						
Stream	1354	0.00	4.00	5.64	7.6	0.13																						
FRKT-02-17		3121																										
	Overland	297	3.91	1.39	3.56			Forest (good cover)	20	25	55	70	77	#N/A	3.4	#N/A	16.6	0.0	3.4	0.0	16.6	1465.9	76.4	64.0	0.10007			
	Channel (ditch)	658	3.06	2.62	4.19			Impervious	2	98	98	98	98	#N/A	0.9	#N/A	1.3	0.0	0.9	0.0	1.3	215.6						
	Paved				0.00	0.00			Pasture: Good Condition	1	39	61	74	80	#N/A	0.0	#N/A	1.1	0.0	0.0	0.0	1.1				88.5		
	Pipe				0.00	0.00			Residential 1 acre	1	51	68	79	84	#N/A	#N/A	#N/A	0.7	0.0	0.0	0.0	0.7				56.4		
	Stream	2166	0.00	4.00	9.03	10.1	0.17		Residential 1/2 acre	3	54	70	80	85	#N/A	0.2	#N/A	2.4	0.0	0.2	0.0	2.4				214.5		
								Woods-Grass: Good	73	32	58	72	79	#N/A	9.7	0.0	63.7	0.0	9.7	0.0	63.7	5597.5						
FRKT-02-18		2735																										
	Overland	153	6.99	1.86	1.37			Forest (good cover)	83	25	55	70	77	#N/A	10.0	33.5	39.3	0.0	10.0	33.5	39.3	5922.0	72.6	47.8	0.07470			
	Channel (ditch)	763	14.84	5.86	2.17			Impervious	1	98	98	98	98	#N/A	#N/A	#N/A	0.7	0.0	0.0	0.0	0.7	71.5						
	Paved				0.00	0.00			Pasture: Good Condition	16	39	61	74	80	#N/A	1.7	3.0	11.8	0.0	1.7	3.0	11.8				1266.4		
	Pipe				0.00	0.00																						
Stream	1820	0.00	4.00	7.58	6.7	0.11																						
FRKT-02-19		2101																										
	Overland	170	2.90	1.19	2.37			Impervious	1	98	98	98	98	#N/A	#N/A	#N/A	0.7	0.0	0.0	0.0	0.7	64.9	79.4	35.9	0.05614			
	Channel (ditch)	268	6.18	3.75	1.19			Residential 2 acre	10	46	65	77	82	#N/A	#N/A	#N/A	9.9	0.0	0.0	0.0	9.9	813.8						
	Paved				0.00	0.00			Woods-Grass: Good	89	32	58	72	79	#N/A	#N/A	#N/A	89.4	0.0	0.0	0.0	89.4				7063.7		
	Pipe				0.00	0.00																						
Stream	1663	0.00	4.00	6.93	6.3	0.10																						
FRKT-02-20		1937																										
	Overland	294	0.36	0.42	11.64			Impervious	6	98	98	98	98	#N/A	#N/A	#N/A	5.8	0.0	0.0	0.0	5.8	566.1	79.7	4.8	0.00743			
	Channel (ditch)	936	0.90	1.40	11.16			Woods-Grass: Good	94	32	58	72	79	#N/A	#N/A	6.3	88.0	0.0	0.0	6.3	88.0	7399.8						
	Paved				0.00	0.00																						
	Pipe				0.00	0.00																						
Stream	707	0.00	4.00	2.95	15.4	0.26																						

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)			
										A	B	C	D	A	B	C	D	A	B	C	D				hide		
FRKT-02-21		2414																									
	Overland	209	2.80	1.18	2.97			Impervious	4	98	98	98	98	#N/A	#N/A	#N/A	3.6	0.0	0.0	0.0	3.6	355.5	79.9	17.3	0.02703		
	Channel (ditch)	832	3.62	2.85	4.86			Residential 2 acre	8	46	65	77	82	#N/A	#N/A	#N/A	8.2	0.0	0.0	0.0	8.2	668.5					
	Paved			0.00	0.00			Woods-Grass: Good	88	32	58	72	79	#N/A	#N/A	#N/A	88.2	0.0	0.0	0.0	88.2	6969.4					
	Pipe			0.00	0.00																						
Stream	741	0.00	4.00	3.09		6.6	0.11																				
FRKT-02-22		#REF!																									
	Overland	201	4.24	1.45	2.32			Impervious	2	98	98	98	98	#N/A	#N/A	0.2	1.7	0.0	0.0	0.2	1.7	181.4	82.3	21.9	0.03419		
	Channel (ditch)	583	4.69	3.25	2.99			Industrial	17	81	88	91	93	#N/A	#N/A	#N/A	16.7	0.0	0.0	0.0	16.7	1552.2					
	Paved			0.00	0.00			Residential 1 acre	14	51	68	79	84	#N/A	#N/A	2.0	12.0	0.0	0.0	2.0	12.0	1159.4					
	Pipe			0.00	0.00			Residential 2 acre	0	46	65	77	82	#N/A	#N/A	#N/A	0.1	0.0	0.0	0.0	0.1	6.7					
Stream	1373	#REF!	4.00	5.72		6.6	0.11	Woods-Grass: Good	67	32	58	72	79	#N/A	#N/A	0.1	67.3	0.0	0.0	0.1	67.3	5328.2					
FRKT-02-23		3915																									
	Overland	299	22.33	3.33	1.49			Forest (good cover)	55	25	55	70	77	#N/A	13.3	34.3	7.0	0.0	13.3	34.3	7.0	3677.7	68.6	80.6	0.12587		
	Channel (ditch)	2208	2.69	2.45	15.01			Impervious	1	98	98	98	98	#N/A	0.3	0.5	#N/A	0.0	0.3	0.5	0.0	77.3					
	Paved			0.00	0.00			Pasture: Good Condition	33	39	61	74	80	#N/A	13.1	18.7	0.9	0.0	13.1	18.7	0.9	2257.7					
	Pipe			0.00	0.00			Residential 1 acre	1	51	68	79	84	#N/A	0.3	0.7	0.4	0.0	0.3	0.7	0.4	112.3					
Stream	1408	0.00	4.00	5.87		13.4	0.22	Woods-Grass: Good	10	32	58	72	79	#N/A	3.9	0.4	6.1	0.0	3.9	0.4	6.1	733.4					
FRKT-02-24		2087																									
	Overland	293	1.82	0.95	5.16			Forest (good cover)	3	25	55	70	77	#N/A	2.7	#N/A	#N/A	0.0	2.7	0.0	0.0	148.8	71.5	56.2	0.08776		
	Channel (ditch)	1540	1.26	1.66	15.46			Impervious	3	98	98	98	98	#N/A	1.0	1.7	0.2	0.0	1.0	1.7	0.2	282.1					
	Paved			0.00	0.00			Residential 1 acre	36	51	68	79	84	#N/A	7.8	17.0	11.6	0.0	7.8	17.0	11.6	2840.3					
	Pipe			0.00	0.00			Woods-Grass: Good	58	32	58	72	79	#N/A	27.1	20.0	11.0	0.0	27.1	20.0	11.0	3881.3					
Stream	255	0.00	4.00	1.06		13.0	0.22																				
FRKT-02-25		2364																									
	Overland	298	1.16	0.75	6.59			Forest (good cover)	12	25	55	70	77	#N/A	2.6	9.0	#N/A	0.0	2.6	9.0	0.0	775.7	67.5	30.2	0.04720		
	Channel (ditch)	2066	1.14	1.58	21.84			Impervious	2	98	98	98	98	#N/A	1.0	0.6	#N/A	0.0	1.0	0.6	0.0	158.9					
	Paved			0.00	0.00			Residential 1 acre	30	51	68	79	84	#N/A	10.3	19.4	#N/A	0.0	10.3	19.4	0.0	2234.4					
	Pipe			0.00	0.00			Woods-Grass: Good	57	32	58	72	79	#N/A	37.4	19.6	#N/A	0.0	37.4	19.6	0.0	3580.4					
Stream			0.00	0.00		17.1	0.28																				
FRKT-03		1116																									
	Overland	220	4.06	1.42	2.59			Forest (good cover)	50	25	55	70	77	#N/A	9.0	33.8	7.1	0.0	9.0	33.8	7.1	3409.0	71.6	9.3	0.01446		
	Channel (ditch)	646	2.99	2.59	4.16			Impervious	7	98	98	98	98	#N/A	2.0	0.1	5.0	0.0	2.0	0.1	5.0	703.4					
	Paved			0.00	0.00			Woods-Grass: Good	43	32	58	72	79	#N/A	15.4	2.1	25.4	0.0	15.4	2.1	25.4	3051.7					
	Pipe			0.00	0.00																						
Stream	250	0.00	4.00	1.04		4.7	0.08																				

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)				
										A	B	C	D	A	B	C	D	A	B	C	D							
FRKT-04		1123																										
	Overland	170	3.37	1.29	2.20			Impervious	12	98	98	98	98	#N/A	9.7	0.4	2.3	0.0	9.7	0.4	2.3	1209.9	69.1	5.8	0.00914			
	Channel (ditch)	952	0.59	1.13	14.10			Pasture: Good Condition	88	39	61	74	80	#N/A	67.1	6.1	14.4	0.0	67.1	6.1	14.4	5700.1						
	Paved				0.00	0.00																						
	Pipe				0.00	0.00																						
Stream				0.00	0.00	9.8	0.16																					
FRKT-05		1656																										
	Overland	156	3.59	1.33	1.95			Forest (good cover)	17	25	55	70	77	#N/A	4.8	#N/A	11.9	0.0	4.8	0.0	11.9	1183.6	73.2	47.4	0.07407			
	Channel (ditch)	724	4.79	3.29	3.67			Impervious	1	98	98	98	98	#N/A	0.6	0.4	0.2	0.0	0.6	0.4	0.2	111.9						
	Paved				0.00	0.00			Pasture: Good Condition	78	39	61	74	80	#N/A	19.6	12.4	45.9	0.0	19.6	12.4	45.9				5779.6		
	Pipe				0.00	0.00			Woods-Grass: Good	4	32	58	72	79	#N/A	4.3	#N/A	#N/A	0.0	4.3	0.0	0.0				249.0		
Stream	775	0.00	4.00	3.23	5.3	0.09																						
FRKT-05-01		808																										
	Overland	184	0.58	0.53	5.77			Forest (good cover)	4	25	55	70	77	#N/A	3.7	#N/A	#N/A	0.0	3.7	0.0	0.0	202.1	70.4	8.6	0.01343			
	Channel (ditch)	624	3.82	2.93	3.55			Impervious	10	98	98	98	98	#N/A	3.1	#N/A	6.8	0.0	3.1	0.0	6.8	965.8						
	Paved				0.00	0.00			Pasture: Good Condition	86	39	61	74	80	#N/A	55.1	#N/A	31.4	0.0	55.1	0.0	31.4				5871.4		
	Pipe				0.00	0.00																						
Stream				0.00	0.00	5.6	0.09																					
FRKT-05-02		723																										
	Overland	296	2.97	1.21	4.08			Forest (good cover)	0	25	55	70	77	#N/A	0.0	#N/A	#N/A	0.0	0.0	0.0	0.0	2.0	64.6	8.5	0.01330			
	Channel (ditch)	427	2.12	2.17	3.28			Impervious	1	98	98	98	98	#N/A	1.0	#N/A	0.3	0.0	1.0	0.0	0.3	124.9						
	Paved				0.00	0.00			Pasture: Good Condition	99	39	61	74	80	#N/A	82.4	#N/A	16.3	0.0	82.4	0.0	16.3				6330.3		
	Pipe				0.00	0.00																						
Stream				0.00	0.00	4.4	0.07																					
FRKT-05-03		1343																										
	Overland	75	11.54	2.39	0.52			Forest (good cover)	12	25	55	70	77	#N/A	#N/A	12.1	#N/A	0.0	0.0	12.1	0.0	847.7	66.6	19.1	0.02991			
	Channel (ditch)	865	6.55	3.86	3.73			Impervious	6	98	98	98	98	#N/A	5.5	0.6	#N/A	0.0	5.5	0.6	0.0	593.8						
	Paved				0.00	0.00			Pasture: Good Condition	82	39	61	74	80	#N/A	64.3	17.5	#N/A	0.0	64.3	17.5	0.0				5219.6		
	Pipe				0.00	0.00																						
Stream	403	0.00	4.00	1.68	3.6	0.06																						
FRKT-05-04		2462																										
	Overland	296	2.56	1.12	4.40			Forest (good cover)	26	25	55	70	77	#N/A	21.5	#N/A	4.3	0.0	21.5	0.0	4.3	1508.3	66.7	27.3	0.04267			
	Channel (ditch)	866	2.14	2.18	6.62			Impervious	3	98	98	98	98	#N/A	1.9	#N/A	0.8	0.0	1.9	0.0	0.8	271.6						
	Paved				0.00	0.00			Pasture: Good Condition	34	39	61	74	80	#N/A	10.0	#N/A	23.9	0.0	10.0	0.0	23.9				2521.6		
	Pipe				0.00	0.00			Woods-Grass: Good	38	32	58	72	79	#N/A	28.8	#N/A	8.8	0.0	28.8	0.0	8.8				2365.1		
Stream	1300	0.00	4.00	5.42	9.9	0.16																						

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)				
										A	B	C	D	A	B	C	D	A	B	C	D							
FRKT-06		2011																										
	Overland	173	6.70	1.82	1.59			Forest (good cover)	40	25	55	70	77	#N/A	24.5	#N/A	16.0	0.0	24.5	0.0	16.0	2574.5	69.0	20.5	0.03210			
	Channel (ditch)	732	4.04	3.02	4.04			Impervious	4	98	98	98	98	#N/A	2.8	#N/A	0.8	0.0	2.8	0.0	0.8	345.3						
	Paved				0.00	0.00		Pasture: Good Condition	56	39	61	74	80	#N/A	26.3	#N/A	29.7	0.0	26.3	0.0	29.7	3983.9						
	Pipe				0.00	0.00																						
Stream	1106	0.00	4.00	4.61	6.1	0.10																						
FRKT-07		3809																										
	Overland	98	9.67	2.19	0.74			Forest (good cover)	66	25	55	70	77	#N/A	23.5	26.0	16.2	0.0	23.5	26.0	16.2	4359.8	65.9	46.4	0.07258			
	Channel (ditch)	760	19.76	6.79	1.87			Impervious	2	98	98	98	98	#N/A	0.8	#N/A	0.9	0.0	0.8	0.0	0.9	168.4						
	Paved				0.00	0.00		Pasture: Good Condition	33	39	61	74	80	#N/A	28.2	1.2	3.1	0.0	28.2	1.2	3.1	2060.6						
	Pipe				0.00	0.00																						
Stream	2951	0.00	4.00	12.30	8.9	0.15																						
FRKT-07-01		2643																										
	Overland	115	16.01	2.82	0.68			Forest (good cover)	35	25	55	70	77	#N/A	3.0	26.5	5.4	0.0	3.0	26.5	5.4	2436.9	68.1	55.7	0.08698			
	Channel (ditch)	253	12.24	5.31	0.79			Impervious	5	98	98	98	98	#N/A	3.0	1.7	#N/A	0.0	3.0	1.7	0.0	465.0						
	Paved				0.00	0.00		Pasture: Good Condition	59	39	61	74	80	#N/A	41.2	18.2	#N/A	0.0	41.2	18.2	0.0	3862.7						
	Pipe				0.00	0.00		Residential 2 acre	1	46	65	77	82	#N/A	#N/A	0.5	#N/A	0.0	0.0	0.5	0.0	42.3						
Stream	2276	0.00	4.00	9.48	6.6	0.11																						
FRKT-08		2445																										
	Overland	297	2.91	1.20	4.14			Forest (good cover)	68	25	55	70	77	#N/A	4.6	36.6	27.0	0.0	4.6	36.6	27.0	4891.8	73.7	60.6	0.09468			
	Channel (ditch)	889	5.97	3.68	4.02			Impervious	1	98	98	98	98	#N/A	#N/A	0.9	0.5	0.0	0.0	0.9	0.5	131.9						
	Paved				0.00	0.00		Pasture: Good Condition	2	39	61	74	80	#N/A	2.1	#N/A	#N/A	0.0	2.1	0.0	0.0	126.9						
	Pipe				0.00	0.00		Residential 2 acre	28	46	65	77	82	#N/A	0.5	19.9	8.0	0.0	0.5	19.9	8.0	2220.4						
Stream	1259	0.00	4.00	5.24	8.0	0.13																						
IDT-01		1356																										
	Overland	227	4.53	1.50	2.52			Forest (good cover)	18	25	55	70	77	#N/A	17.5	0.3	#N/A	0.0	17.5	0.3	0.0	981.8	69.9	20.0	0.03127			
	Channel (ditch)	323	8.25	4.34	1.24			Impervious	2	98	98	98	98	#N/A	1.8	0.3	#N/A	0.0	1.8	0.3	0.0	202.7						
	Paved				0.00	0.00		Industrial	28	81	88	91	93	#N/A	4.2	19.1	4.6	0.0	4.2	19.1	4.6	2530.2						
	Pipe				0.00	0.00		Pasture: Good Condition	2	39	61	74	80	#N/A	1.2	0.2	0.5	0.0	1.2	0.2	0.5	129.0						
Stream	807	0.00	4.00	3.36	4.3	0.07	Woods-Grass: Good	50	32	58	72	79	#N/A	34.8	14.7	0.9	0.0	34.8	14.7	0.9	3148.6							
IDT-02		2377																										
	Overland	159	3.78	1.36	1.94			Commercial	9	89	92	94	95	#N/A	0.1	#N/A	9.0	0.0	0.1	0.0	9.0	861.7	84.0	32.5	0.05077			
	Channel (ditch)	1626	1.83	2.01	13.48			Forest (good cover)	5	25	55	70	77	#N/A	4.5	#N/A	#N/A	0.0	4.5	0.0	0.0	249.9						
	Paved				0.00	0.00		Impervious	10	98	98	98	98	#N/A	1.5	5.7	3.2	0.0	1.5	5.7	3.2	1021.3						
	Pipe				0.00	0.00		Industrial	49	81	88	91	93	#N/A	16.9	23.2	8.8	0.0	16.9	23.2	8.8	4417.5						
Stream	592	0.00	4.00	2.47	10.7	0.18	Pasture: Good Condition	8	39	61	74	80	#N/A	#N/A	5.9	1.8	0.0	0.0	5.9	1.8	581.4							
							Woods-Grass: Good	19	32	58	72	79	#N/A	12.2	0.0	7.1	0.0	12.2	0.0	7.1	1271.6							

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)		
										A	B	C	D	A	B	C	D	A	B	C	D					
IDT-02-01		1645																								
	Overland	191	2.86	1.19	2.69			Commercial	17	89	92	94	95	#N/A	2.4	#N/A	14.8	0.0	2.4	0.0	14.8	1623.5	84.6	11.6	0.01817	
	Channel (ditch)	183	4.44	3.16	0.96			Impervious	32	98	98	98	98	#N/A	15.4	#N/A	16.6	0.0	15.4	0.0	16.6	3130.6				
	Paved	895	3.89	3.94	3.78			Pasture: Good Condition	27	39	61	74	80	#N/A	9.3	#N/A	18.1	0.0	9.3	0.0	18.1	2020.2				
	Pipe			0.00	0.00			Woods-Grass: Good	23	32	58	72	79	#N/A	7.9	#N/A	15.6	0.0	7.9	0.0	15.6	1685.0				
Stream	376	0.00	4.00	1.57		5.4	0.09																			
IDT-02-02		1568																								
	Overland	245	4.95	1.56	2.61			Impervious	17	98	98	98	98	#N/A	2.2	0.4	14.6	0.0	2.2	0.4	14.6	1691.9	80.7	27.4	0.04286	
	Channel (ditch)	436	5.20	3.43	2.12			Pasture: Good Condition	10	39	61	74	80	#N/A	1.9	#N/A	8.2	0.0	1.9	0.0	8.2	767.1				
	Paved			0.00	0.00			Woods-Grass: Good	73	32	58	72	79	#N/A	6.0	1.7	65.0	0.0	6.0	1.7	65.0	5606.1				
	Pipe			0.00	0.00																					
Stream	887	0.00	4.00	3.69		5.1	0.08																			
IDT-02-03		1442																								
	Overland	282	1.46	0.85	5.55			Impervious	12	98	98	98	98	#N/A	#N/A	3.2	9.2	0.0	0.0	3.2	9.2	1215.8	81.2	5.7	0.00890	
	Channel (ditch)	1059	1.50	1.82	9.72			Industrial	15	81	88	91	93	#N/A	#N/A	2.4	12.5	0.0	0.0	2.4	12.5	1377.3				
	Paved			0.00	0.00			Pasture: Good Condition	73	39	61	74	80	#N/A	#N/A	48.5	24.2	0.0	0.0	48.5	24.2	5527.6				
	Pipe			0.00	0.00																					
Stream	101	0.00	4.00	0.42		9.4	0.16																			
IDT-02-04		846																								
	Overland	213	1.38	0.82	4.31			Impervious	6	98	98	98	98	#N/A	#N/A	#N/A	6.3	0.0	0.0	0.0	6.3	621.1	86.1	11.2	0.01754	
	Channel (ditch)	633	2.13	2.17	4.86			Industrial	38	81	88	91	93	#N/A	#N/A	#N/A	38.0	0.0	0.0	0.0	38.0	3534.6				
	Paved			0.00	0.00			Pasture: Good Condition	56	39	61	74	80	#N/A	#N/A	#N/A	55.7	0.0	0.0	0.0	55.7	4452.5				
	Pipe			0.00	0.00																					
Stream			0.00	0.00		5.5	0.09																			
IDT-02-05		1175																								
	Overland	249	6.47	1.79	2.32			Impervious	0	98	98	98	98	#N/A	#N/A	0.0	#N/A	0.0	0.0	0.0	0.0	0.1	76.1	13.8	0.02149	
	Channel (ditch)	926	2.87	2.53	6.10			Pasture: Good Condition	64	39	61	74	80	#N/A	#N/A	48.2	16.0	0.0	0.0	48.2	16.0	4848.7				
	Paved			0.00	0.00			Woods-Grass: Good	36	32	58	72	79	#N/A	#N/A	8.6	27.1	0.0	0.0	8.6	27.1	2765.9				
	Pipe			0.00	0.00																					
Stream			0.00	0.00		5.1	0.08																			
IDT-02-06		2443																								
	Overland	192	2.22	1.05	3.06			Impervious	12	98	98	98	98	#N/A	#N/A	0.4	12.1	0.0	0.0	0.4	12.1	1224.5	81.4	29.0	0.04529	
	Channel (ditch)	369	11.19	5.08	1.21			Pasture: Good Condition	74	39	61	74	80	#N/A	#N/A	12.2	61.8	0.0	0.0	12.2	61.8	5852.4				
	Paved	1587	3.06	3.50	7.57			Woods-Grass: Good	13	32	58	72	79	#N/A	#N/A	#N/A	13.4	0.0	0.0	0.0	13.4	1061.1				
	Pipe			0.00	0.00																					
Stream	294	0.00	4.00	1.23		7.8	0.13																			

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)				
										A	B	C	D	A	B	C	D	A	B	C	D				hide			
IDT-02-07		1218																										
	Overland	238	4.49	1.49	2.66			Impervious	13	98	98	98	98	#N/A	#N/A	#N/A	12.8	0.0	0.0	0.0	12.8	1252.8	83.5	15.8	0.02471			
	Channel (ditch)	980	1.65	1.91	8.57			Industrial	19	81	88	91	93	#N/A	#N/A	14.8	4.0	0.0	0.0	14.8	4.0	1722.5						
	Paved				0.00	0.00		Pasture: Good Condition	56	39	61	74	80	#N/A	#N/A	22.3	33.6	0.0	0.0	22.3	33.6	4340.3						
	Pipe				0.00	0.00		Residential 1/4 acre	12	61	75	83	87	#N/A	#N/A	11.5	1.0	0.0	0.0	11.5	1.0	1037.3						
Stream				0.00	0.00	6.7	0.11																					
IDT-02-08		988																										
	Overland	211	6.02	1.72	2.03			Industrial	33	81	88	91	93	#N/A	#N/A	#N/A	33.2	0.0	0.0	0.0	33.2	3086.7	84.3	4.4	0.00689			
	Channel (ditch)	778	9.36	4.63	2.80			Pasture: Good Condition	67	39	61	74	80	#N/A	#N/A	#N/A	66.8	0.0	0.0	0.0	66.8	5344.8						
	Paved				0.00	0.00																						
	Pipe				0.00	0.00																						
Stream				0.00	0.00	2.9	0.05																					
IDT-03		1667																										
	Overland	299	6.15	1.74	2.86			Impervious	44	98	98	98	98	#N/A	17.0	22.5	4.9	0.0	17.0	22.5	4.9	4350.7	84.0	7.4	0.01163			
	Channel (ditch)	324	2.14	2.18	2.48			Pasture: Good Condition	56	39	61	74	80	#N/A	12.0	28.4	15.2	0.0	12.0	28.4	15.2	4050.0						
	Paved	984	2.13	2.91	5.63																							
	Pipe				0.00	0.00																						
Stream	59	0.00	4.00	0.25	6.7	0.11																						
IDT-04		1628																										
	Overland	299	2.14	1.03	4.86			Forest (good cover)	21	25	55	70	77	#N/A	18.2	1.6	1.0	0.0	18.2	1.6	1.0	1190.6	79.5	19.6	0.03055			
	Channel (ditch)	457	1.61	1.88	4.05			Impervious	25	98	98	98	98	#N/A	6.1	7.4	11.9	0.0	6.1	7.4	11.9	2491.4						
	Paved	813	2.36	3.07	4.41			Industrial	5	81	88	91	93	#N/A	4.6	#N/A	#N/A	0.0	4.6	0.0	0.0	402.9						
	Pipe				0.00	0.00		Pasture: Good Condition	19	39	61	74	80	#N/A	4.5	2.2	11.7	0.0	4.5	2.2	11.7	1381.1						
	Stream				0.00	0.00	8.0	0.13	Residential 1/4 acre	22	61	75	83	87	#N/A	0.0	0.2	21.3	0.0	0.0	0.2	21.3				1871.5		
								Woods-Grass: Good	9	32	58	72	79	#N/A	5.2	#N/A	3.9	0.0	5.2	0.0	3.9	613.6						
IDT-04-01		2015																										
	Overland	227	2.83	1.18	3.20			Forest (good cover)	4	25	55	70	77	#N/A	4.1	#N/A	#N/A	0.0	4.1	0.0	0.0	227.2	73.1	14.5	0.02264			
	Channel (ditch)				0.00	0.00		Industrial	16	81	88	91	93	#N/A	16.1	#N/A	#N/A	0.0	16.1	0.0	0.0	1416.0						
	Paved	421	3.33	3.65	1.92			Pasture: Good Condition	9	39	61	74	80	#N/A	7.5	1.7	#N/A	0.0	7.5	1.7	0.0	579.5						
	Pipe				0.00	0.00		Residential 1 acre	1	51	68	79	84	#N/A	#N/A	1.1	#N/A	0.0	0.0	1.1	0.0	90.0						
	Stream	1368	0.00	4.00	5.70	6.5	0.11	Residential 1/2 acre	26	54	70	80	85	#N/A	8.1	17.6	#N/A	0.0	8.1	17.6	0.0	1978.2						
							Woods-Grass: Good	44	32	58	72	79	#N/A	20.7	#N/A	23.0	0.0	20.7	0.0	23.0	3020.9							
IDT-04-02		923																										
	Overland	232	4.08	1.42	2.73			Impervious	3	98	98	98	98	#N/A	#N/A	1.2	1.6	0.0	0.0	1.2	1.6	281.7	80.1	8.5	0.01333			
	Channel (ditch)	456	3.25	2.70	2.82			Residential 1 acre	79	51	68	79	84	#N/A	6.2	45.9	27.0	0.0	6.2	45.9	27.0	6312.7						
	Paved				0.00	0.00		Residential 1/2 acre	18	54	70	80	85	#N/A	2.9	15.2	#N/A	0.0	2.9	15.2	0.0	1415.9						
	Pipe				0.00	0.00																						
Stream	235	0.00	4.00	0.98	3.9	0.07																						

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)				
										A	B	C	D	A	B	C	D	A	B	C	D							
IDT-04-03		1074																										
	Overland	298	2.24	1.05	4.73			Commercial	2	89	92	94	95	#N/A	#N/A	0.2	2.0	0.0	0.0	0.2	2.0	216.7	81.8	5.8	0.00912			
	Channel (ditch)	777	1.60	1.88	6.90			Impervious	8	98	98	98	98	#N/A	#N/A	2.1	5.8	0.0	0.0	2.1	5.8	769.4						
	Paved			0.00	0.00			Pasture: Good Condition	32	39	61	74	80	#N/A	#N/A	24.9	7.3	0.0	0.0	24.9	7.3	2425.3						
	Pipe			0.00	0.00			Residential 1 acre	58	51	68	79	84	#N/A	#N/A	15.3	42.4	0.0	0.0	15.3	42.4	4769.0						
Stream			0.00	0.00	7.0	0.12																						
IDT-04-04		1108																										
	Overland	298	0.94	0.68	7.33			Industrial	77	81	88	91	93	#N/A	0.9	39.8	36.7	0.0	0.9	39.8	36.7	7113.4	88.2	14.9	0.02324			
	Channel (ditch)	810	2.30	2.26	5.97			Pasture: Good Condition	23	39	61	74	80	#N/A	0.1	17.0	5.5	0.0	0.1	17.0	5.5	1704.7						
	Paved			0.00	0.00																							
	Pipe			0.00	0.00																							
Stream			0.00	0.00	8.0	0.13																						
IDT-04-05		1527																										
	Overland	75	7.11	1.88	0.67			Forest (good cover)	15	25	55	70	77	#N/A	#N/A	#N/A	14.9	0.0	0.0	0.0	14.9	1147.5	89.4	10.6	0.01660			
	Channel (ditch)	1452	5.61	3.57	6.78			Industrial	76	81	88	91	93	#N/A	#N/A	1.6	74.5	0.0	0.0	1.6	74.5	7076.3						
	Paved			0.00	0.00			Pasture: Good Condition	9	39	61	74	80	#N/A	#N/A	#N/A	9.0	0.0	0.0	0.0	9.0	717.8						
	Pipe			0.00	0.00																							
Stream			0.00	0.00	4.5	0.07																						
IDT-04-06		1414																										
	Overland	214	4.66	1.52	2.36			Impervious	5	98	98	98	98	#N/A	2.1	#N/A	3.2	0.0	2.1	0.0	3.2	519.8	72.8	8.7	0.01356			
	Channel (ditch)	260	10.00	4.79	0.90			Residential 1 acre	1	51	68	79	84	#N/A	0.7	#N/A	0.6	0.0	0.7	0.0	0.6	93.2						
	Paved			0.00	0.00			Residential 1/2 acre	2	54	70	80	85	#N/A	2.3	#N/A	#N/A	0.0	2.3	0.0	0.0	161.7						
	Pipe			0.00	0.00			Woods-Grass: Good	91	32	58	72	79	#N/A	33.2	#N/A	57.9	0.0	33.2	0.0	57.9	6503.4						
Stream	940	0.00	4.00	3.91	4.3	0.07																						
IDT-04-07		710																										
	Overland	243	2.97	1.21	3.34			Impervious	11	98	98	98	98	#N/A	1.4	2.2	7.5	0.0	1.4	2.2	7.5	1088.1	75.0	3.4	0.00535			
	Channel (ditch)	376	1.03	1.50	4.18			Pasture: Good Condition	89	39	61	74	80	#N/A	35.4	5.1	48.4	0.0	35.4	5.1	48.4	6408.5						
	Paved			0.00	0.00																							
	Pipe			0.00	0.00																							
Stream	92	0.00	4.00	0.38	4.7	0.08																						
IDT-04-08		2278																										
	Overland	204	6.86	1.84	1.85			Forest (good cover)	0	25	55	70	77	#N/A	#N/A	#N/A	0.4	0.0	0.0	0.0	0.4	27.3	75.1	29.4	0.04591			
	Channel (ditch)	1316	1.43	1.77	12.37			Impervious	5	98	98	98	98	#N/A	#N/A	1.3	3.2	0.0	0.0	1.3	3.2	444.1						
	Paved			0.00	0.00			Industrial	0	81	88	91	93	#N/A	#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	1.9						
	Pipe			0.00	0.00			Pasture: Good Condition	95	39	61	74	80	#N/A	18.6	36.6	39.9	0.0	18.6	36.6	39.9	7035.4						
Stream	757	0.00	4.00	3.16	10.4	0.17																						

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)		
										A	B	C	D	A	B	C	D	A	B	C	D					
IDT-04-09		1028																								
	Overland	194	11.01	2.34	1.38			Pasture: Good Condition	100	39	61	74	80	#N/A	39.2	25.9	34.9	0.0	39.2	25.9	34.9	7099.2	71.0	13.8	0.02164	
	Channel (ditch)	175	9.60	4.69	0.62																					
	Paved			0.00	0.00																					
	Pipe			0.00	0.00																					
Stream	660	0.00	4.00	2.75		2.9	0.05																			
IDT-04-10		1591																								
	Overland	171	7.80	1.97	1.45			Forest (good cover)	29	25	55	70	77	#N/A	#N/A	#N/A	28.6	0.0	0.0	0.0	28.6	2199.7	80.7	9.5	0.01479	
	Channel (ditch)	1421	5.13	3.41	6.95			Industrial	19	81	88	91	93	#N/A	#N/A	11.8	6.8	0.0	0.0	11.8	6.8	1704.0				
	Paved			0.00	0.00			Pasture: Good Condition	53	39	61	74	80	#N/A	#N/A	10.3	42.6	0.0	0.0	10.3	42.6	4166.8				
	Pipe			0.00	0.00																					
Stream			0.00	0.00		5.0	0.08																			
IDT-04-11		1246																								
	Overland	105	8.92	2.10	0.83			Forest (good cover)	38	25	55	70	77	#N/A	#N/A	#N/A	38.1	0.0	0.0	0.0	38.1	2934.9	79.2	10.7	0.01671	
	Channel (ditch)	779	3.66	2.87	4.53			Impervious	3	98	98	98	98	#N/A	#N/A	1.1	1.4	0.0	0.0	1.1	1.4	250.3				
	Paved	362	19.32	8.84	0.68			Pasture: Good Condition	59	39	61	74	80	#N/A	#N/A	2.1	57.3	0.0	0.0	2.1	57.3	4734.0				
	Pipe			0.00	0.00																					
Stream			0.00	0.00		3.6	0.06																			
IDT-04-12		1747																								
	Overland	191	4.68	1.52	2.09			Forest (good cover)	42	25	55	70	77	#N/A	#N/A	4.1	38.2	0.0	0.0	4.1	38.2	3232.6	79.1	29.8	0.04651	
	Channel (ditch)	1249	10.69	4.96	4.20			Impervious	4	98	98	98	98	#N/A	3.0	#N/A	0.7	0.0	3.0	0.0	0.7	365.1				
	Paved			0.00	0.00			Industrial	11	81	88	91	93	#N/A	#N/A	9.8	0.8	0.0	0.0	9.8	0.8	970.1				
	Pipe			0.00	0.00			Pasture: Good Condition	43	39	61	74	80	#N/A	2.5	12.2	28.5	0.0	2.5	12.2	28.5	3341.0				
Stream	307	0.00	4.00	1.28		4.5	0.08																			
IDT-04-13		1067																								
	Overland	154	2.95	1.21	2.12			Forest (good cover)	72	25	55	70	77	#N/A	#N/A	5.8	65.9	0.0	0.0	5.8	65.9	5479.8	77.8	18.3	0.02862	
	Channel (ditch)	914	15.39	5.97	2.55			Pasture: Good Condition	15	39	61	74	80	#N/A	#N/A	2.9	11.9	0.0	0.0	2.9	11.9	1171.0				
	Paved			0.00	0.00			Residential 1/2 acre	13	54	70	80	85	#N/A	#N/A	3.2	10.2	0.0	0.0	3.2	10.2	1124.9				
	Pipe			0.00	0.00			Woods-Grass: Good	0	32	58	72	79	#N/A	#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.0	2.5			
Stream			0.00	0.00		2.8	0.05																			
IDT-04-14		1307																								
	Overland	298	1.57	0.88	5.66			Commercial	5	89	92	94	95	#N/A	#N/A	#N/A	5.4	0.0	0.0	0.0	5.4	513.5	71.2	19.1	0.02987	
	Channel (ditch)	802	11.63	5.18	2.58			Forest (good cover)	36	25	55	70	77	#N/A	#N/A	#N/A	36.3	0.0	0.0	0.0	36.3	2791.5				
	Paved	206	3.00	3.46	0.99			Impervious	5	98	98	98	98	#N/A	#N/A	1.6	3.1	0.0	0.0	1.6	3.1	454.8				
	Pipe			0.00	0.00			Industrial	31	81	88	91	93	#N/A	#N/A	16.3	15.2	0.0	0.0	16.3	15.2	2892.4				
	Stream			0.00	0.00		5.5	0.09	Pasture: Good Condition	6	39	61	74	80	#N/A	#N/A	1.7	4.4	0.0	0.0	1.7	4.4	472.5			
								Residential 1/4 acre	2	61	75	83	87	#N/A	#N/A	#N/A	1.6	0.0	0.0	0.0	1.6	143.1				
								Residential 1/8 acre	13	77	85	90	92	#N/A	#N/A	0.5	12.4	0.0	0.0	0.5	12.4	1186.2				
							Woods-Grass: Good	2	32	58	72	79	#N/A	#N/A	#N/A	1.7	0.0	0.0	0.0	1.7	131.8					

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)					
										A	B	C	D	A	B	C	D	A	B	C	D								
IDT-04-15		1630																											
	Overland	162	10.05	2.23	1.21			Forest (good cover)	33	25	55	70	77	#N/A	#N/A	#N/A	32.9	0.0	0.0	0.0	32.9	2531.5	81.5	15.6	0.02439				
	Channel (ditch)	1468	9.65	4.70	5.20			Impervious	3	98	98	98	98	#N/A	#N/A	#N/A	2.6	0.0	0.0	0.0	2.6	251.3							
	Paved				0.00	0.00		Industrial	17	81	88	91	93	#N/A	#N/A	#N/A	17.3	0.0	0.0	0.0	17.3	1607.1							
	Pipe				0.00	0.00		Pasture: Good Condition	28	39	61	74	80	#N/A	#N/A	#N/A	27.6	0.0	0.0	0.0	27.6	2208.8							
	Stream				0.00	0.00	3.8	0.06	Woods-Grass: Good	20	32	58	72	79	#N/A	#N/A	#N/A	19.7	0.0	0.0	0.0	19.7				1553.7			
IDT-04-16		1806																											
	Overland	202	7.38	1.91	1.77			Impervious	5	98	98	98	98	#N/A	#N/A	1.7	3.5	0.0	0.0	1.7	3.5	502.4	79.9	10.1	0.01573				
	Channel (ditch)	1604	3.38	2.75	9.72			Pasture: Good Condition	56	39	61	74	80	#N/A	#N/A	11.1	44.9	0.0	0.0	11.1	44.9	4413.0							
	Paved				0.00	0.00		Woods-Grass: Good	39	32	58	72	79	#N/A	#N/A	0.0	38.9	0.0	0.0	0.0	38.9	3071.3							
	Pipe				0.00	0.00																							
	Stream				0.00	0.00	6.9	0.11																					
IDT-04-17		1793																											
	Overland	124	3.45	1.30	1.58			Impervious	24	98	98	98	98	#N/A	3.6	4.1	16.1	0.0	3.6	4.1	16.1	2327.9	81.7	5.5	0.00859				
	Channel (ditch)	1096	3.19	2.67	6.84			Pasture: Good Condition	76	39	61	74	80	#N/A	9.6	12.1	54.5	0.0	9.6	12.1	54.5	5844.4							
	Paved	574	2.51	3.16	3.02																								
	Pipe				0.00	0.00																							
	Stream				0.00	0.00	6.9	0.11																					
IDT-05		1659																											
	Overland	224	6.67	1.82	2.05			Commercial	0	89	92	94	95	#N/A	0.1	#N/A	0.0	0.0	0.1	0.0	0.0	13.9	77.3	29.1	0.04547				
	Channel (ditch)	954	2.57	2.39	6.64			Forest (good cover)	10	25	55	70	77	#N/A	8.1	#N/A	1.7	0.0	8.1	0.0	1.7	571.8							
	Paved				0.00	0.00		Impervious	1	98	98	98	98	#N/A	0.4	#N/A	0.7	0.0	0.4	0.0	0.7	112.6							
	Pipe				0.00	0.00		Industrial	2	81	88	91	93	#N/A	1.9	#N/A	#N/A	0.0	1.9	0.0	0.0	169.0							
	Stream	481	0.00	4.00	2.00	6.4	0.11	Pasture: Good Condition	0	39	61	74	80	#N/A	#N/A	#N/A	0.0	0.0	0.0	0.0	0.0	0.9							
								Residential 1 acre	53	51	68	79	84	#N/A	20.0	3.3	30.2	0.0	20.0	3.3	30.2	4155.8							
								Residential 1/2 acre	15	54	70	80	85	#N/A	9.3	5.4	#N/A	0.0	9.3	5.4	0.0	1081.2							
								Residential 1/4 acre	19	61	75	83	87	#N/A	1.4	#N/A	17.5	0.0	1.4	0.0	17.5	1626.0							
IDT-06		1994																											
	Overland	292	4.97	1.57	3.11			Commercial	30	89	92	94	95	#N/A	25.4	2.0	2.4	0.0	25.4	2.0	2.4	2754.2	75.5	44.1	0.06896				
	Channel (ditch)	1562	1.61	1.89	13.80			Forest (good cover)	8	25	55	70	77	#N/A	4.8	#N/A	3.3	0.0	4.8	0.0	3.3	517.2							
	Paved				0.00	0.00		Impervious	6	98	98	98	98	#N/A	4.6	0.5	0.9	0.0	4.6	0.5	0.9	585.9							
	Pipe				0.00	0.00		Pasture: Good Condition	51	39	61	74	80	#N/A	40.9	0.1	10.2	0.0	40.9	0.1	10.2	3324.1							
	Stream	139	0.00	4.00	0.58	10.5	0.17	Residential 1/4 acre	5	61	75	83	87	#N/A	4.6	#N/A	0.3	0.0	4.6	0.0	0.3	367.6							
IDT-06-01		1273																											
	Overland	299	2.58	1.13	4.42			Commercial	2	89	92	94	95	#N/A	0.9	0.1	1.1	0.0	0.9	0.1	1.1	196.5	84.8	9.3	0.01452				
	Channel (ditch)	974	0.78	1.30	12.47			Impervious	5	98	98	98	98	#N/A	4.1	0.4	0.3	0.0	4.1	0.4	0.3	468.9							
	Paved				0.00	0.00		Industrial	42	81	88	91	93	#N/A	11.5	10.3	20.0	0.0	11.5	10.3	20.0	3820.8							
	Pipe				0.00	0.00		Pasture: Good Condition	6	39	61	74	80	#N/A	4.1	1.7	#N/A	0.0	4.1	1.7	0.0	376.3							
	Stream				0.00	0.00	10.1	0.17	Residential 1 acre	1	51	68	79	84	#N/A	0.5	#N/A	0.3	0.0	0.5	0.0	0.3				55.7			
								Residential 1/4 acre	45	61	75	83	87	#N/A	23.0	10.8	10.8	0.0	23.0	10.8	10.8	3563.7							

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)			
										A	B	C	D	A	B	C	D	A	B	C	D						
IDT-06-02		2523																									
	Overland	173	12.74	2.52	1.14			Forest (good cover)	13	25	55	70	77	#N/A	#N/A	3.1	10.3	0.0	0.0	3.1	10.3	1014.2	87.0	37.7	0.05888		
	Channel (ditch)	900	11.32	5.10	2.94			Impervious	0	98	98	98	98	#N/A	#N/A	#N/A	0.1	0.0	0.0	0.0	0.1	12.5					
	Paved			0.00	0.00			Industrial	68	81	88	91	93	#N/A	0.2	21.9	46.2	0.0	0.2	21.9	46.2	6311.4					
	Pipe			0.00	0.00			Pasture: Good Condition	0	39	61	74	80	#N/A	#N/A	#N/A	0.3	0.0	0.0	0.0	0.3	22.4					
	Stream	1450	0.00	4.00	6.04	6.1	0.10	Residential 1/2 acre	0	54	70	80	85	#N/A	#N/A	#N/A	0.1	0.0	0.0	0.0	0.1	5.9					
							Woods-Grass: Good	18	32	58	72	79	#N/A	#N/A	9.4	8.3	0.0	0.0	9.4	8.3	1333.7						
IDT-06-03		1827																									
	Overland	208	2.56	1.12	3.09			Forest (good cover)	58	25	55	70	77	#N/A	#N/A	27.1	31.0	0.0	0.0	27.1	31.0	4283.9	75.3	23.1	0.03606		
	Channel (ditch)	1619	8.43	4.39	6.15			Pasture: Good Condition	14	39	61	74	80	#N/A	#N/A	3.0	11.5	0.0	0.0	3.0	11.5	1137.4					
	Paved			0.00	0.00			Residential 1/2 acre	3	54	70	80	85	#N/A	#N/A	2.0	0.6	0.0	0.0	2.0	0.6	217.1					
	Pipe			0.00	0.00			Woods-Grass: Good	25	32	58	72	79	#N/A	#N/A	10.0	14.8	0.0	0.0	10.0	14.8	1887.9					
Stream			0.00	0.00	5.5	0.09																					
IDT-06-04		930																									
	Overland	96	4.19	1.44	1.11			Forest (good cover)	53	25	55	70	77	#N/A	#N/A	38.4	15.1	0.0	0.0	38.4	15.1	3849.0	77.5	14.8	0.02313		
	Channel (ditch)	835	14.59	5.81	2.39			Pasture: Good Condition	1	39	61	74	80	#N/A	#N/A	#N/A	0.9	0.0	0.0	0.0	0.9	68.4					
	Paved			0.00	0.00			Residential 1/2 acre	46	54	70	80	85	#N/A	#N/A	10.4	35.3	0.0	0.0	10.4	35.3	3829.7					
	Pipe			0.00	0.00																						
Stream			0.00	0.00	2.1	0.04																					
IDT-06-05		357																									
	Overland	209	1.92	0.97	3.59			Residential 1/2 acre	100	54	70	80	85	#N/A	#N/A	29.3	70.7	0.0	0.0	29.3	70.7	8353.7	83.5	3.6	0.00570		
	Channel (ditch)	148	11.27	5.09	0.48																						
	Paved			0.00	0.00																						
	Pipe			0.00	0.00																						
Stream			0.00	0.00	2.4	0.04																					
IDT-06-06		1492																									
	Overland	287	1.21	0.77	6.22			Commercial	9	89	92	94	95	#N/A	#N/A	0.1	9.2	0.0	0.0	0.1	9.2	884.3	87.7	22.2	0.03463		
	Channel (ditch)	1205	3.62	2.85	7.05			Impervious	37	98	98	98	98	#N/A	#N/A	19.6	17.1	0.0	0.0	19.6	17.1	3598.1					
	Paved			0.00	0.00			Pasture: Good Condition	54	39	61	74	80	#N/A	0.3	3.7	50.0	0.0	0.3	3.7	50.0	4290.4					
	Pipe			0.00	0.00																						
Stream			0.00	0.00	8.0	0.13																					
IDT-06-07		2355																									
	Overland	291	2.15	1.03	4.72			Commercial	6	89	92	94	95	#N/A	3.4	1.6	0.8	0.0	3.4	1.6	0.8	540.5	81.4	34.9	0.05447		
	Channel (ditch)	884	3.05	2.61	5.64			Impervious	29	98	98	98	98	#N/A	7.5	7.0	14.6	0.0	7.5	7.0	14.6	2853.4					
	Paved			0.00	0.00			Industrial	9	81	88	91	93	#N/A	4.4	#N/A	4.3	0.0	4.4	0.0	4.3	787.5					
	Pipe			0.00	0.00			Pasture: Good Condition	31	39	61	74	80	#N/A	10.0	14.5	6.9	0.0	10.0	14.5	6.9	2233.3					
Stream	1179	0.00	4.00	4.91	9.2	0.15	Woods-Grass: Good	25	32	58	72	79	#N/A	11.7	#N/A	13.3	0.0	11.7	0.0	13.3	1728.6						

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

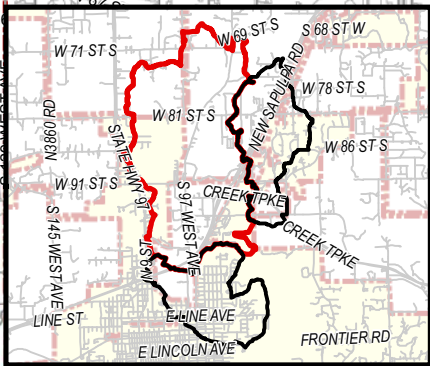
Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)		
										A	B	C	D	A	B	C	D	A	B	C	D				hide	
IDT-07		2000																								
	Overland	297	0.76	0.61	8.11			Forest (poor cover)	24	45	66	77	83	#N/A	14.4	7.0	2.5	0.0	14.4	7.0	2.5	1696.4	82.8	15.6	0.02436	
	Channel (ditch)	1404	1.72	1.95	12.01			Impervious	3	98	98	98	98	#N/A	1.1	0.2	1.5	0.0	1.1	0.2	1.5	277.1				
	Paved				0.00	0.00		Industrial	41	81	88	91	93	#N/A	10.9	0.9	29.2	0.0	10.9	0.9	29.2	3748.8				
	Pipe				0.00	0.00		Residential 1/4 acre	11	61	75	83	87	#N/A	0.3	5.8	5.0	0.0	0.3	5.8	5.0	936.0				
Stream	299	0.00	4.00	1.24		12.8	0.21	Residential 2 acre	21	46	65	77	82	#N/A	7.4	#N/A	13.9	0.0	7.4	0.0	13.9	1621.3				
IDT-08		1111																								
	Overland	265	0.96	0.68	6.46			Forest (good cover)	0	25	55	70	77	#N/A	0.0	#N/A	#N/A	0.0	0.0	0.0	0.0	0.4	89.1	32.9	0.05143	
	Channel (ditch)	846	2.49	2.35	5.99			Industrial	96	81	88	91	93	#N/A	48.7	27.0	20.5	0.0	48.7	27.0	20.5	8655.3				
	Paved				0.00	0.00		Woods-Grass: Good	4	32	58	72	79	#N/A	0.7	3.0	#N/A	0.0	0.7	3.0	0.0	258.4				
	Pipe				0.00	0.00																				
Stream				0.00	0.00	7.5	0.12																			
IDT-08-01		1178																								
	Overland	132	4.04	1.41	1.56			Forest (good cover)	71	25	55	70	77	#N/A	11.2	2.9	57.4	0.0	11.2	2.9	57.4	5238.3	72.8	6.9	0.01082	
	Channel (ditch)	1046	14.70	5.83	2.99			Industrial	0	81	88	91	93	#N/A	0.1	0.0	#N/A	0.0	0.1	0.0	0.0	7.0				
	Paved				0.00	0.00		Pasture: Good Condition	9	39	61	74	80	#N/A	#N/A	#N/A	9.2	0.0	0.0	0.0	9.2	735.4				
	Pipe				0.00	0.00		Woods-Grass: Good	19	32	58	72	79	#N/A	7.3	9.9	2.0	0.0	7.3	9.9	2.0	1295.7				
Stream				0.00	0.00	2.7	0.05																			
IDT-09		1423																								
	Overland	150	4.09	1.42	1.76			Forest (good cover)	46	25	55	70	77	#N/A	#N/A	16.2	29.9	0.0	0.0	16.2	29.9	3439.4	75.6	17.2	0.02683	
	Channel (ditch)	1178	13.01	5.48	3.58			Impervious	0	98	98	98	98	#N/A	#N/A	0.3	#N/A	0.0	0.0	0.3	0.0	26.7				
	Paved				0.00	0.00		Industrial	3	81	88	91	93	#N/A	0.0	2.1	1.3	0.0	0.0	2.1	1.3	314.9				
	Pipe				0.00	0.00		Pasture: Good Condition	18	39	61	74	80	#N/A	#N/A	0.2	18.0	0.0	0.0	0.2	18.0	1457.8				
Stream	95	0.00	4.00	0.40		3.4	0.06	Woods-Grass: Good	32	32	58	72	79	#N/A	0.5	26.6	4.8	0.0	0.5	26.6	4.8	2324.8				
IDT-10		1831																								
	Overland	263	1.87	0.96	4.57			Forest (good cover)	51	25	55	70	77	#N/A	0.5	39.2	11.3	0.0	0.5	39.2	11.3	3636.7	75.9	12.3	0.01923	
	Channel (ditch)	1568	7.49	4.13	6.32			Impervious	3	98	98	98	98	#N/A	0.3	2.6	0.2	0.0	0.3	2.6	0.2	302.7				
	Paved				0.00	0.00		Industrial	8	81	88	91	93	#N/A	3.2	1.1	3.6	0.0	3.2	1.1	3.6	712.3				
	Pipe				0.00	0.00		Pasture: Good Condition	12	39	61	74	80	#N/A	0.9	4.9	6.6	0.0	0.9	4.9	6.6	943.7				
Stream				0.00	0.00	6.5	0.11	Residential 2 acre	19	46	65	77	82	#N/A	0.1	9.4	9.4	0.0	0.1	9.4	9.4	1494.9				
IDT-11		2789																								
	Overland	104	5.53	1.65	1.05			Forest (good cover)	29	25	55	70	77	#N/A	9.4	17.7	2.4	0.0	9.4	17.7	2.4	1937.6	67.0	41.5	0.06491	
	Channel (ditch)	2685	2.21	2.22	20.20			Impervious	1	98	98	98	98	#N/A	#N/A	0.9	0.1	0.0	0.0	0.9	0.1	96.9				
	Paved				0.00	0.00		Industrial	0	81	88	91	93	#N/A	#N/A	0.0	0.1	0.0	0.0	0.0	0.1	10.7				
	Pipe				0.00	0.00		Pasture: Good Condition	58	39	61	74	80	#N/A	33.8	1.3	22.9	0.0	33.8	1.3	22.9	3994.1				
Stream				0.00	0.00	12.7	0.21	Woods-Grass: Good	11	32	58	72	79	#N/A	11.2	0.2	#N/A	0.0	11.2	0.2	0.0	662.4				

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)		
										A	B	C	D	A	B	C	D	A	B	C	D					
IDT-11-01		2022																								
	Overland	281	7.02	1.86	2.52			Forest (good cover)	46	25	55	70	77	#N/A	3.3	42.8	#N/A	0.0	3.3	42.8	0.0	3178.1	67.8	21.6	0.03368	
	Channel (ditch)	1741	6.11	3.72	7.79			Impervious	2	98	98	98	98	#N/A	0.4	1.7	#N/A	0.0	0.4	1.7	0.0	212.6				
	Paved			0.00	0.00			Pasture: Good Condition	2	39	61	74	80	#N/A	1.9	0.0	#N/A	0.0	1.9	0.0	0.0	113.8				
	Pipe			0.00	0.00			Woods-Grass: Good	50	32	58	72	79	#N/A	22.2	27.7	#N/A	0.0	22.2	27.7	0.0	3280.4				
Stream			0.00	0.00		6.2	0.10																			
IDT-11-02		1324																								
	Overland	293	3.10	1.24	3.95			Forest (good cover)	3	25	55	70	77	#N/A	0.4	#N/A	2.6	0.0	0.4	0.0	2.6	222.6	84.8	11.7	0.01829	
	Channel (ditch)	1031	2.18	2.20	7.81			Industrial	65	81	88	91	93	#N/A	22.8	#N/A	41.9	0.0	22.8	0.0	41.9	5896.3				
	Paved			0.00	0.00			Pasture: Good Condition	32	39	61	74	80	#N/A	12.1	#N/A	20.2	0.0	12.1	0.0	20.2	2358.5				
	Pipe			0.00	0.00																					
Stream			0.00	0.00		7.1	0.12																			
IDT-12		1765																								
	Overland	87	3.98	1.40	1.03			Forest (good cover)	65	25	55	70	77	#N/A	12.0	50.7	1.9	0.0	12.0	50.7	1.9	4355.3	66.0	18.2	0.02838	
	Channel (ditch)	873	12.96	5.47	2.66			Pasture: Good Condition	18	39	61	74	80	#N/A	10.3	2.9	5.2	0.0	10.3	2.9	5.2	1258.9				
	Paved			0.00	0.00			Woods-Grass: Good	17	32	58	72	79	#N/A	16.6	0.4	#N/A	0.0	16.6	0.4	0.0	990.7				
	Pipe			0.00	0.00																					
Stream	805	0.00	4.00	3.35		4.2	0.07																			
IDT-12-01		2227																								
	Overland	126	19.17	3.09	0.68			Forest (good cover)	56	25	55	70	77	#N/A	2.9	52.9	#N/A	0.0	2.9	52.9	0.0	3861.7	70.5	33.4	0.05211	
	Channel (ditch)	411	9.57	4.68	1.46			Impervious	5	98	98	98	98	#N/A	0.1	5.0	#N/A	0.0	0.1	5.0	0.0	504.6				
	Paved			0.00	0.00			Pasture: Good Condition	22	39	61	74	80	#N/A	0.9	21.4	#N/A	0.0	0.9	21.4	0.0	1633.6				
	Pipe			0.00	0.00			Woods-Grass: Good	17	32	58	72	79	#N/A	11.7	5.1	#N/A	0.0	11.7	5.1	0.0	1047.8				
Stream	1690	0.00	4.00	7.04		5.5	0.09																			
IDT-13		2404																								
	Overland	209	3.89	1.39	2.51			Forest (good cover)	58	25	55	70	77	#N/A	1.2	56.5	#N/A	0.0	1.2	56.5	0.0	4023.5	74.7	40.0	0.06250	
	Channel (ditch)	311	7.33	4.09	1.27			Impervious	0	98	98	98	98	#N/A	#N/A	0.1	#N/A	0.0	0.0	0.1	0.0	10.9				
	Paved	496	4.36	4.18	1.98			Pasture: Good Condition	7	39	61	74	80	#N/A	#N/A	6.8	#N/A	0.0	0.0	6.8	0.0	501.1				
	Pipe			0.00	0.00			Residential 1/4 acre	35	61	75	83	87	#N/A	#N/A	35.4	#N/A	0.0	0.0	35.4	0.0	2936.3				
Stream	1389	0.00	4.00	5.79		6.9	0.12																			
IDT-14		1206																								
	Overland	149	4.91	1.56	1.60			Forest (good cover)	53	25	55	70	77	#N/A	#N/A	52.6	#N/A	0.0	0.0	52.6	0.0	3680.3	73.8	36.7	0.05732	
	Channel (ditch)	691	8.99	4.54	2.54			Impervious	6	98	98	98	98	#N/A	0.5	5.1	#N/A	0.0	0.5	5.1	0.0	552.8				
	Paved			0.00	0.00			Pasture: Good Condition	27	39	61	74	80	#N/A	5.1	21.7	#N/A	0.0	5.1	21.7	0.0	1917.5				
	Pipe			0.00	0.00			Residential 1/4 acre	15	61	75	83	87	#N/A	0.4	14.2	#N/A	0.0	0.4	14.2	0.0	1213.4				
Stream	366	0.00	4.00	1.52		3.4	0.06	Woods-Grass: Good	0	32	58	72	79	#N/A	0.3	#N/A	#N/A	0.0	0.3	0.0	0.0	17.8				

Appendix 14-A. North Polecat Systems - Frankoma Creek and Industrial Tributary - Hydrologic Coefficients for Existing Conditions

Tributary Subarea	Flow Type	Length (ft)	Weighted Slope (%)	Velocity (ft./sec.)	Tc (min.)	Lag (min.)	Lag (hr.)	Land Use:	% of Use	CN value for each Hydrologic Soil Group				HSG Calcs (hide)				Hydrologic Soil Groups and %				Composite CN	Drainage Area (acres)	Drainage Area (sq. mi.)		
										A	B	C	D	A	B	C	D	A	B	C	D					
IDT-15		940																								
	Overland	251	1.49	0.85	4.89			Residential 1/4 acre	100	61	75	83	87	#N/A	7.9	92.1	#N/A	0.0	7.9	92.1	0.0	8237.1	82.4	7.8	0.01219	
	Channel (ditch)	523	3.39	2.76	3.16																					
	Paved	166	2.04	2.85	0.97																					
	Pipe				0.00	0.00																				
Stream				0.00	0.00	5.4	0.09																			



Index Map

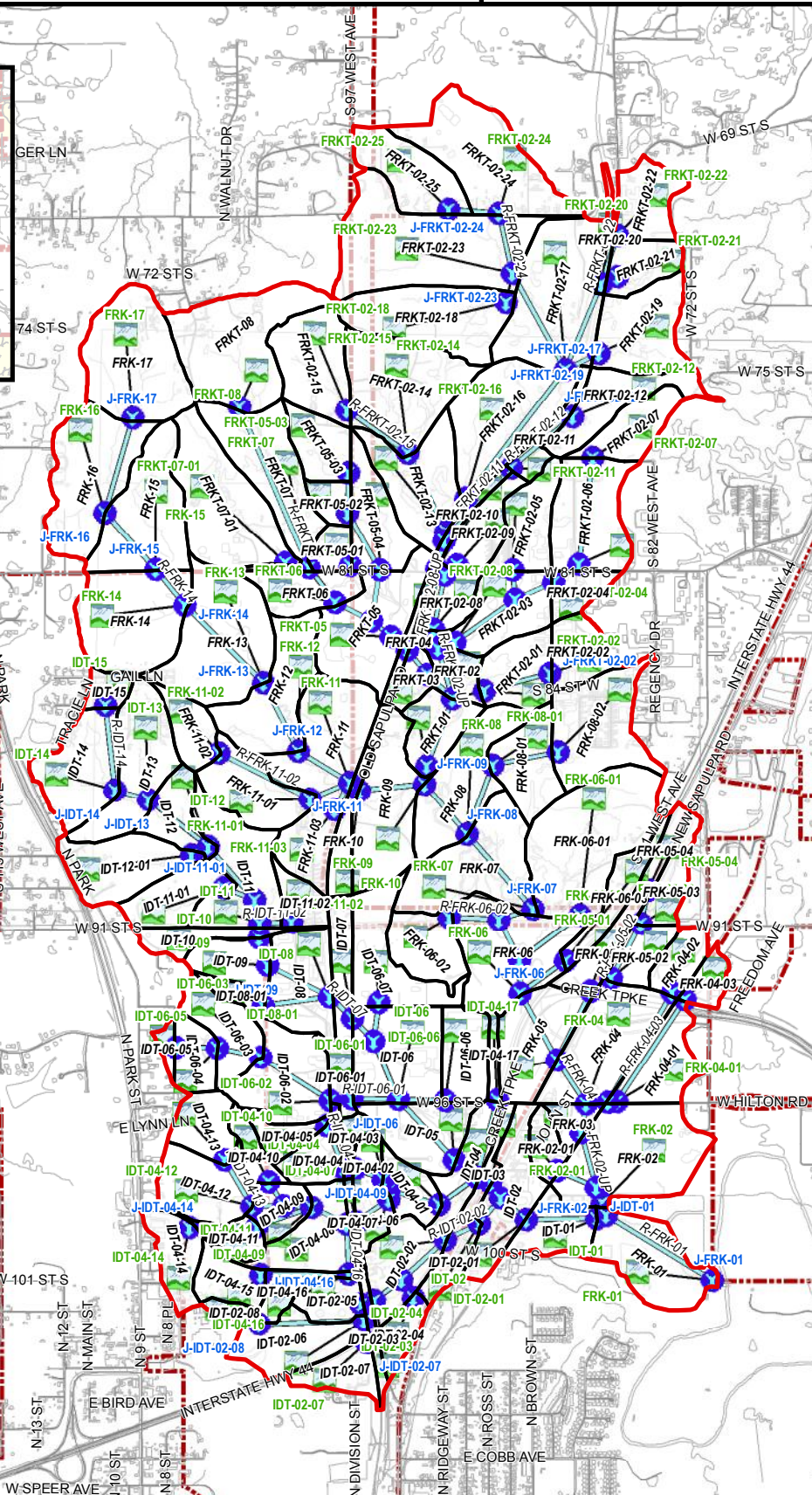
Legend

HMS Points

- Diversion
- Subbasin
- Junction
- Reservoir

HMS Lines

- Reach
- Route Downstream
- Subbasin Boundaries



**Appendix 14-C. North Polecat Systems - Frankoma & Industrial Tributary
Existing Flow Rates (CFS)**

HMS Junction	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year	Drainage Area, mi ²
FRK-01	21	40	82	109	145	174	202	259	0.059
FRK-02	9	23	66	97	139	175	212	287	0.093
FRK-02-01	11	19	32	40	51	60	68	84	0.015
FRK-03	6	10	19	25	32	38	44	56	0.013
FRK-04	15	33	78	109	149	184	218	286	0.074
FRK-04-01	12	23	47	64	85	103	120	156	0.040
FRK-04-02	9	18	36	47	63	75	87	111	0.021
FRK-04-03	11	19	32	40	50	59	66	82	0.014
FRK-05	43	77	132	166	211	245	278	342	0.057
FRK-05-01	9	16	33	44	58	70	82	105	0.023
FRK-05-02	8	17	34	46	62	75	87	111	0.022
FRK-05-03	35	52	73	86	102	114	126	149	0.023
FRK-05-04	8	13	23	29	36	42	48	60	0.012
FRK-06	21	44	97	133	180	219	258	336	0.080
FRK-06-01	21	46	110	154	212	261	311	409	0.109
FRK-06-02	48	73	106	126	153	172	190	228	0.037
FRK-06-03	15	25	43	56	71	83	95	119	0.027
FRK-07	15	34	84	118	162	200	238	313	0.076
FRK-08	14	29	68	94	129	158	187	246	0.066
FRK-08-01	15	29	62	83	111	134	156	200	0.042
FRK-08-02	45	72	123	156	197	230	261	326	0.070
FRK-09	22	42	89	121	162	195	229	296	0.073
FRK-10	13	20	35	44	55	64	73	90	0.018
FRK-11	20	39	83	112	150	181	213	276	0.072
FRK-11-01	29	50	90	115	148	173	198	246	0.046
FRK-11-02	10	18	37	50	66	79	92	118	0.024
FRK-11-03	32	50	77	93	114	129	144	174	0.029
FRK-12	30	51	97	127	165	196	226	287	0.064
FRK-13	18	39	93	130	179	220	262	345	0.094
FRK-14	34	66	133	177	234	280	325	412	0.080
FRK-15	21	43	96	132	178	216	254	330	0.076
FRK-16	42	78	150	196	257	304	351	441	0.081
FRK-17	39	72	142	188	248	295	342	434	0.087
FRKT-01	11	22	47	64	87	105	123	158	0.032
FRKT-02	6	13	30	41	56	68	80	103	0.022
FRKT-02-01	30	49	82	103	130	150	171	210	0.039
FRKT-02-02	40	61	86	102	122	137	151	180	0.028
FRKT-02-03	32	53	93	118	151	176	201	250	0.048
FRKT-02-04	22	32	47	57	68	77	85	103	0.018

**Appendix 14-C. North Polecat Systems - Frankoma & Industrial Tributary
Existing Flow Rates (CFS)**

HMS Junction	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year	Drainage Area, mi ²
FRKT-02-05	42	59	88	105	128	144	161	195	0.038
FRKT-02-06	50	75	120	149	185	212	239	295	0.064
FRKT-02-07	23	38	67	84	107	125	142	176	0.032
FRKT-02-08	6	12	28	40	54	66	78	102	0.023
FRKT-02-09	19	30	51	65	83	96	110	137	0.029
FRKT-02-10	3	6	13	17	22	26	31	39	0.009
FRKT-02-11	8	13	23	30	39	46	53	67	0.015
FRKT-02-12	33	56	94	119	150	174	198	244	0.043
FRKT-02-13	15	32	72	99	135	164	194	253	0.061
FRKT-02-14	34	65	132	176	233	279	325	414	0.085
FRKT-02-15	20	38	80	108	144	174	203	260	0.056
FRKT-02-16	43	74	137	179	232	274	315	398	0.083
FRKT-02-17	52	87	158	205	263	310	356	449	0.100
FRKT-02-18	33	60	117	155	203	242	281	357	0.075
FRKT-02-19	42	69	117	148	186	216	245	303	0.056
FRKT-02-20	4	6	11	14	18	21	24	30	0.007
FRKT-02-21	21	34	57	71	90	104	118	145	0.027
FRKT-02-22	30	48	78	96	120	137	155	189	0.034
FRKT-02-23	27	55	125	173	235	287	340	446	0.126
FRKT-02-24	26	49	102	137	182	220	257	332	0.088
FRKT-02-25	8	17	40	56	77	94	112	149	0.047
FRKT-03	6	12	24	32	42	50	59	74	0.014
FRKT-04	2	5	11	15	20	24	28	36	0.009
FRKT-05	37	67	129	168	220	260	301	379	0.074
FRKT-05-01	5	10	20	27	36	43	51	65	0.013
FRKT-05-02	3	6	16	22	31	38	46	60	0.013
FRKT-05-03	8	18	42	58	79	96	113	146	0.030
FRKT-05-04	8	18	44	61	83	103	122	161	0.043
FRKT-06	10	20	44	60	80	97	114	147	0.032
FRKT-07	13	30	74	104	143	177	211	277	0.073
FRKT-07-01	24	50	111	152	206	250	295	382	0.087
FRKT-08	43	76	147	192	251	298	345	437	0.095
IDT-01	12	24	49	66	88	106	124	158	0.031
IDT-02	43	64	102	126	156	179	202	248	0.051
IDT-02-01	19	30	47	57	70	80	90	108	0.018
IDT-02-02	37	61	99	124	156	179	203	248	0.043
IDT-02-03	7	10	17	22	27	31	35	44	0.009
IDT-02-04	20	31	47	57	70	79	88	106	0.018
IDT-02-05	14	24	42	54	70	82	94	117	0.021

Appendix 14-C. North Polecat Systems - Frankoma & Industrial Tributary
Existing Flow Rates (CFS)

HMS Junction	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year	Drainage Area, mi ²
IDT-02-06	36	57	94	118	147	170	192	237	0.045
IDT-02-07	23	37	58	71	88	101	113	138	0.025
IDT-02-08	8	13	20	25	30	34	38	46	0.007
IDT-03	11	18	28	34	42	48	54	65	0.012
IDT-04	22	35	59	75	94	110	125	155	0.031
IDT-04-01	11	19	37	48	63	75	87	110	0.023
IDT-04-02	12	20	33	41	51	59	66	81	0.013
IDT-04-03	8	12	20	25	31	36	40	49	0.009
IDT-04-04	27	39	58	70	85	97	107	130	0.023
IDT-04-05	23	36	51	61	73	82	90	108	0.017
IDT-04-06	7	13	25	32	42	50	57	72	0.014
IDT-04-07	3	6	10	13	17	20	23	29	0.005
IDT-04-08	21	36	68	89	115	137	158	200	0.046
IDT-04-09	10	20	39	52	68	81	95	119	0.022
IDT-04-10	13	21	35	43	54	62	70	86	0.015
IDT-04-11	14	24	40	50	64	73	83	102	0.017
IDT-04-12	37	63	106	133	168	195	221	271	0.047
IDT-04-13	22	40	68	86	110	127	145	177	0.029
IDT-04-14	12	23	47	62	83	99	115	147	0.030
IDT-04-15	23	39	63	78	97	111	125	152	0.024
IDT-04-16	12	19	32	41	52	60	68	84	0.016
IDT-04-17	7	12	19	23	29	34	38	47	0.009
IDT-05	29	50	88	112	143	167	191	237	0.045
IDT-06	33	56	104	135	174	206	238	302	0.069
IDT-06-01	13	19	31	38	46	53	60	73	0.015
IDT-06-02	69	105	157	189	231	261	291	350	0.059
IDT-06-03	21	37	68	87	112	132	152	190	0.036
IDT-06-04	18	34	57	72	91	105	119	146	0.023
IDT-06-05	6	11	17	21	25	29	32	39	0.006
IDT-06-06	39	58	86	104	126	143	159	192	0.035
IDT-06-07	41	65	107	134	167	193	219	270	0.054
IDT-07	18	27	44	55	68	79	89	110	0.024
IDT-08	63	93	135	162	196	220	244	294	0.051
IDT-08-01	6	11	21	28	37	43	50	62	0.011
IDT-09	18	32	57	73	94	110	126	156	0.027
IDT-10	11	19	35	45	58	68	78	98	0.019
IDT-11	12	25	61	85	117	144	171	226	0.065
IDT-11-01	9	19	43	59	80	98	115	149	0.034
IDT-11-02	18	28	44	53	66	75	84	102	0.018

**Appendix 14-C. North Polecat Systems - Frankoma & Industrial Tributary
Existing Flow Rates (CFS)**

HMS Junction	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year	Drainage Area, mi ²
IDT-12	7	15	37	51	70	86	102	133	0.028
IDT-12-01	20	39	79	106	141	169	198	252	0.052
IDT-13	33	57	106	138	179	212	244	307	0.063
IDT-14	33	61	114	148	192	226	260	324	0.057
IDT-15	11	18	30	36	45	52	58	71	0.012
J-FRK-01	637	1105	2546	3348	4544	5346	6258	7241	4.954
J-FRK-01-UP	659	1118	2554	3346	4553	5348	6256	7238	4.895
J-FRK-02	525	940	1976	2629	3444	4123	4830	5681	3.425
J-FRK-02-01	11	19	32	40	51	60	68	84	0.015
J-FRK-02-UP	523	938	1966	2618	3428	4105	4790	5659	3.332
J-FRK-03	534	957	2022	2709	3543	4229	4911	5708	3.316
J-FRK-04	533	956	2020	2706	3540	4225	4905	5701	3.303
J-FRK-04-01	23	41	79	104	135	161	187	238	0.054
J-FRK-04-01-DN	32	58	114	150	197	235	273	347	0.075
J-FRK-04-02	9	18	36	47	63	75	87	111	0.021
J-FRK-04-03	11	19	32	40	50	59	66	82	0.014
J-FRK-05	535	956	2010	2739	3555	4221	4890	5690	3.155
J-FRK-05-01	57	92	151	189	239	277	316	393	0.079
J-FRK-05-02	49	76	118	145	180	207	234	288	0.056
J-FRK-05-03	41	62	91	109	132	149	166	200	0.035
J-FRK-05-04	8	13	23	29	36	42	48	60	0.012
J-FRK-06	531	953	1992	2717	3539	4210	4882	5690	3.019
J-FRK-06-01	21	46	110	154	212	261	311	409	0.109
J-FRK-06-02	48	73	106	126	153	172	190	228	0.037
J-FRK-06-03	15	25	43	56	71	83	95	119	0.027
J-FRK-06-MID	527	946	1977	2691	3508	4173	4839	5633	2.912
J-FRK-06-UP	527	946	1978	2681	3497	4175	4837	5996	2.803
J-FRK-07	527	946	1979	2676	3489	4166	4822	6072	2.766
J-FRK-08	540	958	1988	2671	3474	4143	4790	6133	2.689
J-FRK-08-01	54	89	161	208	268	315	363	460	0.111
J-FRK-08-02	45	72	123	156	197	230	261	326	0.070
J-FRK-09	528	923	1897	2526	3266	3882	4482	5709	2.512
J-FRK-10	108	222	462	578	720	872	1056	1533	0.671
J-FRK-11	120	231	474	594	736	897	1074	1532	0.653
J-FRK-11-01	34	58	108	141	184	218	251	318	0.070
J-FRK-11-02	10	18	37	50	66	79	92	118	0.024
J-FRK-11-03	32	50	77	93	114	129	144	174	0.029
J-FRK-12	105	209	458	636	883	1093	1302	1736	0.482
J-FRK-13	101	197	436	602	829	1014	1198	1573	0.417

**Appendix 14-C. North Polecat Systems - Frankoma & Industrial Tributary
Existing Flow Rates (CFS)**

HMS Junction	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year	Drainage Area, mi ²
J-FRK-14	98	186	394	537	718	867	1013	1315	0.323
J-FRK-15	91	169	341	455	601	720	838	1074	0.243
J-FRK-16	74	134	263	346	454	542	630	801	0.168
J-FRK-17	39	72	142	188	248	295	342	434	0.087
J-FRKT-01	460	768	1492	1978	2571	3061	3535	4512	1.767
J-FRKT-02	463	775	1492	1972	2558	3042	3510	4477	1.735
J-FRKT-02-01	68	107	163	198	242	276	309	375	0.066
J-FRKT-02-02	40	61	86	102	122	137	151	180	0.028
J-FRKT-02-03	144	217	352	439	547	630	712	883	0.200
J-FRKT-02-03-UP	129	193	306	378	468	536	603	741	0.152
J-FRKT-02-04	88	136	221	275	343	396	447	552	0.114
J-FRKT-02-05	42	59	88	105	128	144	161	195	0.038
J-FRKT-02-06	73	113	186	233	292	337	381	471	0.096
J-FRKT-02-07	23	38	67	84	107	125	142	176	0.032
J-FRKT-02-08	268	455	895	1196	1577	1894	2213	2881	0.963
J-FRKT-02-08-UP	266	451	886	1183	1559	1873	2187	2846	0.941
J-FRKT-02-09	19	30	51	65	83	96	110	137	0.029
J-FRKT-02-10	256	436	860	1148	1514	1818	2123	2762	0.912
J-FRKT-02-10-UP	254	433	853	1139	1502	1803	2106	2740	0.903
J-FRKT-02-11	41	68	117	149	189	220	251	311	0.058
J-FRKT-02-12	33	56	94	119	150	174	198	244	0.043
J-FRKT-02-13	225	393	781	1045	1380	1661	1941	2528	0.845
J-FRKT-02-14	50	96	197	265	352	423	494	634	0.141
J-FRKT-02-15	20	38	80	108	144	174	203	260	0.056
J-FRKT-02-16	192	333	653	869	1143	1371	1600	2071	0.643
J-FRKT-02-17	176	304	597	794	1045	1254	1463	1893	0.560
J-FRKT-02-18	33	60	117	155	203	242	281	357	0.075
J-FRKT-02-19	42	69	117	148	186	216	245	303	0.056
J-FRKT-02-20	53	84	140	174	219	253	286	352	0.069
J-FRKT-02-21	21	34	57	71	90	104	118	145	0.027
J-FRKT-02-22	30	48	78	96	120	137	155	189	0.034
J-FRKT-02-23	75	146	320	440	593	723	853	1121	0.336
J-FRKT-02-24	33	63	138	188	253	307	362	472	0.135
J-FRKT-02-25	8	17	40	56	77	94	112	149	0.047
J-FRKT-02-UP	392	638	1200	1579	2059	2455	2851	3671	1.164
J-FRKT-03	56	111	241	316	398	469	520	624	0.483
J-FRKT-04	54	108	236	312	389	458	505	600	0.469
J-FRKT-05	52	107	237	319	396	469	517	615	0.460
J-FRKT-05-01	5	10	20	27	36	43	51	65	0.013

**Appendix 14-C. North Polecat Systems - Frankoma & Industrial Tributary
Existing Flow Rates (CFS)**

HMS Junction	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year	Drainage Area, mi ²
J-FRKT-05-02	11	24	57	80	110	134	159	206	0.043
J-FRKT-05-03	8	18	42	58	79	96	113	146	0.030
J-FRKT-05-04	24	51	119	165	226	276	326	425	0.099
J-FRKT-05-UP	33	69	158	218	298	364	430	559	0.386
J-FRKT-06	10	20	44	60	80	97	114	147	0.286
J-FRKT-07	65	125	262	356	477	578	679	889	0.254
J-FRKT-07-01	24	50	111	152	206	250	295	382	0.087
J-FRKT-08	43	76	147	192	251	298	345	437	0.095
J-IDT-01	508	737	1186	1460	1761	2007	2230	2815	1.471
J-IDT-02	515	739	1177	1453	1741	2003	2222	2835	1.439
J-IDT-02-01	134	207	344	432	542	626	709	880	0.186
J-IDT-02-02	123	192	317	398	498	576	653	809	0.168
J-IDT-02-03	86	135	221	277	347	400	453	558	0.107
J-IDT-02-03-UP	103	159	260	323	404	466	527	649	0.125
J-IDT-02-04	20	31	47	57	70	79	88	106	0.018
J-IDT-02-05	79	124	205	256	320	370	418	515	0.098
J-IDT-02-06	66	104	167	207	258	296	334	409	0.077
J-IDT-02-07	23	37	58	71	88	101	113	138	0.025
J-IDT-02-08	8	13	20	25	30	34	38	46	0.007
J-IDT-02-UP	492	700	1123	1373	1675	1945	2143	2753	1.389
J-IDT-03	405	572	938	1186	1489	1714	1899	2294	1.203
J-IDT-04	402	568	931	1180	1488	1712	1921	2409	1.191
J-IDT-04-01	177	287	491	626	769	900	1065	1377	0.348
J-IDT-04-01-UP	176	286	480	612	761	917	1174	1458	0.325
J-IDT-04-02	66	100	152	184	224	254	284	344	0.062
J-IDT-04-03	57	87	129	156	189	214	238	286	0.049
J-IDT-04-04	50	75	110	131	158	178	198	237	0.040
J-IDT-04-05	23	36	51	61	73	82	90	108	0.017
J-IDT-04-06	143	233	397	510	628	766	975	1220	0.263
J-IDT-04-07	148	235	399	513	620	798	977	1218	0.250
J-IDT-04-08	156	269	468	596	760	888	1014	1261	0.244
J-IDT-04-09	101	175	307	391	500	584	667	830	0.158
J-IDT-04-09-UP	71	122	206	259	328	380	430	529	0.090
J-IDT-04-10	13	21	35	43	54	62	70	86	0.015
J-IDT-04-11	23	40	77	100	130	154	178	225	0.047
J-IDT-04-12	59	102	172	216	274	318	361	444	0.075
J-IDT-04-13	22	40	68	86	110	127	145	177	0.029
J-IDT-04-14	12	23	47	62	83	99	115	147	0.030
J-IDT-04-15	23	39	63	78	97	111	125	152	0.024

**Appendix 14-C. North Polecat Systems - Frankoma & Industrial Tributary
Existing Flow Rates (CFS)**

HMS Junction	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year	Drainage Area, mi ²
J-IDT-04-16	34	58	94	117	147	168	190	232	0.040
J-IDT-04-17	7	12	19	23	29	34	38	47	0.009
J-IDT-05	257	417	770	1006	1271	1477	1675	2127	0.804
J-IDT-06	250	408	750	979	1241	1440	1649	2058	0.758
J-IDT-06-01	113	173	284	353	442	509	576	710	0.138
J-IDT-06-02	100	154	253	316	396	457	517	638	0.124
J-IDT-06-03	45	80	140	178	227	264	301	373	0.065
J-IDT-06-04	24	43	72	91	115	132	150	183	0.029
J-IDT-06-05	6	11	17	21	25	29	32	39	0.006
J-IDT-06-06	39	58	86	104	126	143	159	192	0.035
J-IDT-06-07	41	65	107	134	167	193	219	270	0.054
J-IDT-06-UP	158	298	524	609	703	778	849	994	0.517
J-IDT-07	147	276	480	528	587	634	679	763	0.462
J-IDT-08	141	266	469	521	588	645	691	759	0.438
J-IDT-08-01	6	11	21	28	37	43	50	62	0.011
J-IDT-09	125	235	468	624	825	987	1151	1484	0.375
J-IDT-10	120	226	448	597	788	943	1097	1410	0.349
J-IDT-11	114	214	427	568	750	898	1046	1343	0.329
J-IDT-11-01	9	19	43	59	80	98	115	149	0.034
J-IDT-11-02	18	28	44	53	66	75	84	102	0.018
J-IDT-11-UP	92	173	339	449	590	704	818	1046	0.246
J-IDT-12	86	158	307	405	531	632	732	932	0.213
J-IDT-12-01	20	39	79	106	141	169	198	252	0.052
J-IDT-13	67	120	224	292	381	451	520	655	0.132
J-IDT-14	35	64	121	158	206	243	280	352	0.070
J-IDT-15	11	18	30	36	45	52	58	71	0.012
R-FRK-01	633	1102	2541	3340	4534	5335	6244	7231	4.895
R-FRK-02	523	938	1966	2618	3428	4105	4790	5659	3.332
R-FRK-02-01	11	19	32	40	51	60	68	84	0.015
R-FRK-02-UP	523	938	1963	2616	3424	4102	4782	5656	3.316
R-FRK-03	533	956	2020	2706	3540	4225	4905	5701	3.303
R-FRK-04	528	951	2000	2679	3507	4186	4843	5627	3.155
R-FRK-04-01	32	58	114	150	197	235	273	347	0.075
R-FRK-04-02	9	18	36	47	63	75	87	111	0.021
R-FRK-04-03	11	19	32	40	50	59	66	82	0.014
R-FRK-05	528	950	1987	2707	3519	4181	4838	5613	3.019
R-FRK-05-01	57	92	151	189	239	277	316	393	0.079
R-FRK-05-02	41	62	91	109	132	149	166	200	0.035
R-FRK-05-03	8	13	23	29	36	42	48	60	0.012

**Appendix 14-C. North Polecat Systems - Frankoma & Industrial Tributary
Existing Flow Rates (CFS)**

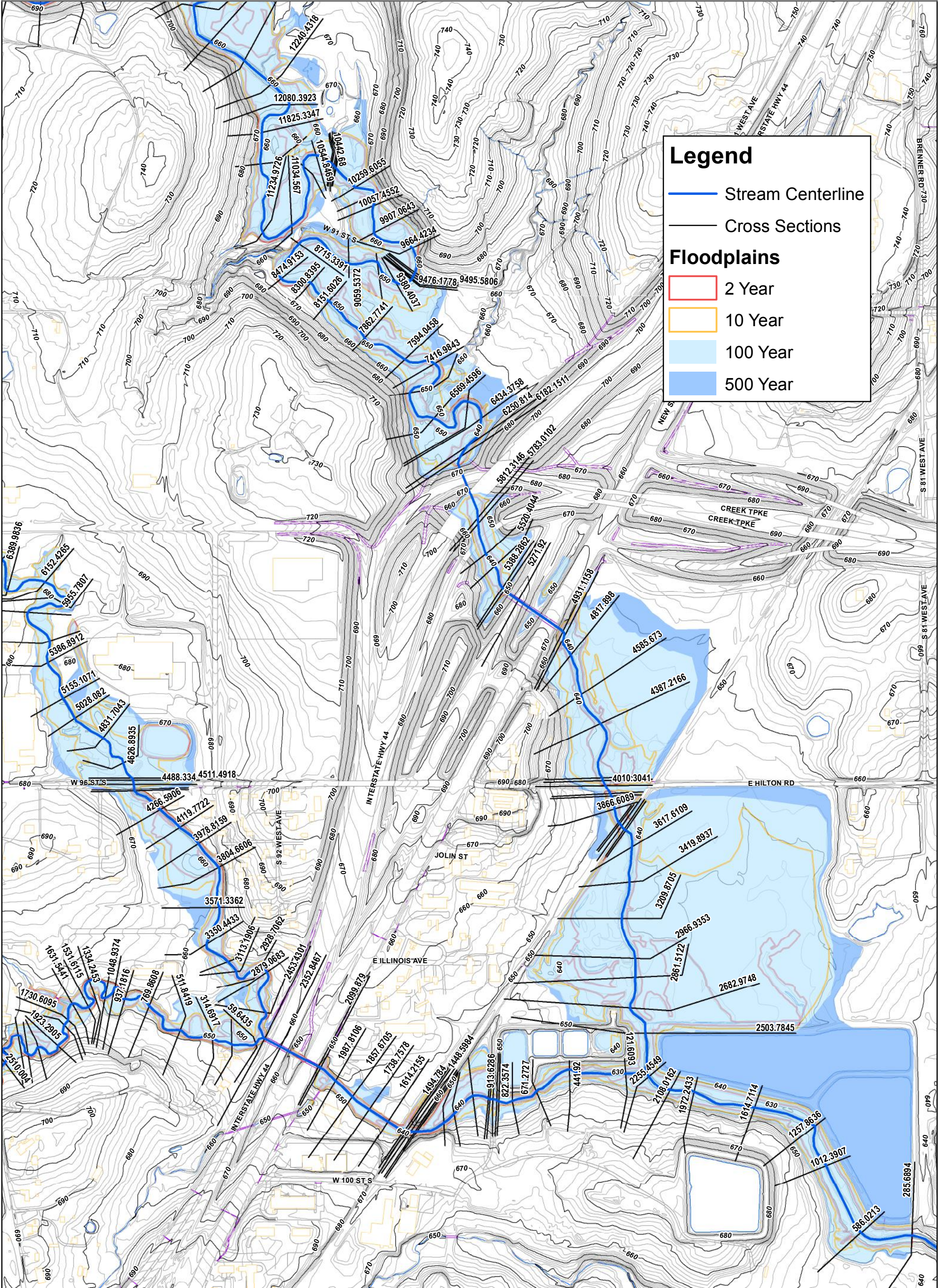
HMS Junction	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year	Drainage Area, mi ²
R-FRK-06	527	946	1977	2691	3508	4173	4839	5633	2.912
R-FRK-06-01	21	46	110	154	212	261	311	409	0.109
R-FRK-06-02	48	73	106	126	153	172	190	228	0.037
R-FRK-06-03	15	25	43	56	71	83	95	119	0.027
R-FRK-06-MID	523	940	1962	2663	3471	4131	4787	5581	2.803
R-FRK-06-UP	523	941	1969	2667	3481	4155	4812	5979	2.766
R-FRK-07	524	941	1967	2654	3457	4124	4771	6031	2.689
R-FRK-08	516	912	1882	2514	3256	3873	4471	5696	2.512
R-FRK-08-01	54	89	161	208	268	315	363	460	0.111
R-FRK-08-02	45	72	123	156	197	230	261	326	0.070
R-FRK-09	106	220	459	572	714	867	1048	1526	0.671
R-FRK-10	106	219	458	574	715	867	1047	1525	0.653
R-FRK-11	104	206	439	558	694	851	1010	1461	0.482
R-FRK-11-01	34	58	108	141	184	218	251	318	0.070
R-FRK-11-02	10	18	37	50	66	79	92	118	0.024
R-FRK-11-03	32	50	77	93	114	129	144	174	0.029
R-FRK-12	97	192	422	583	806	993	1178	1558	0.417
R-FRK-13	91	175	375	512	694	842	990	1287	0.323
R-FRK-14	86	161	331	445	592	711	829	1067	0.243
R-FRK-16	74	134	263	346	454	542	630	801	0.168
R-FRKT-01	457	763	1479	1961	2547	3031	3500	4464	1.735
R-FRKT-02	55	109	237	313	396	467	518	621	0.483
R-FRKT-02-02	40	61	86	102	122	137	151	180	0.028
R-FRKT-02-03	129	193	306	378	468	536	603	741	0.152
R-FRKT-02-04	88	136	221	275	343	396	447	552	0.114
R-FRKT-02-05	42	59	88	105	128	144	161	195	0.038
R-FRKT-02-06	73	113	186	233	292	337	381	471	0.096
R-FRKT-02-07	23	38	67	84	107	125	142	176	0.032
R-FRKT-02-08	268	455	895	1196	1577	1894	2213	2881	0.963
R-FRKT-02-08-UP	266	451	886	1183	1559	1873	2187	2846	0.941
R-FRKT-02-10-UP	254	433	853	1139	1502	1803	2106	2740	0.903
R-FRKT-02-11	41	68	117	149	189	220	251	311	0.058
R-FRKT-02-12	33	56	94	119	150	174	198	244	0.043
R-FRKT-02-14	50	96	197	265	352	423	494	634	0.141
R-FRKT-02-15	20	38	80	108	144	174	203	260	0.056
R-FRKT-02-16	192	333	653	869	1143	1371	1600	2071	0.643
R-FRKT-02-17	176	304	597	794	1045	1254	1463	1893	0.560
R-FRKT-02-19	42	69	117	148	186	216	245	303	0.056
R-FRKT-02-20	53	84	140	174	219	253	286	352	0.069

**Appendix 14-C. North Polecat Systems - Frankoma & Industrial Tributary
Existing Flow Rates (CFS)**

HMS Junction	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year	Drainage Area, mi ²
R-FRKT-02-22	30	48	78	96	120	137	155	189	0.034
R-FRKT-02-23	75	146	320	440	593	723	853	1121	0.336
R-FRKT-02-24	33	63	138	188	253	307	362	472	0.135
R-FRKT-02-25	8	17	40	56	77	94	112	149	0.047
R-FRKT-02-UP	392	638	1200	1579	2059	2455	2851	3671	1.164
R-FRKT-03	54	106	231	305	384	454	501	594	0.469
R-FRKT-04	52	104	227	299	375	442	485	569	0.460
R-FRKT-05	33	69	157	209	282	345	358	382	0.386
R-FRKT-05-01	5	10	20	27	36	43	51	65	0.013
R-FRKT-05-02	11	24	57	80	110	134	159	206	0.043
R-FRKT-05-03	8	18	42	58	79	96	113	146	0.030
R-FRKT-05-04	24	51	119	165	226	276	326	425	0.099
R-FRKT-05-UP	10	20	43	59	78	95	111	143	0.286
R-FRKT-06	0	0	0	0	0	0	0	0	0.254
R-FRKT-07	43	76	147	192	251	298	345	437	0.095
R-FRKT-16	39	72	142	188	248	295	342	434	0.087
R-IDT-01	505	731	1174	1441	1736	1995	2215	2796	1.439
R-IDT-02	490	699	1121	1366	1673	1939	2141	2722	1.389
R-IDT-02-01	134	207	344	432	542	626	709	880	0.186
R-IDT-02-02	123	192	317	398	498	576	653	809	0.168
R-IDT-02-03	103	159	260	323	404	466	527	649	0.125
R-IDT-02-03-UP	86	135	221	277	347	400	453	558	0.107
R-IDT-02-05	79	124	205	256	320	370	418	515	0.098
R-IDT-02-06	66	104	167	207	258	296	334	409	0.077
R-IDT-02-07	23	37	58	71	88	101	113	138	0.025
R-IDT-02-08	8	13	20	25	30	34	38	46	0.007
R-IDT-02-UP	405	572	938	1186	1489	1714	1899	2294	1.203
R-IDT-03	401	567	931	1180	1482	1703	1889	2272	1.191
R-IDT-04	256	415	767	988	1232	1424	1608	2071	0.804
R-IDT-04-01	136	262	370	469	529	613	668	680	0.348
R-IDT-04-01-UP	173	280	476	606	745	874	1031	1338	0.325
R-IDT-04-03	57	87	129	156	189	214	238	286	0.049
R-IDT-04-04	50	75	110	131	158	178	198	237	0.040
R-IDT-04-05	23	36	51	61	73	82	90	108	0.017
R-IDT-04-07	141	229	389	499	612	747	947	1184	0.250
R-IDT-04-08	146	232	394	505	611	786	962	1199	0.244
R-IDT-04-09	101	175	307	391	500	584	667	830	0.158
R-IDT-04-10	13	21	35	43	54	62	70	86	0.015
R-IDT-04-11	23	40	77	100	130	154	178	225	0.047

**Appendix 14-C. North Polecat Systems - Frankoma & Industrial Tributary
Existing Flow Rates (CFS)**

HMS Junction	1-Year	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	500-Year	Drainage Area, mi ²
R-IDT-04-12	71	122	206	259	328	380	430	529	0.090
R-IDT-04-12-UP	59	102	172	216	274	318	361	444	0.075
R-IDT-04-13	22	40	68	86	110	127	145	177	0.029
R-IDT-04-14	12	23	47	62	83	99	115	147	0.030
R-IDT-04-15	23	39	63	78	97	111	125	152	0.024
R-IDT-04-16	34	58	94	117	147	168	190	232	0.040
R-IDT-04-17	7	12	19	23	29	34	38	47	0.009
R-IDT-05	246	400	739	962	1214	1406	1598	1997	0.758
R-IDT-06	154	291	520	603	695	770	844	985	0.517
R-IDT-06-01	113	173	284	353	442	509	576	710	0.138
R-IDT-06-02	100	154	253	316	396	457	517	638	0.124
R-IDT-06-03	45	80	140	178	227	264	301	373	0.065
R-IDT-06-04	24	43	72	91	115	132	150	183	0.029
R-IDT-06-05	6	11	17	21	25	29	32	39	0.006
R-IDT-06-06	39	58	86	104	126	143	159	192	0.035
R-IDT-06-07	41	65	107	134	167	193	219	270	0.054
R-IDT-06-UP	144	272	479	526	585	632	676	761	0.462
R-IDT-07	136	258	452	483	556	590	627	734	0.438
R-IDT-08	120	227	405	467	556	579	601	717	0.375
R-IDT-08-01	6	11	21	28	37	43	50	62	0.011
R-IDT-09	120	224	446	595	786	940	1095	1406	0.349
R-IDT-10	114	214	426	568	750	898	1045	1343	0.329
R-IDT-11	92	173	339	449	590	704	818	1046	0.246
R-IDT-11-01	9	19	43	59	80	98	115	149	0.034
R-IDT-11-02	18	28	44	53	66	75	84	102	0.018
R-IDT-11-UP	86	158	307	405	531	632	732	932	0.213
R-IDT-12	67	120	224	292	381	451	520	655	0.132
R-IDT-13	35	64	121	158	206	243	280	352	0.070
R-IDT-14	11	18	30	36	45	52	58	71	0.012

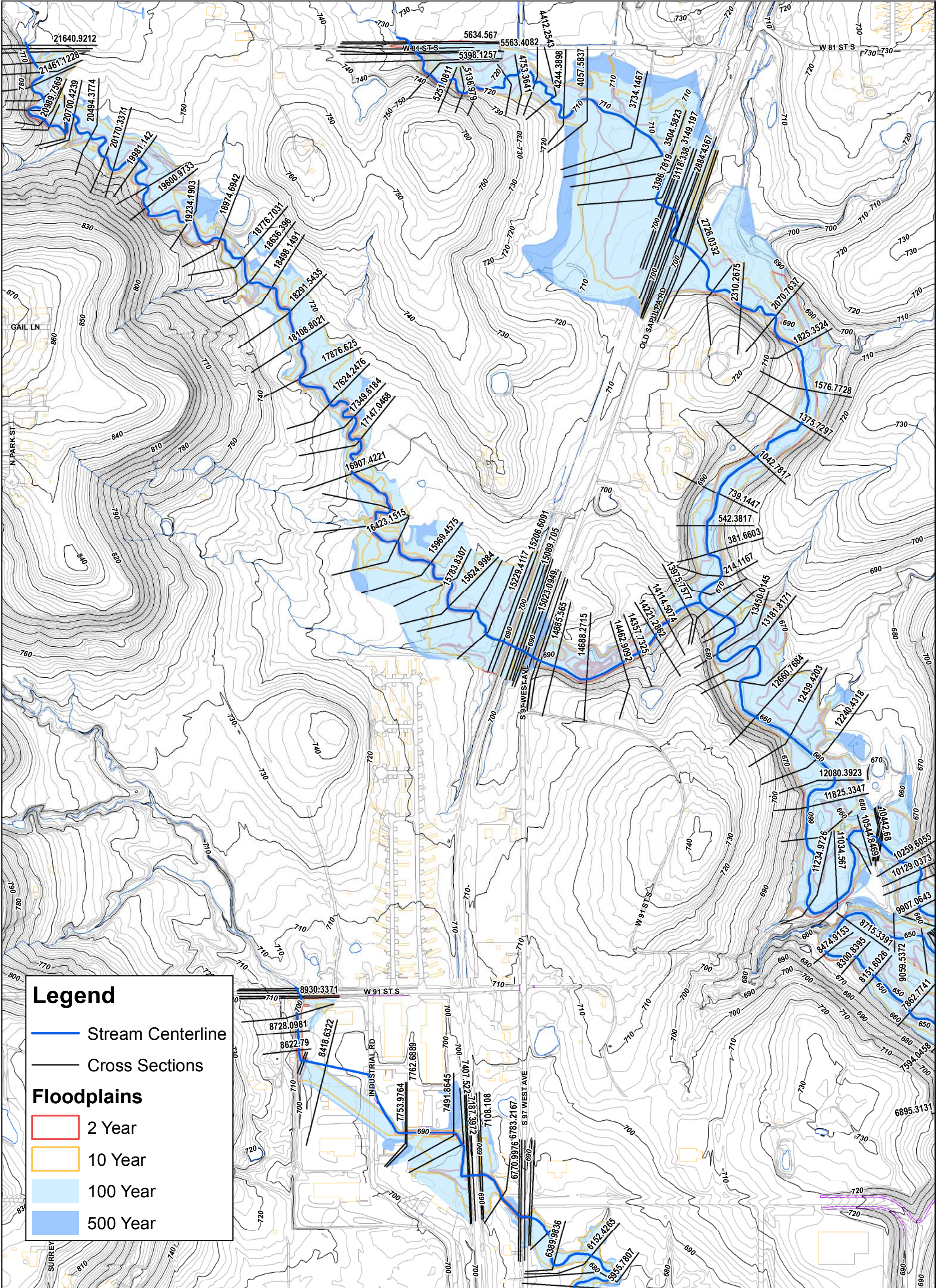


Legend

- Stream Centerline
- Cross Sections

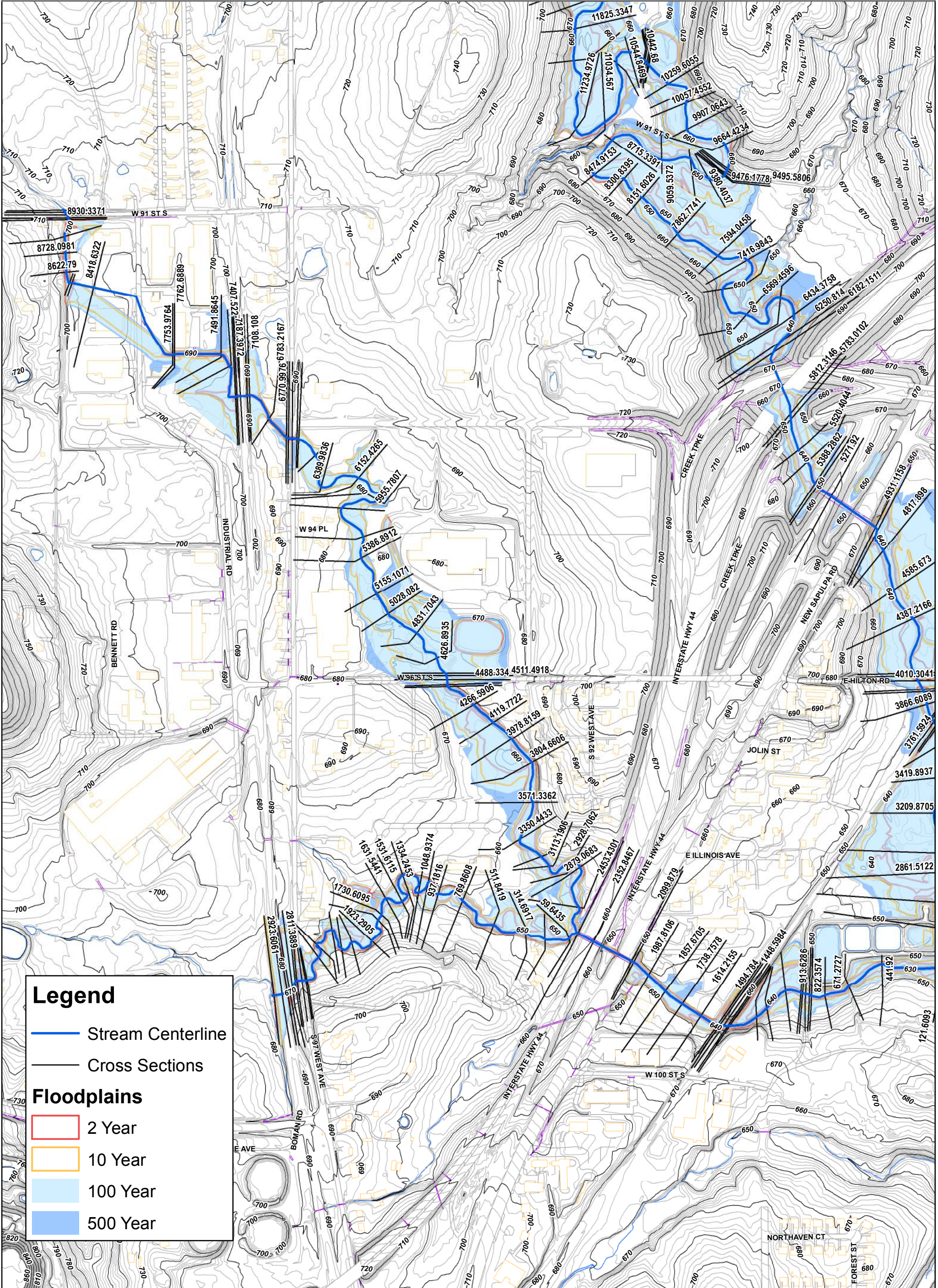
Floodplains

- 2 Year
- 10 Year
- 100 Year
- 500 Year



Legend

- Stream Centerline
- Cross Sections
- Floodplains**
- 2 Year
- 10 Year
- 100 Year
- 500 Year

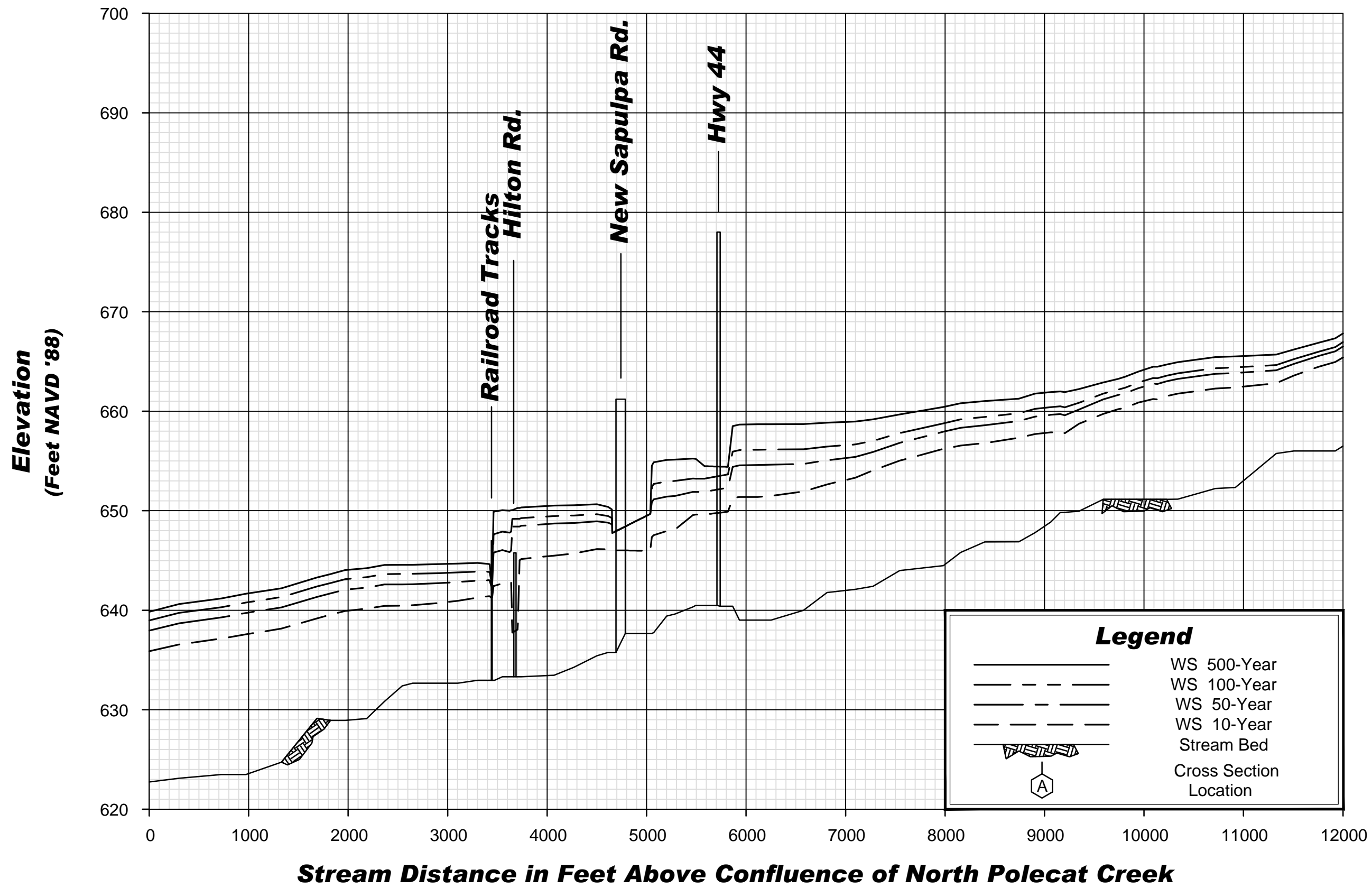


Legend

- Stream Centerline
- Cross Sections

Floodplains

- 2 Year
- 10 Year
- 100 Year
- 500 Year



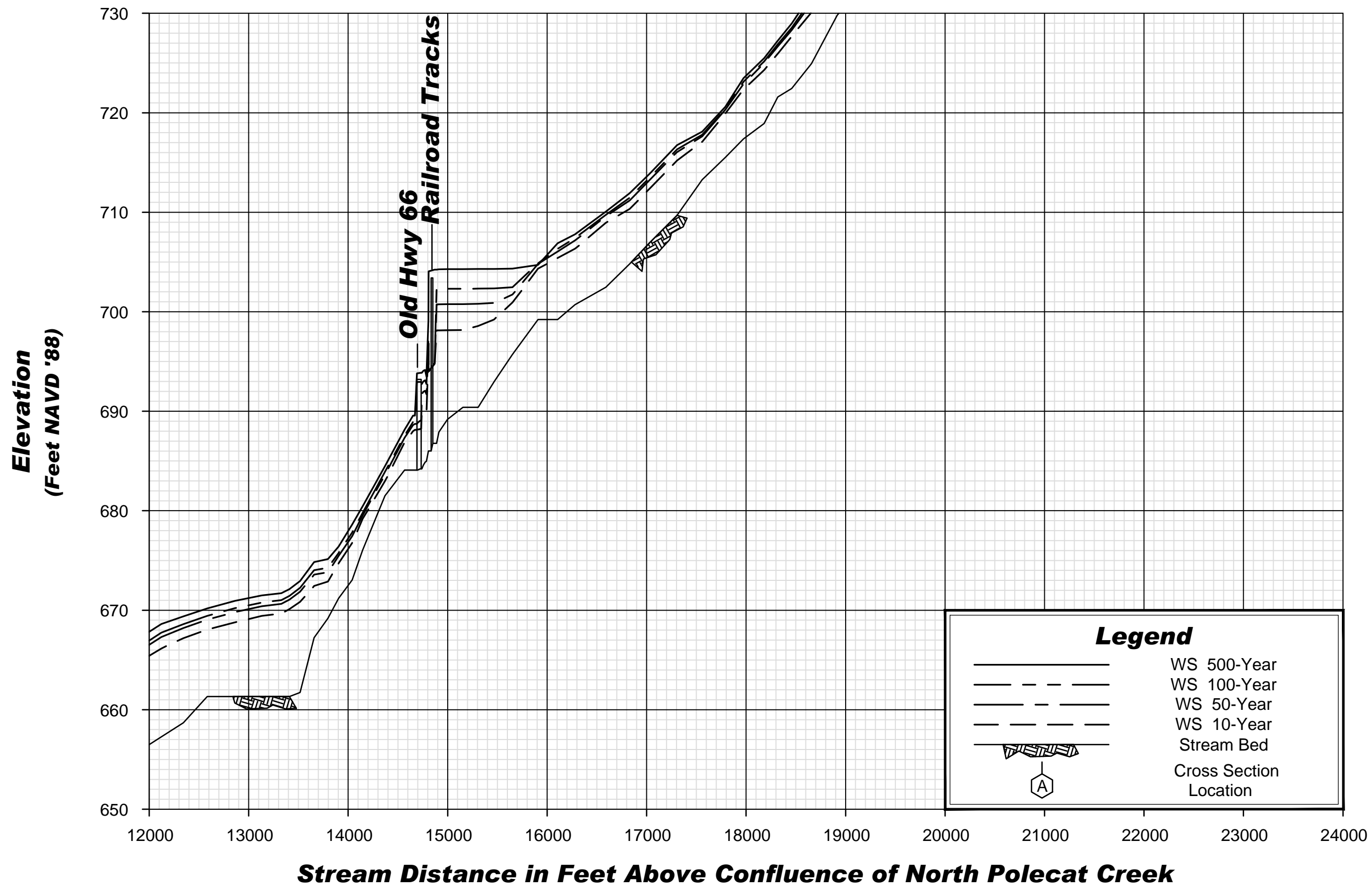
Appendix 14-E-1
Existing Flood Profiles

Frankoma Creek

City of Sapulpa, OK

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1437 S. Boulder Ave. - Suite 1080
Tulsa, OK 74119
(918) 392-5620

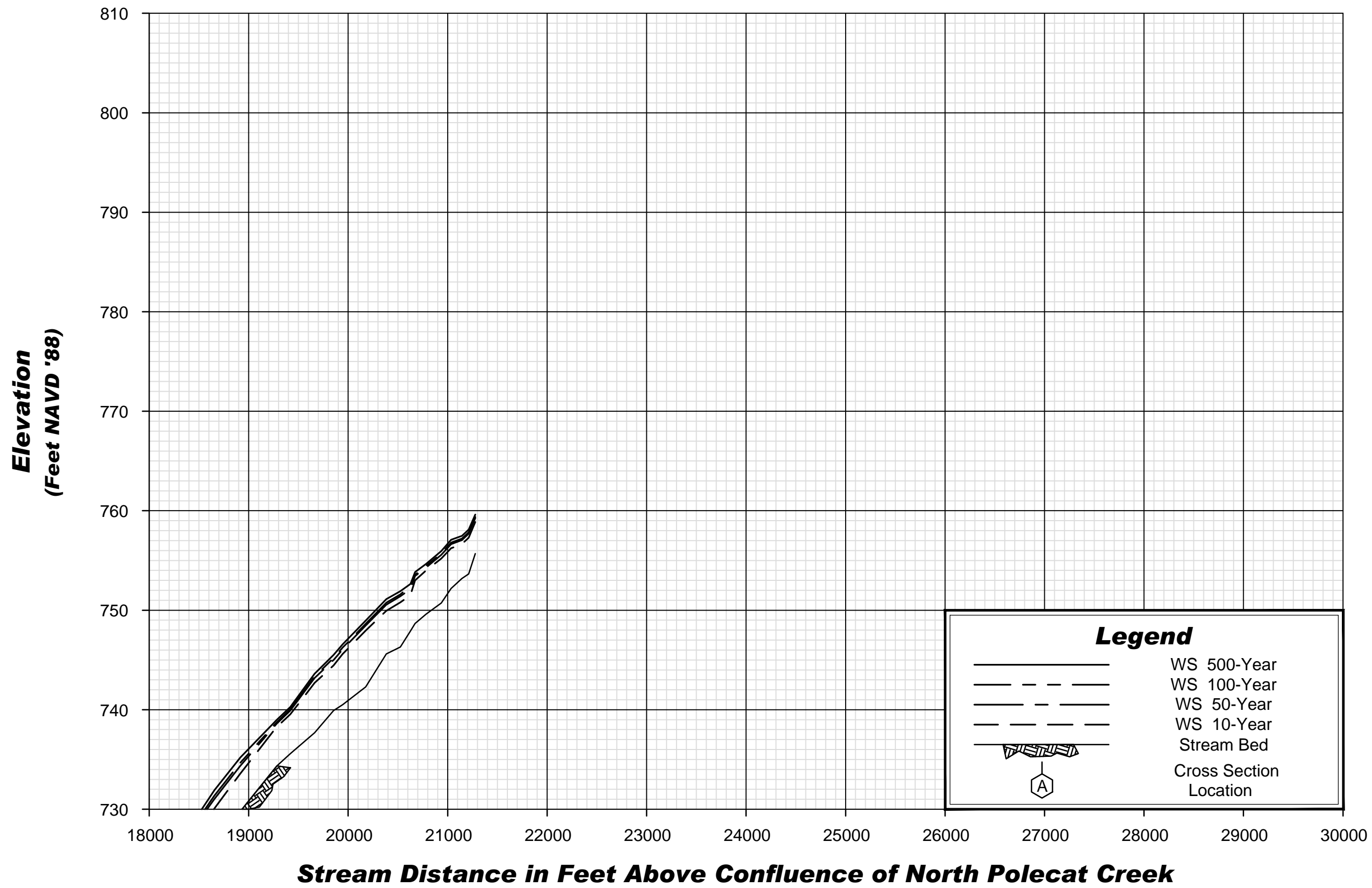


**Appendix 14-E-2
Existing Flood Profiles**

Frankoma Creek

City of Sapulpa, OK

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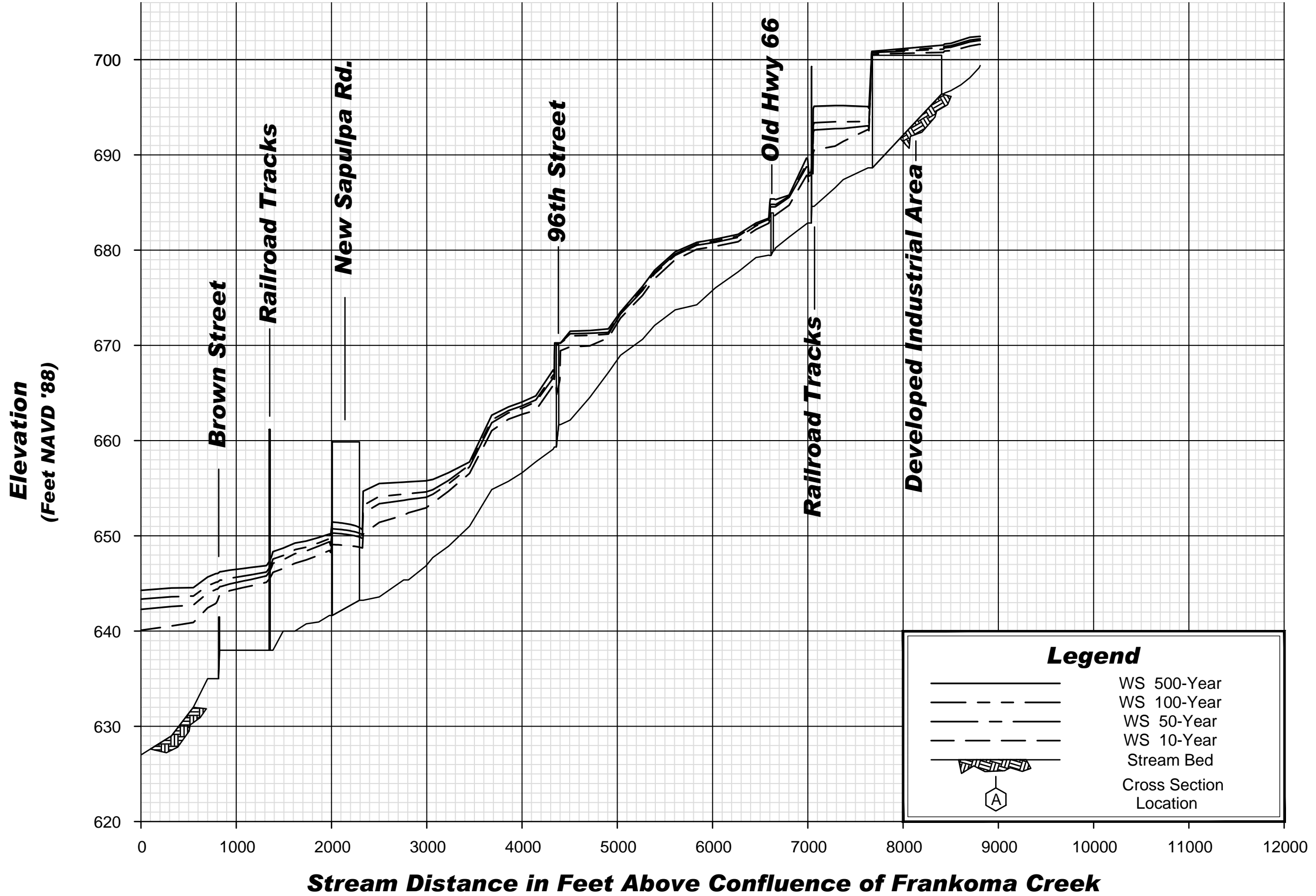
Appendix 14-E-3
Existing Flood Profiles

Frankoma Creek

City of Sapulpa, OK

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Legend

- WS 500-Year
- - - WS 100-Year
- · - WS 50-Year
- - - WS 10-Year
- ▨ Stream Bed
- ⬠ A Cross Section Location

City of Sapulpa, OK

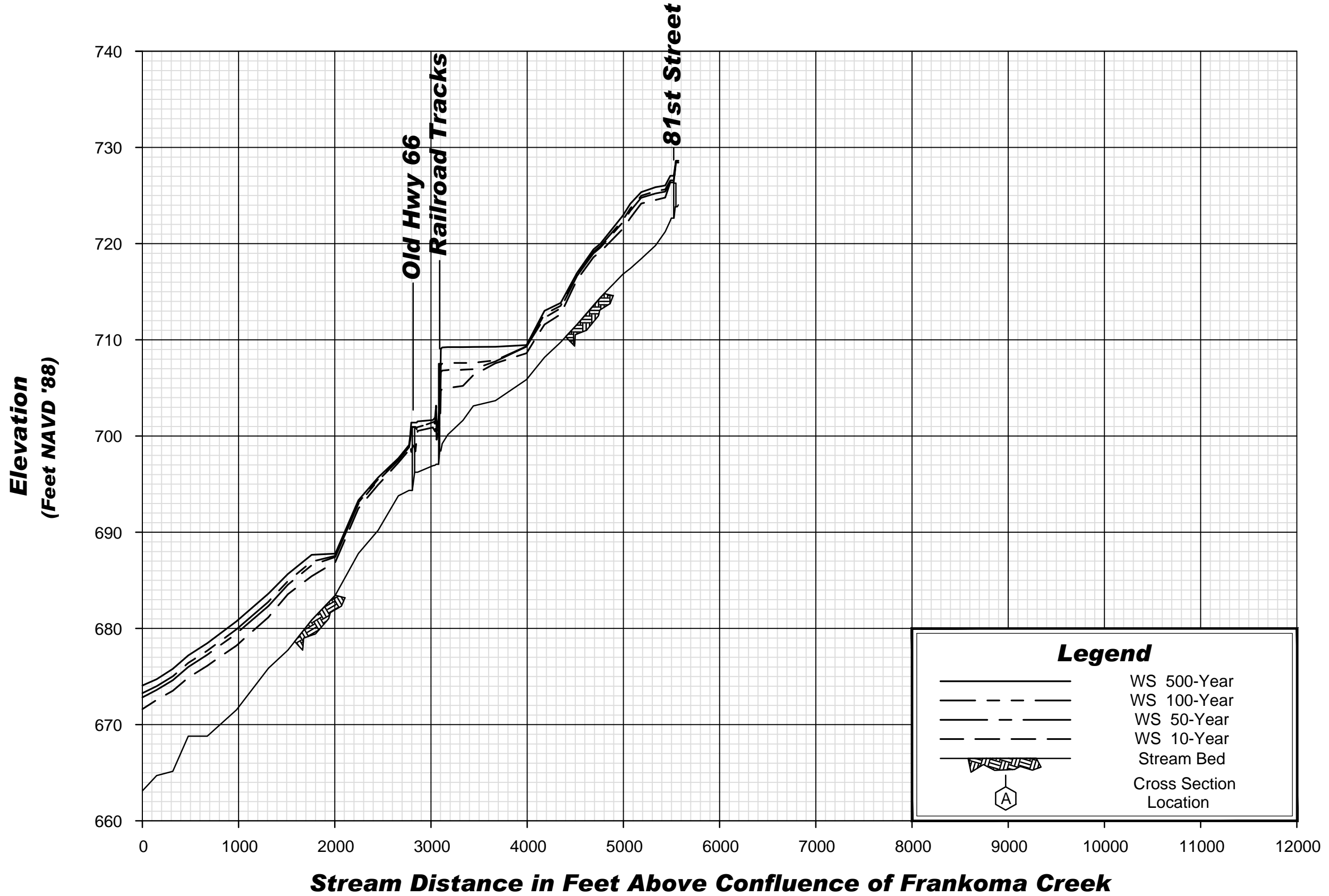
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**Appendix 14-E-4
Existing Flood Profiles**

Industrial Creek



**Appendix 14-E-5
Existing Flood Profiles**

Frankoma Tributary

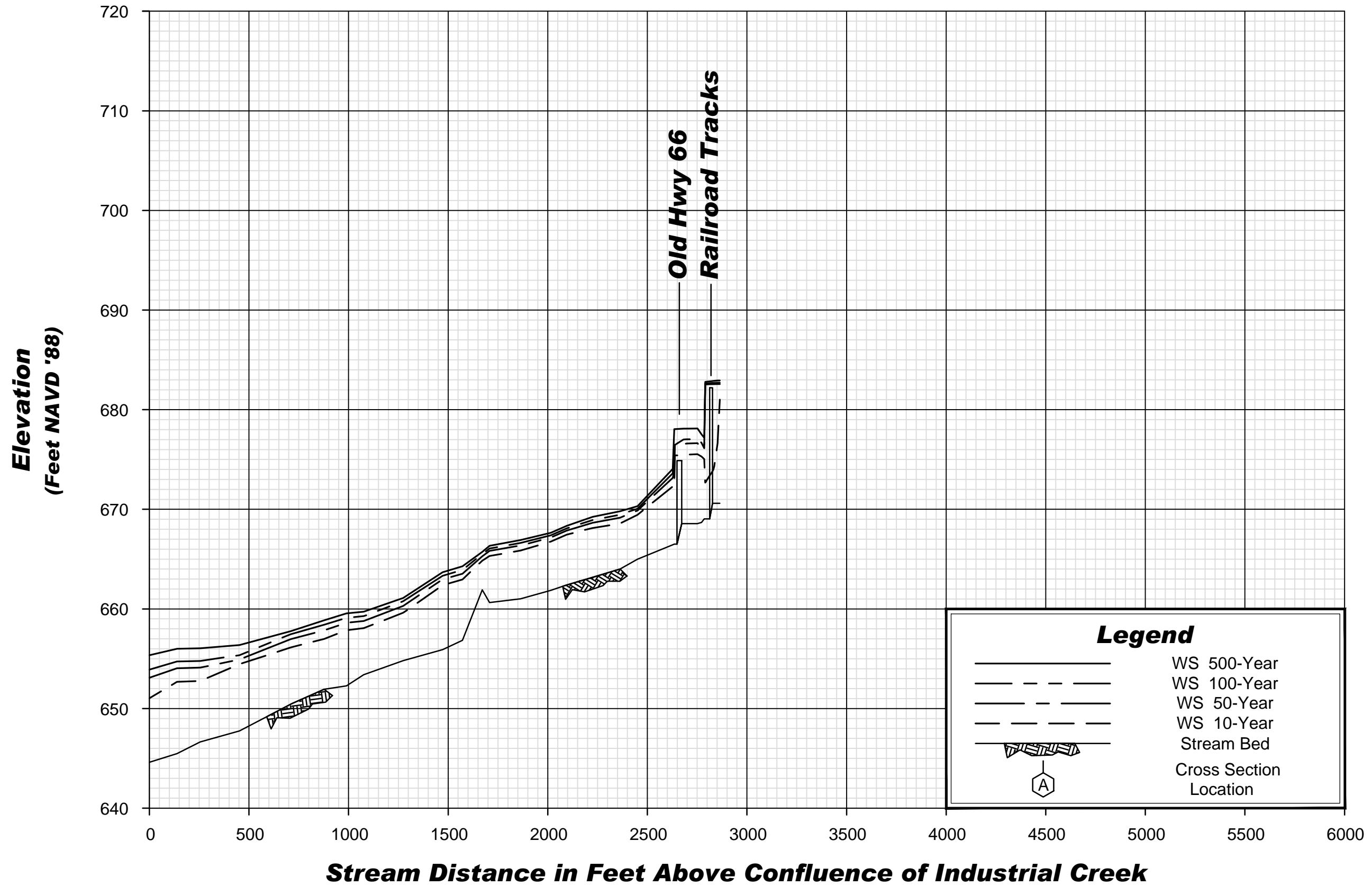
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Appendix 14-E-6
Existing Flood Profiles
Industrial Tributary

City of Sapulpa, OK
PREPARED BY
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City of Sapulpa

Appendix 14-F. Frankoma and Industrial Drainage Basin - Problem Area 1 - Alternative 1 Detention

ITEM	ITEM NO.	DESCRIPTION	UNIT	TOTAL	UNIT PRICE	TOTAL COST
1	202.06(A)	UNCLASSIFIED EXCAVATION	CY	46464	\$ 12.00	\$ 557,568.00
2	223.06	TEMPORARY SILT FENCE	LF	9660	\$ 2.00	\$ 19,320.00
3	230.06(A)	SOLID SLAB BERMUDA SODDING	SY	13322	\$ 2.50	\$ 33,305.56
4	613.06(B)	18" C76 CL IV RCP W/ OMNIFLEX GASKETS	LF	50	\$ 90.00	\$ 4,500.00
5	613.06(S)	TRENCH EXCAVATION	CY	26	\$ 8.00	\$ 211.33
6	613.06(T)	STANDARD BEDDING MATERIAL	CY	14	\$ 20.00	\$ 274.00
7	619.06(B)	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	1	\$ 20,000.00	\$ 20,000.00
Subtotal						\$ 635,178.89
15% Contingency						\$ 95,276.83
Subtotal						\$ 730,455.72
25% Utility Relocation Contingency						\$ 182,613.93
Total						\$ 913,069.65