City of Fort Lupton

City Council Agenda
Regular Meeting
7:00 p.m.
130 South McKinley Avenue
November 7, 2016

Pledge Of Allegiance

Call To Order - Roll Call

Persons To Address Council

This portion of the Agenda is provided to allow members of the audience to present comments to the City Council. The City Council may not respond to your comments this evening, rather they may take your comments and suggestions under advisement or your question may be directed to the appropriate staff member for follow-up. Please limit the time of your comments to five (5) minutes - Mayor Holton

Proclamation

Documents:

NET Cancer Day Proclamation.pdf

Approval Of Agenda

Review Of Accounts Payables

a. **11072016, Accounts Payables**

Documents:

11072016 Accounts Payables.pdf

Consent Agenda

Consent Agenda items are considered to be routine and will be enacted by one motion and vote. There will be no separate discussion of Consent Agenda items unless a Councilmember so requests, in which case the item may be removed from the Consent Agenda and considered at the end of the Consent Agenda.

a. **10032016, City Council Meeting Minutes**

Documents:

10032016, City Council Meeting Minutes.pdf

b. **10122016, City Council Meeting Minutes**

Documents:

10122016, City Council Meeting Minutes.pdf

c. **10122016, City Council Meeting Minutes (2)**

Documents:

10122016, City Council Meeting Minutes (2).Pdf

d. **10152016, City Council Meeting Minutes**

Documents:

10152016, City Council Meeting Minutes.pdf

e. **10172016, City Council Meeting Minutes**

Documents:

10172016, City Council Meeting Minutes.pdf

f. **AM 2016-154, Ratify Council Signatures On New Oil And Gas Exemption Application**

Documents:

AM 2016-154, Ratify Council Signatures On New Oil And Gas Exemption Application.pdf

g. **AM 2016-156, Declare Surplus And Authorize Sale**

Documents:

AM 2016-156, Declare Surplus And Authorize Sale.pdf

h. **AM 2016-160, Approve Acceptance Of The Energy & Mineral Impact Assistant Grant For WC Road 16 In The Amount Of $750,000**

Documents:

AM 2016-160, Accept EIAF Grant - WC Road 16 - 750,000.Pdf

i. **AM 2016-158, Approving A Resolution Appointing Public Safety Committee Member - Robert Mealy**

Documents:

AM 2016-158, Approving A Resolution Appointing Mealy To The Public Safety Committee.pdf

j. **AM 2016-159, Approval To Authorize The Mayor To Sign A Resolution Adopting The Weld County Multi-Jurisdictional Hazard Mitigation Plan**

Documents:

AM 2016-159, Approve Resolution Adopting The Weld County Milti-Jursdictional Hazard Mitigation Plan.pdf

Public Hearing

a. **AM 2016-161, Approving A Site Plan And Special Use Permit For Dave's Earthworks, Inc. Located One-Half Mile North Of County Road 8 On Lots 2 And 3 Of The Yarbrough Acres Minor Subdivision**

Documents:

AM 2016-161 Site Plan And Special Use Permit Daves Earthworks.pdf

b. **Third Continuance For FL Mountain HZ Wells**

Documents:

Continuance Of FL Mountain HZ Wells.pdf

Action Memorandum

a. **AM 2016-155, Approve Increase In Employee Life Insurance Benefit For A Total Of $17,953.97 Per Year**

Documents:

AM 2016-155, Approve Increase In Employee Life Insurance Benefit - 17,954 Per Year.pdf

b. **AM 2016-157, Approving A Resolution To Opt Out Uncompensated Elected And/Or Appointed Officials From Workers' Compensation**

Elected And/Or Appointed Officials From Workers' Compensation Policy And Add Them To The VAMP For 2017 Policy Year For The Amount Of $959.05

Documents:

AM 2016-157, Approve A Resolution Opt Out Compensated Elected Appointed Officials - VAMP.pdf

Staff Reports

Mayor/Council Reports

Future City Events

a. **1107216 Upcoming Events**

Documents:

11072016 Upcoming Events.docx

Executive Session - For The Purpose Of Determining Positions Relative To Matters That May Be Subject To Negotiations, Developing Strategy For Negotiations, And/Or Instructing Negotiators, Under C.R.S. 24-6-402 (4)(E)

Adjourn

NET Cancer Day
PROCLAMATION

Whereas neuroendocrine tumors/tumours (NETs) often develop into cancer and, if left untreated, can result in serious illness and death; and

Whereas all too often healthcare professionals underestimate the malignant and metastatic potential of neuroendocrine tumors/tumors; and

Whereas NET cancer patients are often misdiagnosed or receive a delayed diagnosis, which can have a negative impact on their chance of survival and quality of life; and

Whereas survival for NET cancer patients is further compromised by fragmented care and lack of access to treatment by networks of specialists; and

Whereas although there have been advances in the detection and treatment of NET cancers, not all patients are benefiting quickly enough from scientific and medical progress in the field; and

Whereas with timely diagnosis and proper treatment, NET cancer patients can have significantly improved outcomes and quality of life;

Now, therefore, the City of Fort Lupton City Council, proclaims November 10, 2016 as World NET Cancer Awareness Day and encourage patients, caregivers, healthcare professionals, as well as the wider community, to join us as we work together to raise awareness about NET cancers and the need for timely diagnosis and access to optimal treatment and care.

In Witness Whereof, I have hereto set my hand and cause the seal of City of Fort Lupton, this 7th day of November 2016

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Tommy Holton, Mayor

Report Criteria:
Report type: GL detail
Check.Voided = {=} No
[Report].Check GL Account = "6000010100"-"6082059040"

Invoice Date	Check No	Payee	Invoice Description	Invoice No	Seq Amount
10/11/2016	81243	ACE HARDWARE OF FORT LUPTO	GOLF-TRASH BAGS,TERRAPOT	57209/1	21.97
10/19/2016	81243	ACE HARDWARE OF FORT LUPTO	GOLF-ORANGE MARKING PAINT	57383/1	44.94
Total 81243:					66.91
10/01/2016	81244	AMERICAN DISPOSAL SERVICES	GOLF-OCT16 TRASH SVCS	0005715998	86.00
10/01/2016	81244	AMERICAN DISPOSAL SERVICES	GOLF-OCT16 TRASH SVCS	0005715999	44.00
Total 81244:					130.00
10/03/2016	81245	AMERICAN EAGLE DISTRIBUTING	GOLF-BRAVAL 1/6 BBL	197755	77.00
Total 81245:					77.00
10/03/2016	81246	CINTAS FIRE PROTECTION	GOLF-FIRE SYSTEM INSPECTION	OD51137130	678.97
Total 81246:					678.97
10/06/2016	81247	COMCAST CABLE COMM, LLC	GOLF-10/6-11/5/16 PHONE SCVS	6460120790	59.85
10/06/2016	81247	COMCAST CABLE COMM, LLC	GOLF-10/6-11/5/16 INTERNET SCVS	6460120790	169.90
Total 81247:					229.75
10/14/2016	81248	ECOLAB PEST ELIMINATION DIV	GOLF-COCHROACH/RODENT CONTROL PROG	8559966	118.77
10/14/2016	81248	ECOLAB PEST ELIMINATION DIV	GOLF-COCHROACH/RODENT PROG	8697827	125.00
Total 81248:					243.77
10/18/2016	81249	HIGH COUNTRY BEVERAGE CORP	GOLF-VARIOUS CANNED BEERS	W-2440590	144.90
10/18/2016	81249	HIGH COUNTRY BEVERAGE CORP	GOLF-KEG RTN	W-2440590	30.00-
Total 81249:					114.90
10/11/2016	81250	SWIRE COCA-COLA	GOLF-CANNED COLAS	3632099512	206.45
10/11/2016	81250	SWIRE COCA-COLA	GOLF-CANNED COLAS	3632099512	37.95
Total 81250:					244.40
10/12/2016	81251	UNITED POWER	GC-OCT'16 ELECTRIC-CLUBHOUSE	1194602 OC	882.83
10/12/2016	81251	UNITED POWER	GC-OCT'16 ELECTRIC-PUMP HOUSE	1195001 OC	3,482.05
10/12/2016	81251	UNITED POWER	GC-OCT'16 ELECTRIC-MAINT BLDG	1195701 OC	127.48
10/12/2016	81251	UNITED POWER	GC-OCT'16 ELECTRIC-PAVILLION	6601202 OC	21.84
Total 81251:					4,514.20
10/25/2016	81252	ACE HARDWARE OF FORT LUPTO	GOLF-BAKING SODA,SPRAYMASTER	57496/1	27.57
Total 81252:					27.57
10/21/2016	81253	AMERICAN EAGLE DISTRIBUTING	GOLF-CANNED BEERS	201162	60.30
10/24/2016	81253	AMERICAN EAGLE DISTRIBUTING	GOLF-CANNED BEERS	201206	179.45

Invoice Date	Check No	Payee	Invoice Description	Invoice No	Seq Amount
Total 81253:					239.75
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-PHOTO CONTROL,GLASS REFELCTOR	FIN2016248a	129.75
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MOTOROLA ANTENNA	FIN2016248a	15.00
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-HANDICAP GOLF CART FLAG	FIN2016248a	119.88
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MH REPLACEMENT BATTERY	FIN2016248a	30.99
10/12/2016	81254	CITY OF FORT LUPTON	GOLF- CHICKEN	FIN2016248a	29.88
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-PAD,PERF,5X8,LGL,	FIN2016248a	6.99
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-PAPER,65#C,96B,250PK	FIN2016248a	35.98
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-STEEL TUBE,CUTTING CHG	FIN2016248a	122.55
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-V-SEAL KIT,VALVE	FIN2016248a	120.26
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-TIRE REPAIR	FIN2016248a	30.00
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-ICE CREAM	FIN2016248a	8.00
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MISC CHG	FIN2016248a	1.98
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-BREAKFAST SYRUPS	FIN2016248a	3.79
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-CLEMENTINES	FIN2016248a	5.00
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-TOILET BOWL CLEANERS HOME CLEANING	FIN2016248a	10.36
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-J HOOK/CLIP STRIP MISC. HOUSEHOL	FIN2016248a	2.49
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-COOKIES	FIN2016248a	10.00
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MISC CHG	FIN2016248a	.80
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-BEVERAGE ICE	FIN2016248a	23.94
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-FAMILY SIZE >20 FRUIT	FIN2016248a	11.16
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MARSHMALLOWS	FIN2016248a	3.05
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-WHIPPED TOPPINGS	FIN2016248a	9.16
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-GELATIN MIXES	FIN2016248a	1.62
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-BAKING NUTS	FIN2016248a	11.99
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MISC CHG	FIN2016248a	2.33
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-CHILI PEPPERS	FIN2016248a	.65
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MISC CHG	FIN2016248a	1.45-
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-ITALIAN CHEESE	FIN2016248a	1.99
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-BUTTER	FIN2016248a	1.99
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-DICED CORE TOMATO	FIN2016248a	3.16
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MULTI-SERVE EATING SOUP	FIN2016248a	3.16
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-CORE TOMATO SAUCE	FIN2016248a	3.16
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MAINSTREAM LONG CUTS DRY PASTA	FIN2016248a	3.98
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-FRESH CUT FLOWERS	FIN2016248a	9.98
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MISC CHG	FIN2016248a	3.45
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-SMALLWARES	FIN2016248a	3.99
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-FACIAL TISSUE	FIN2016248a	2.49
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MISC HARDWARE	FIN2016248a	7.18
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-LEMONS	FIN2016248a	3.99
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-SOUR CREAM	FIN2016248a	5.49
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-SHELL EGGS	FIN2016248a	1.58
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-HOT DOG BUNS	FIN2016248a	5.96
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-MISC CHG	FIN2016248a	1.40
10/19/2016	81254	CITY OF FORT LUPTON	GOLF-SEPT16 POSTAGE	FIN2016251	22.79
10/19/2016	81254	CITY OF FORT LUPTON	GOLF-PAYROLL 9/24-10/7/16 PAID ON 10/14/16	FIN2016253	19,683.14
10/12/2016	81254	CITY OF FORT LUPTON	GOLF-FIN2016149 DOUBLE PYMT CORRECTION	FIN201649	3,079.28-
Total 81254:					17,435.75
10/25/2016	81255	HIGH COUNTRY BEVERAGE CORP	GOLF-VARIOUS BEERS	W-2445094	139.65
Total 81255:					139.65

Invoice Date	Check No	Payee	Invoice Description	Invoice No	Seq Amount
04/13/2016	81256	OAKLEY INC	GOLF-REFUND SLS TAX ON PURCHASES	1600000849	21.75-
07/06/2016	81256	OAKLEY INC	GOLF-RTN BLACK INK FROM 07/05/16 DEL	9000190025	65.00-
10/11/2016	81256	OAKLEY INC	GOLF-OAKLEY PRODUCTS FOR PRO SHOP	9000256805	101.88
Total 81256:					15.13
08/09/2016	81257	R&R PRODUCTS INC	GOLF-BRACKETS,SCREWS,NUT,CYLINDER,F/R ORFICE	CD2048300	480.21
08/09/2016	81257	R&R PRODUCTS INC	GOLF-MASTERS GAUGE	CD2048325	159.30
08/09/2016	81257	R&R PRODUCTS INC	GOLF-TIRE	CD2048403	126.00
Total 81257:					765.51
10/20/2016	81258	SHAMROCK FOODS COMPANY	GOLF-FLOOR CLEANER,SPRAY BOTTLES,TRIGGERS	18367754	45.39
10/20/2016	81258	SHAMROCK FOODS COMPANY	GOLF-PICKLES,OIL,PREP FOOD ITEMS,MEAT,BREAD,FLOUR	18367754	330.62
10/20/2016	81258	SHAMROCK FOODS COMPANY	GOLF-TOMATO JUICE	18367754	21.30
10/20/2016	81258	SHAMROCK FOODS COMPANY	GOLF-CANDY BARS, PRETZELS	18367754	93.25
Total 81258:					490.56
10/19/2016	81259	TAYLOR MADE GOLF COMPANY, IN	GOLF-GOLF CLUB FOR PROSHOP	32042342	196.21
Total 81259:					196.21
10/20/2016	81260	WESTERN DISTRIBUTING INC	GOLF-CANNED BEERS,LIQUORS	305054	56.24
Total 81260:					56.24
10/14/2016	81261	XCEL ENERGY-GAS	GOLF-SEP/OCT16 GAS SERVICE	532222950-1	212.99
Total 81261:					212.99
10/11/2016	81262	OAKLEY INC	GOLF-OAKLEY PRODUCTS FOR PRO SHOP	9000256804	940.80
Total 81262:					940.80
10/31/2016	81263	AMERICAN EAGLE DISTRIBUTING	GOLF-CANNED BEERS	204760	214.30
Total 81263:					214.30
10/19/2016	81264	CENTURYLINK	GOLF-OCT/NOV16 PHONE SVCS	3038573945	97.51
Total 81264:					97.51
10/31/2016	81265	CITY OF FORT LUPTON	GOLF-10/15-11/14/16 PHONE SVCS	FIN2016258	210.37
10/31/2016	81265	CITY OF FORT LUPTON	GOLF-OCT16 COPIERLEASE & COPIES	FIN2016259	223.94
10/31/2016	81265	CITY OF FORT LUPTON	GOLF-LTD/CARDER,FLETCHER,TARPLEY	FIN2016260	34.89
10/31/2016	81265	CITY OF FORT LUPTON	GOLF-LI & AD&D/CARDER,FLETCHER,TARPLEY	FIN2016260	26.79
10/31/2016	81265	CITY OF FORT LUPTON	GOLF-LTD/GUTHRIE,MCNAY,SHARRAI	FIN2016260	11.79
10/31/2016	81265	CITY OF FORT LUPTON	GOLF-LI & AD&D/GUTHRIE,MCNAY,SHARRAI	FIN2016260	8.93
10/31/2016	81265	CITY OF FORT LUPTON	GOLF-NOV16 EAP PROGRAM	FIN2016262	52.80
Total 81265:					569.51
10/31/2016	81266	CITY OF FT LUPTON-UTIL INVOICE	GOLF-OCT'16 WATER USAGE-CLUBHOUSE	11249001 O	78.74

Invoice Date	Check No	Payee	Invoice Description	Invoice No	Seq Amount	
10/31/2016	81266	CITY OF FT LUPTON-UTIL INVOICE	GOLF-OCT'16 WATER USAGE-IRRIGATION	11252001 O	3.86	
10/31/2016	81266	CITY OF FT LUPTON-UTIL INVOICE	GOLF-OCT'16 WATER USAGE-RESTROOM	11252101 O	5.99	
10/31/2016	81266	CITY OF FT LUPTON-UTIL INVOICE	GOLF-OCT'16 WATER USAGE-MAINT SHOP	77214501 O	4.82	
Total 81266:					93.41	
10/18/2016	81267	COMCAST CABLE COMM, LLC	GOLF-NOV16 INFINITY TV	6460025494	10.58	
Total 81267:					10.58	
10/04/2016	81268	CROP PRODUCTION SERVICES IN	GC-32-0-0 FERTILIZER-GC MAINT	31450194	4,300.00	
10/04/2016	81268	CROP PRODUCTION SERVICES IN	GC-SPREAD FEE FOR FERTILIZER-GC MAINT	31450194	867.50	
07/25/2016	81268	CROP PRODUCTION SERVICES IN	GOLF-CREDIT ON STMT	81044 CRED	16.41-	
Total 81268:					5,151.09	
10/27/2016	81269	FUZION FIELD SERVICES, LLC	GOLF-TOILET CLEANING & SERVICE	106619	170.00	
Total 81269:					170.00	
10/18/2016	81270	GOLF & SPORT SOLUTIONS, LLC	GOLF-BUNKER SAND	26224	399.69	
Total 81270:					399.69	
10/26/2016	81271	REPUBLIC NATIONAL DISTRIBUTIN	GOLF-VARIOUS LIQUORS	3845080	88.80	
Total 81271:					88.80	
10/20/2016	81272	SCNS SPORTS FOODS INC	GOLF-BAR COOKIES	96390	21.20	
Total 81272:					21.20	
10/09/2016	81273	SHAMROCK FOODS COMPANY	GOLF-BUNS RETURNED	18346266 R	22.42-	
10/09/2016	81273	SHAMROCK FOODS COMPANY	GOLF-SCOOPS RETURNED	18346266 R	16.46-	
10/26/2016	81273	SHAMROCK FOODS COMPANY	GOLF-SPRAYER AND BOTTLE RETURNED	18367754 R	11.36-	
10/27/2016	81273	SHAMROCK FOODS COMPANY	GOLF-SPICE,FRANKS,MEAT,CHEESE,TOMATO	18378230	240.55	
10/27/2016	81273	SHAMROCK FOODS COMPANY	GOLF-CUPS,LIDS	18378230	192.71	
10/27/2016	81273	SHAMROCK FOODS COMPANY	GOLF-WATER,COFFEE,CREAMER,CANDY	18378230	207.25	
Total 81273:					590.27	
08/26/2016	81274	TURF ELEVATION	GOLF-CARBON 21,FUEL KELP,PHITE PRIMER	1177	742.50	
10/25/2016	81274	TURF ELEVATION	GOLF-RESPO FUEL	1187	450.00	
Total 81274:					1,192.50	
10/04/2016	81275	WAXIE SANITARY SUPPLY	GOLF-TOWELS,BLACK BAGS,HAND CLEANER	76260737	204.07	
Total 81275:					204.07	
10/14/2016	9001321	COLORADO STATE TREASURER	GOLF-2016 3RD QTR SUTA	2016 3RD Q	370.99	M
10/14/2016	9001321	COLORADO STATE TREASURER	GOLF-2016 3RD QTR SUTA	2016 3RD Q	370.99-	M
Total 9001321:					.00	

Invoice Date	Check No	Payee	Invoice Description	Invoice No	Seq	Amount
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Report Criteria:
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Check No	Payee	Invoice Description	Invoice No	Seq	Seq Amount
60127	AARON HERRERA	GF-CONF EDCC TRAVEL-CITY ADMIN	MILEAGE O	1	131.76
Total 60127:					131.76
60128	ACKLAM INC	GF-AM2016-141 DRAFTING, STREET PROJECTS-STREETS	2318	1	8,910.00
Total 60128:					8,910.00
60129	ADAMSON POLICE PRODUCTS	GF-12 GA DRAG ROUNDS-POLICE	INV225686	1	255.00
Total 60129:					255.00
60130	AMERICAN DISPOSAL SERVICES	GF-SEP16 RUBBISH PICKUP-GOV BLDG	0005710054	1	89.00
60130	AMERICAN DISPOSAL SERVICES	GF-SEP16 RUBBISH PICKUP-SHOP	0005710054	2	127.00
60130	AMERICAN DISPOSAL SERVICES	CPR-SEP16 RUBBISH PICKUP	0005710054	3	242.00
60130	AMERICAN DISPOSAL SERVICES	CEM-SEP16 RUBBISH PICKUP	0005710054	4	42.45
60130	AMERICAN DISPOSAL SERVICES	CEM-SEP16 RUBBISH PICKUP-HWY 52 PARKS	0005710054	5	74.25
60130	AMERICAN DISPOSAL SERVICES	CEM-OCT16 RUBISH PICKUP	0005710082	1	42.45
Total 60130:					617.15
60131	ARAMARK UNIFORM SERVICES IN	CPR-DOOR MAT SERVICE	492361542	1	46.77
60131	ARAMARK UNIFORM SERVICES IN	REC-DOOR MAT SERVICE	492361542	2	46.78
60131	ARAMARK UNIFORM SERVICES IN	GF-UNIFORM SERVICE-B&G	492361542	3	87.61
60131	ARAMARK UNIFORM SERVICES IN	GF-DOOR MAT SERVICE-CITY HALL	492361543	1	35.73
60131	ARAMARK UNIFORM SERVICES IN	GF-UNIFORM SERVICE-PW SHOP	492361543	2	219.27
Total 60131:					436.16
60132	CESARE INC	GF-AM2016-142 TESTING STREET PROJECTS-STREETS	16.3086.1	1	187.50
Total 60132:					187.50
60133	CHEMATOX LABORATORY INC	GF-CR-1606251 CLIENT TESTING-POLICE	21554	1	465.00
Total 60133:					465.00
60134	CINTAS FIRE PROTECTION	GF-INSP SPRINKLER RISE-GOV BLDG	OD51583065	1	244.50
Total 60134:					244.50
60136	COMCAST BUSINESS	GF-10/1/16-10/31/16 INTERNET SVC-IT	46697029	1	1,512.57
60136	COMCAST BUSINESS	REC-10/1/16-10/31/16 INTERNET-REC	46697029	2	312.57
Total 60136:					1,825.14
60137	COMCAST CABLE COMM, LLC	GF-10/23-11/22/16 CABLE,INTERNET-SHOP	6460164533	1	2.05
Total 60137:					2.05

Check No	Payee	Invoice Description	Invoice No	Seq	Seq Amount
60138	COYOTE CREEK GOLF COURSE	CPR-2016 GOLF COURSE ASSESSMENTS	2016 GOLF	1	82,000.00
Total 60138:					82,000.00
60139	FORT LUPTON PACKING & SHIPPIN	GF-PRINTER COVER-B&G	16265	1	27.50
Total 60139:					27.50
60140	G & G EQUIPMENT	GF-AM2016-138 SNOW PLOWS FOR F250 TRUCKS-B&G	57397	1	12,977.40
Total 60140:					12,977.40
60141	INTELLICHOICE, INC.	GF-ANNUAL LICENSE & SUPPORT FEE FOR EFORCE-IT	1228281	1	2,983.91
60141	INTELLICHOICE, INC.	GF-ANNUAL HOSTING FEE FOR EFORCE-IT	1228281	2	255.98
Total 60141:					3,239.89
60142	IRENE RIVAL	GF-E0006895 RESTITUTION PAYMENT-COURT	E0006895 2	1	526.66
Total 60142:					526.66
60143	J & T CONSULTING INC	UF-SEP16 WATER RIGHTS ENGINEERING	1922	1	1,725.70
Total 60143:					1,725.70
60145	KENNETH E PONCELOW	GF-CHIEF OF POLICE LUNCH-POLICE	90	1	60.00
Total 60145:					60.00
60146	KONE INC	REC-09/01-09/31/16 MAINT AGREE ELEVATOR	949434197	1	140.80
Total 60146:					140.80
60147	L.G. EVERIST, INC	STX-14.19 CLASS 6 ROAD BASE	344326	1	117.07
60147	L.G. EVERIST, INC	UF-SQUEEGEE-WATERLINE	344326	2	24.22
60147	L.G. EVERIST, INC	UF-SQUEEGEE-SEWERLINE	344326	3	24.22
Total 60147:					165.51
60148	LAWS	GF-MOVE ANTENNA FOR MDTS-IT	11513A	1	1,193.50
Total 60148:					1,193.50
60149	LOUIS A GRESH	GF-CK59274 REISSUED MAY16-COURT	CK59274 RE	1	1,500.00
Total 60149:					1,500.00
60150	MAC EQUIPMENT INC	GF-TRIMMER CARB & SPARKS PLUG	142915	1	130.85
Total 60150:					130.85
60151	METROWEST NEWSPAPERS	GF-PUB HEAR HARGETTS HEROS/PAID TWICE	07/20/16-CR	1	16.72-
60151	METROWEST NEWSPAPERS	GF-AMEND CHAP 16 CODE/PAID TWICE-LEGIST	07/20/16-CR	2	10.56-
60151	METROWEST NEWSPAPERS	GF-BUDGET NOTICE/PAID TWICE-FINANCE	08/31/16 CR	1	9.24-
60151	METROWEST NEWSPAPERS	GF-PUBL HEARING HZ WELLS/PAID TWICE	08/31/16 CR	2	14.08-

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60151	METROWEST NEWSPAPERS	GF-PAINT PUMP HOUSE NOTICE-LEGIST	25-015485 0	1	212.14
60151	METROWEST NEWSPAPERS	GF-PUB HEAR THOMAS MINOR SUB	25-401951 1	1	18.04
Total 60151:					179.58
60152	MIRACLE RECREATION EQUIP	GF-BAG OF BOLTS/PLAYGROUND-B&G	WO 696881	1	22.46
Total 60152:					22.46
60153	RIES ELECTRIC INC	GF-INSTALL 30 AMP CIRCUIT-GOV BLDG	16-20497	1	643.70
60153	RIES ELECTRIC INC	GF-REPAIR LIGHT ON SIGN-TRIANGLE PK	16-20512	1	194.50
Total 60153:					838.20
60154	SHORT ELLIOTT HENDRICKSON IN	UF-AM 2016-096 WWTP STUDY-SPLANT	322164	1	31,359.90
Total 60154:					31,359.90
60155	SUPER-TECH FILTER	REC-VARIOUS HVAC FILTERS	263864	1	456.85
Total 60155:					456.85
60156	TASER INTERNATIONAL	GF-BATTTERY PACK-POLICE	SI1455315	1	56.41
Total 60156:					56.41
60157	THE CONSOLIDATED MUTUAL	UF-SEP16 ELECTRICAL-PERRY PIT WELL C	10442702 SE	1	32.97
60157	THE CONSOLIDATED MUTUAL	UF-SEP16 ELECTRICAL-PERRY PIT WELL B	10443102 SE	1	53.68
60157	THE CONSOLIDATED MUTUAL	UF-SEP16 ELECTRIC SVCS-PERRY PIT DISCHARGE	17273902 SE	1	1,239.71
Total 60157:					1,326.36
60158	TRAPPERS DAYS	GF-TRANSFER AMT TO PAY EXPENSES IN CHECKING ACCOUNT	10.18.16 TR	1	100.00
Total 60158:					100.00
60159	UNITED POWER	GF-OCT'16 ELECTRIC-EMERG SIREN	10553102 O	1	21.53
60159	UNITED POWER	GF-OCT'16 ELECTRIC-WELCOME FLSH	1196401 OC	1	34.06
60159	UNITED POWER	GF-OCT'16 ELECTRIC-SCH SIGNAL	1279801 OC	1	24.80
60159	UNITED POWER	GF-OCT'16 ELECTRIC-VERIZON BLDG	14427100 O	1	106.87
60159	UNITED POWER	GF-OCT'16 ELECTRIC-TORN SIREN	15232500 O	1	21.09
60159	UNITED POWER	GF-OCT'16 ELECTRIC-HERITAGE PARK	17761600 O	1	20.00
60159	UNITED POWER	GF-OCT'16 ELECTRIC-LANCASTER SPRINK	17868800 O	1	20.00
60159	UNITED POWER	UF-OCT'16 ELECTRIC-WELL#7	18498400 O	1	610.67
60159	UNITED POWER	GF-OCT'16 ELECTRIC-SIGN 70110&70111	726705 OCT	1	21.53
60159	UNITED POWER	UF-OCT'16 ELECTRIC-WATER TANKS	7280200 OC	1	21.96
60159	UNITED POWER	UF-OCT'16 ELECTRIC-WTR TRMT PLANT	803908 OCT	1	6,450.65
Total 60159:					7,353.16
60160	WAXIE SANITARY SUPPLY	REC-TOWELS,KROLLS,TISSUE,WIPES	76222465	1	892.21
60160	WAXIE SANITARY SUPPLY	CPR-BAGS,CLEANING SUPPLIES,SOAP	76222466	1	663.06
60160	WAXIE SANITARY SUPPLY	GF-TOWELS,DISINFECTANT,TISSUE-GOV BLDG	76222467	1	104.71
60160	WAXIE SANITARY SUPPLY	CPR-CLING DISINFECTANT	76222933	1	55.28
60160	WAXIE SANITARY SUPPLY	GF-CLINGING DISINFECTANT-GOV BLDG	76222934	1	27.64

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Total 60160:					1,742.90
60161	WELD CNTY CLERK/RECORDER	CPR-EMS FEE FOR 615 ELI	CPR VEH E	1	25.00
Total 60161:					25.00
60162	WELD COUNTY ACCTG DEPART	GF-FLPD07 LICENSE #38625-DISPATCH	FTLUPTONP	1	200.00
Total 60162:					200.00
60163	WELD COUNTY DETENTION	GF-SEP16 DETENTION SVCS-COURT	231711	1	53.64
Total 60163:					53.64
60164	WELD COUNTY PUBLIC WORKS	GF-DURABLEND DUST CONTROL CR 29-STREETS	10.10.16 CH	1	2,671.78
Total 60164:					2,671.78
60165	ADVANCED URGENT CARE AND O	GF-DOT PHYSICAL-B&G	35857C4045	1	85.00
Total 60165:					85.00
60166	AFLAC	GF-OCT16 SUUPPLEMENTAL INS	450806	1	762.22
Total 60166:					762.22
60167	ALBERTSONS/SAFEWAY	REC-POOL PARTY ITEMS	723711 1001	1	36.00
Total 60167:					36.00
60168	ANTHEM BLUE CROSS	GF-NOV16 EAP-HR	0007448914	1	286.00
60168	ANTHEM BLUE CROSS	LIB-NOV16 EAP	0007448914	2	33.00
60168	ANTHEM BLUE CROSS	GOLF-NOV16 EAP	0007448914	3	52.80
Total 60168:					371.80
60169	ANTHEM BLUE CROSS	GF-NOV16 HEALTH INS	000513061C	1	51,649.16
60169	ANTHEM BLUE CROSS	GF-NOV16 COBRA HI	000513061C	2	511.64
60169	ANTHEM BLUE CROSS	GF-NOV16 VISION INSURANCE	000513061C	3	809.41
60169	ANTHEM BLUE CROSS	GF-NOV16 COBRA VI	000513061C	4	7.04
Total 60169:					52,977.25
60170	ARAMARK UNIFORM SERVICES IN	CPR-DOOR MAT SERVICE	492364772	1	46.78
60170	ARAMARK UNIFORM SERVICES IN	REC-DOOR MAT SERVICE	492364772	2	46.77
60170	ARAMARK UNIFORM SERVICES IN	GF-UNIFORM SERVICE-B&G	492364772	3	87.59
60170	ARAMARK UNIFORM SERVICES IN	GF-DOOR MAT SERVICE	492364773	1	35.73
60170	ARAMARK UNIFORM SERVICES IN	GF-UNIFORM SERVICE-PW SHOP	492364773	2	107.17
Total 60170:					324.04
60171	ASPHALT SPECIALTIES CO	STX-14.100 TON 1/2 MIX ASPHALT	2520435	1	683.85
60171	ASPHALT SPECIALTIES CO	STX-13.210 TONS 1/2 MIX ASPHALT	2520440	1	640.69

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Total 60171:					1,324.54
60172	C.E.M. SALES & SERVICE	REC-MURIATIC ACID,DRUM CLEAN	141575	1	1,000.00
60172	C.E.M. SALES & SERVICE	REC-POOL MOSS	141674	1	133.03
Total 60172:					1,133.03
60173	CHAMBER OF COMMERCE	GF-OCT16 CHAMBER LUNCH	2966	1	60.00
Total 60173:					60.00
60174	CIRSA/PC	GF-CHG IN VEHICLE ADDITION	161823	1	176.00
Total 60174:					176.00
60175	COMCAST BUSINESS	GC-10/15-11/14 PHONE-GOLF COURSE	47302378	1	210.37
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE SVC-ADMIN SVCES	47302378	2	97.53
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-LEGISLATIVE	47302378	3	48.70
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-COURT	47302378	4	73.05
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-CLERK	47302378	5	24.35
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-HR	47302378	6	48.70
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-CITY ADMIN	47302378	7	48.70
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-FINANCE	47302378	8	99.84
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-IT	47302378	9	73.05
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-PD	47302378	10	487.00
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-PD COMM SVCS	47302378	11	24.35
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-PD RECORDS	47302378	12	24.35
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-SHOP	47302378	13	63.11
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-STREETS	47302378	14	6.09
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-B&G	47302378	15	87.25
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-BLDG INSP	47302378	16	24.35
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-PLANNING	47302378	17	121.75
60175	COMCAST BUSINESS	GF-10/15-11/14 PHONE-CODE ENF	47302378	18	24.35
60175	COMCAST BUSINESS	CPR-10/15-11/14 PHONE-COM CENTER	47302378	19	125.80
60175	COMCAST BUSINESS	CPR-10/15-11/14 PHONE-SENIORS	47302378	20	62.90
60175	COMCAST BUSINESS	CPR-10/15-11/14 PHONE-MUSEUM	47302378	21	62.83
60175	COMCAST BUSINESS	UF-10/15-11/14 PHONE-W LINES	47302378	22	12.18
60175	COMCAST BUSINESS	UF-10/15-11/14 PHONE-S LINES	47302378	23	6.09
60175	COMCAST BUSINESS	UF-10/15-11/14 PHONE-WWTP	47302378	24	58.26
60175	COMCAST BUSINESS	UF-10/15-11/14 PHONE-UB	47302378	25	46.27
60175	COMCAST BUSINESS	RC-10/15-11/14 PHONE-REC	47302378	26	283.11
Total 60175:					2,244.33
60176	COMCAST CABLE COMM, LLC	CPR-10/20-11/19/16 INTERNET-MUSEUM	6460147405	1	69.95
60176	COMCAST CABLE COMM, LLC	CPR-10/20-11/19/16 PHONE SVCS-MUSEUM	6460147405	2	32.43
60176	COMCAST CABLE COMM, LLC	CPR-10/20-11/19/16 PHONE SVCS-MUSEUM	6460147405	3	32.42
60176	COMCAST CABLE COMM, LLC	GF-MUSEUM 10/20-11/19/16 PHONE/INTERNET-IT	6460147405	4	134.80
60176	COMCAST CABLE COMM, LLC	GF-MUSEUM 10/20-11/19/16 PHONE/INTERNET-IT	6460147405	5	134.80-
60176	COMCAST CABLE COMM, LLC	GF-11/1-11/30 Fax & Intoxilizer-PD	6460159244	1	114.80
Total 60176:					249.60
60177	EMPIRE PORTABLE RESTROOMS	CEM-PORTABLE RESTROOMS PLUS WINTERIZATION	26533	1	139.35
60177	EMPIRE PORTABLE RESTROOMS	GF-PORTABLE RESTROOMS PLUS			

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		WINTERIZATION-4TH & PACIFIC	26533	2	154.33
60177	EMPIRE PORTABLE RESTROOMS	GF-PORTABLE RESTROOMS PLUS WINTERIZATION-DOG PARK	26533	3	199.33
60177	EMPIRE PORTABLE RESTROOMS	GF-PORTABLE RESTROOMS PLUS WINTERIZATION-HWY52	26533	4	154.33
60177	EMPIRE PORTABLE RESTROOMS	GF-PORTABLE RESTROOMS PLUS WINTERIZATION-CHESTNUT&HICKORY	26533	5	154.33
60177	EMPIRE PORTABLE RESTROOMS	GF-PORTABLE RESTROOMS PLUS WINTERIZATION-COMM PARK	26533	6	154.33
Total 60177:					956.00
60178	FASTENAL COMPANY 01COFTL	GF-VARIOUS FASTENERS	COFTL12562	1	49.53
Total 60178:					49.53
60179	GARY RIGG	REC-2016 HAUNTED HAY RIDE	2016 HAYRI	1	100.00
Total 60179:					100.00
60180	GROUND ENGINEERING CONSULT	SSTX-AM 2016-110 WCR 16 MATERIALS TESTING-STREETS	161225.0-2	1	2,887.50
Total 60180:					2,887.50
60181	HD SUPPLY WATERWORKS, LTD	UF-WATER METER PARTS	G218854	1	257.25
Total 60181:					257.25
60182	INTERSTATE RENTALS&SALES, IN	REC-LEASE SCISSOR LIFT	35993	1	293.80
Total 60182:					293.80
60183	J & T CONSULTING INC	UF-AM2016-112 CEMETERY WATERLINE EXTENSION-WLINES	1923	1	3,547.60
60183	J & T CONSULTING INC	SSTX-AM2016-039 HWY 85/52 BEAUTIFICATION ENGINEERING-STREETS	1924	1	2,615.10
Total 60183:					6,162.70
60184	LEGACY SCHOOL OF DANCE, LLC	REC-FALL 2016 DANCE INSTRUCTOR	FALL 2016 D	1	654.50
Total 60184:					654.50
60185	LINCOLN AQUATICS	REC-CLOCK PARTS	SI301809	1	99.96
Total 60185:					99.96
60186	MEANDERING WITH MARY	CPR-OCT16 CASINO TRIP-SENIORS	10.11.2016	1	117.00
Total 60186:					117.00
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM FOR GOLF	585377707	1	46.68
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM FOR LIB	585377707	2	66.43
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-ADMIN SVCS	585377707	3	16.44
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-COURT	585377707	4	25.79
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-CITY CLERK	585377707	5	18.94
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-HR	585377707	6	31.27
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-CITY ADMIN	585377707	7	25.00

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60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-FINANCE	585377707	8	64.39
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-IT	585377707	9	22.27
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-POLICE	585377707	10	237.40
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-COMM SVC	585377707	11	10.85
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-RECORDS	585377707	12	13.02
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-STREETS	585377707	13	48.38
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-B&G	585377707	14	50.10
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-PLANNING	585377707	15	50.55
60187	MUTUAL OF OMAHA	GF-NOV'16 LTD PREM-CODE	585377707	16	10.07
60187	MUTUAL OF OMAHA	CPR-NOV'16 LTD PREM-COMM CTR	585377707	17	46.92
60187	MUTUAL OF OMAHA	CPR-NOV'16 LTD PREM-SENIORS	585377707	18	10.18
60187	MUTUAL OF OMAHA	UF-NOV'16 LTD PREM-WATER LINES	585377707	19	37.46
60187	MUTUAL OF OMAHA	UF-NOV'16 LTD PREM-SEWER LINES	585377707	20	28.22
60187	MUTUAL OF OMAHA	UF-NOV'16 LTD PREM-UB	585377707	21	9.36
60187	MUTUAL OF OMAHA	UF-NOV'16 LTD PREM-STORM DRAIN	585377707	22	2.79
60187	MUTUAL OF OMAHA	REC-NOV'16 LTD PREM-REC	585377707	23	59.24
60187	MUTUAL OF OMAHA	CEM-NOV'16 LTD PREM-CEM	585377707	24	6.97
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM FOR GOLF	585377707	25	35.72
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM FOR LIB	585377707	26	54.09
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-ADMIN SVCS	585377707	27	12.73
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-COURT	585377707	28	19.84
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-CITY CLERK	585377707	29	14.44
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-HR	585377707	30	23.94
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-CITY ADMIN	585377707	31	72.89-
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-FINANCE	585377707	32	46.45
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-IT	585377707	33	17.10
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-POLICE	585377707	34	143.40
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-COMM SVC	585377707	35	8.37
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-RECORDS	585377707	36	9.96
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-STREETS	585377707	37	30.60
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-B&G	585377707	38	76.55
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-PLANNING	585377707	39	38.56
60187	MUTUAL OF OMAHA	GF-NOV'16 LI & AD&D PREM-CODE	585377707	40	5.06
60187	MUTUAL OF OMAHA	CPR-NOV'16 LI & AD&D PREM-COMM CTR	585377707	41	35.72
60187	MUTUAL OF OMAHA	CPR-NOV'16 LI & AD&D PREM-SENIORS	585377707	42	7.79
60187	MUTUAL OF OMAHA	UF-NOV'16 LI & AD&D PREM-WATER LINES	585377707	43	25.42
60187	MUTUAL OF OMAHA	UF-NOV'16 LI & AD&D PREM-SEWER LINES	585377707	44	18.38
60187	MUTUAL OF OMAHA	UF-NOV'16 LI & AD&D PREM-UB	585377707	45	7.18
60187	MUTUAL OF OMAHA	UF-NOV'16 LI & AD&D PREM-STORM DRAIN	585377707	46	2.13
60187	MUTUAL OF OMAHA	REC-NOV'16 LI & AD&D PREM-REC	585377707	47	45.79
60187	MUTUAL OF OMAHA	CEM-NOV'16 LI & AD&D PREM-CEM	585377707	48	5.31
60187	MUTUAL OF OMAHA	GF-NOV'16 ADD'L LI/AD&D PREM-HR	585377707	49	1,239.38
Total 60187:					2,789.74
60188	NORMAN'S MEMORIALS INC.	CEM-ENGRAVING FOR COLUMB(PASS THROUGH)	10.19.16 EN	1	85.00
Total 60188:					85.00
60189	PETTY CASH-FINANCE	GF-POP/WATER FOR MEETINGS-PLANNING	10.20.16 PE	1	1.50
60189	PETTY CASH-FINANCE	GF-POP/WATER FOR MEETINGS-COURT	10.20.16 PE	2	4.00
60189	PETTY CASH-FINANCE	GF-POP/WATER FOR MEETINGS-CITY ADMIN	10.20.16 PE	3	101.03
60189	PETTY CASH-FINANCE	GF-RIBBON CUTTING SUPPLIES-LEGIST	10.20.16 PE	4	21.27
60189	PETTY CASH-FINANCE	GF-LICENSE PLATE FOR TRAILER-B&G	10.20.16 PE	5	9.09
60189	PETTY CASH-FINANCE	CPR-LICENSE PLATE FOR VAN	10.20.16 PE	6	10.98

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Total 60189:					147.87
60190	PLATTE VALLEY MEDICAL CTR	GF-7 EMPLOYEE FLU SHOTS-HR	10202016 FL	1	140.00
Total 60190:					140.00
60191	RECREATION SUPPLY COMPANY	REC-POOL/SPA REGEANTS	308563	1	79.23
Total 60191:					79.23
60192	TOSHIBA FINANCIAL SERVICES	GF-OCT16 COPIER LEASE-IT	315585794	1	176.79
60192	TOSHIBA FINANCIAL SERVICES	GF-OCT16 COPIER LEASE-POLICE	315585794	2	176.80
60192	TOSHIBA FINANCIAL SERVICES	GF-OCT16 COPIER LEASE-FINANCE	315585794	3	176.80
60192	TOSHIBA FINANCIAL SERVICES	GF-OCT16 COPIER LEASE-CITY ADMIN	315585794	4	176.80
60192	TOSHIBA FINANCIAL SERVICES	REC-OCT16 COPIER LEASE	315585794	5	176.80
60192	TOSHIBA FINANCIAL SERVICES	GOLF-OCT16 COPIER LEASE	315585794	6	201.08
60192	TOSHIBA FINANCIAL SERVICES	GOLF-AUG/SEP16 COPIES	315585794	7	22.86
60192	TOSHIBA FINANCIAL SERVICES	GF-AUG/SEP16 COPIES-HR	315585794	8	5.89
60192	TOSHIBA FINANCIAL SERVICES	GF-AUG/SEP16 COPIES-PLANNING	315585794	9	41.38
60192	TOSHIBA FINANCIAL SERVICES	GF-AUG/SEP16 COPIES-POLICE	315585794	10	378.61
60192	TOSHIBA FINANCIAL SERVICES	GF-AUG/SEP16 COPIES-FINANCE	315585794	11	484.82
60192	TOSHIBA FINANCIAL SERVICES	GF-AUG/SEP16 COPIES-ADMIN	315585794	12	758.25
60192	TOSHIBA FINANCIAL SERVICES	REC-AUG/SEP16 COPIES-ADMIN	315585794	13	722.26
60192	TOSHIBA FINANCIAL SERVICES	GF-DAMAGE LEASE-FINANCE	315585794	14	81.27
Total 60192:					3,580.41
60193	UNITED POWER	UF-9/13-10/12 ELECTRIC-WTR TANK&PUMP	1195501 OC	1	1,556.16
60193	UNITED POWER	GF-9/13-10/12 ELECTRIC-B&G SPRINKLER CONTROL	1207701 OC	1	21.09
60193	UNITED POWER	GF-9/13-10/12 ELECTRIC-B&G 10 HP PUMP	1223101 OC	1	20.00
60193	UNITED POWER	UF-9/13-10/12 ELECTRIC-SEWER LIFT STA	1240301 OC	1	132.60
60193	UNITED POWER	GF-9/13-10/12 ELECTRIC-PEARSON PK BALLFIELD	1241801 OC	1	392.78
60193	UNITED POWER	GF-9/13-10/12 ELECTRIC-PEARSON PK	1241903 OC	1	359.64
60193	UNITED POWER	UF-9/13-10/12 ELECTRIC-WELL #4	1276101 OC	1	580.91
60193	UNITED POWER	CPR-9/13-10/12 ELECTRIC-MUSEUM	1295501 OC	1	80.82
60193	UNITED POWER	UF-9/13-10/12 ELECTRIC-WELL #5	1296101 OC	1	57.28
60193	UNITED POWER	GF-9/13-10/12 ELECTRIC-1ST & MCKINLEY TR SIG	1299501 OC	1	113.63
60193	UNITED POWER	GF-9/13-10/12 ELECTRIC-CITY HALL	1302801 OC	1	1,700.16
60193	UNITED POWER	UF-9/13-10/12 ELECTRIC-WELL #1	1302901 OC	1	135.87
60193	UNITED POWER	UF-9/13-10/12 ELECTRIC-WELL #3	1316801 OC	1	624.30
60193	UNITED POWER	GF-9/13-10/12 ELECTRIC-STREET LIGHTS	1322501 OC	1	6,190.64
60193	UNITED POWER	CEM-9/13-10/12 ELECTRIC-CEMETERY	1360303 OC	1	64.04
60193	UNITED POWER	CPR-9/13-10/12 ELECTRIC-REC SIGN	13842400 O	1	55.75
60193	UNITED POWER	UF-9/13-10/12 ELECTRIC-S LIFT STATION	18057500 O	1	457.53
60193	UNITED POWER	UF-10/3-10/11 ELECTRIC-NEW CHRISTMAS LIGHTS	18762100 O	1	5.33
60193	UNITED POWER	GF-9/13-10/12 ELECTRIC-FT LUPTON FLASH	3399301 OC	1	52.70
60193	UNITED POWER	CPR-25% 9/13-10/12 ELECTRIC-COMM CTR	6779701 OC	1	1,849.91
60193	UNITED POWER	REC-75% 9/13-10/12 ELECTRIC-REC	6779701 OC	2	5,549.73
60193	UNITED POWER	UF-9/13-10/12 ELECTRIC-WWTP	704901 OCT	1	7,926.17
60193	UNITED POWER	GF-9/13-10/12 ELECTRIC-GAZEBO	7225800 OC	1	21.53
60193	UNITED POWER	GF-9/13-10/12 ELECTRIC-SHOP	733101 OCT	1	223.18
60193	UNITED POWER	UF-9/13-10/12 ELECTRIC-WELL #13	762901 OCT	1	988.03
60193	UNITED POWER	UF-9/13-10/12 ELECTRIC-N LIFT STATION	8976200 OC	1	669.64

Check No	Payee	Invoice Description	Invoice No	Seq	Seq Amount
Total 60193:					29,829.42
60194	WELD COUNTY OFFICE OF THE BO	GF-2016 TOWN MEETING AND GUEST	10272016	1	60.00
Total 60194:					60.00
60195	WOHNRADE CIVIL ENGINEERS INC	GF-S PLATTE RIVER TRAIL SURVEY & ENGINEERING-B&G	1387	1	932.58
Total 60195:					932.58
60196	XCEL ENERGY-GAS	GF-SEP/OCT16 GAS SERVICE-GOV BLDG	532035238-1	1	98.13
Total 60196:					98.13
60197	ROCKY MOUNTAIN BUILDINGS LLC	GF-AM 2016-125 PEARSON PARK STORAGE BLDG-B&G	137 REISSU	1	11,900.00
Total 60197:					11,900.00
60198	ADAMSON POLICE PRODUCTS	GF-50 SHOT SPONGE ROUND TRAINING KIT-POLICE	INV227532	1	282.52
Total 60198:					282.52
60199	ALYSSA L KNUTSON	GF-APA CONF MILEAGE/CO SPG-PLANNING	OCT16 MILE	1	77.11
60199	ALYSSA L KNUTSON	GF-APA CONF LODGING-PLANNING	OCT16 MILE	2	290.26
Total 60199:					367.37
60200	ANDREW TOVES	GF-MILEAGE TO LITTLETON FOR TRAINING-POLICE	SEP16 MILE	1	205.20
Total 60200:					205.20
60201	ARAMARK UNIFORM SERVICES IN	CPR-DOOR MAT SERVICE	492367963	1	46.77
60201	ARAMARK UNIFORM SERVICES IN	REC-DOOR MAT SERVICE	492367963	2	46.78
60201	ARAMARK UNIFORM SERVICES IN	GF-UNIFORM SERVICE-B&G	492367963	3	87.61
60201	ARAMARK UNIFORM SERVICES IN	GF-DOOR MAT SERVICE-GOV BLDG	492367964	1	35.73
60201	ARAMARK UNIFORM SERVICES IN	GF-UNIFORM SERVICE-PW SHOP	492367964	2	143.39
Total 60201:					360.28
60202	BG'S JAPANESE DESIGNS	GF-TRAINING T-SHIRTS-POLICE	5401	1	286.00
Total 60202:					286.00
60203	CASELLE, INC.	GF-DEC16 CLARITY SUPPORT-CITY CLERK	76672	1	58.50
60203	CASELLE, INC.	GF-DEC16 CLARITY SUPPORT-COURT	76672	2	156.00
60203	CASELLE, INC.	GF-DEC16 CLARITY SUPPORT-HR	76672	3	175.50
60203	CASELLE, INC.	GF-DEC16 CLARITY SUPPORT-FINANCE	76672	4	1,092.00
60203	CASELLE, INC.	UF-DEC16 CLARITY SUPPORT-UTIL BILLING	76672	5	390.00
60203	CASELLE, INC.	CEM-DEC16 CLARITY SUPPORT-UTIL BILLING	76672	6	78.00
60203	CASELLE, INC.	GF-DEC16 CLARITY SUPPORT-CITY CLERK	76672	7	1,950.00-
60203	CASELLE, INC.	GF-DEC16 CLARITY SUPPORT-IT	76672	8	1,950.00

Check No	Payee	Invoice Description	Invoice No	Seq	Seq Amount
Total 60203:					1,950.00
60204	CHEMATOX LABORATORY INC	GF-DRUG SCREEN/CR1607311-POLICE	21615	1	265.00
Total 60204:					265.00
60205	CINTAS FIRST AID & SAFETY	REC-FIRST AID CABINET SERV & SUPPLIES	5006213478	1	99.42
Total 60205:					99.42
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-S RAILROAD PK	11035001 O	1	333.20
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-RR PK SOUTH	11221001 O	1	87.70
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-RR PK NORTH	11222001 O	1	320.83
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-9TH ST PK	33025001 O	1	180.10
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-N RAILROAD PK	33031001 O	1	388.15
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-VINCENTS PK	33033001 O	1	31.50
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-PW SHOP	33045001 O	1	102.22
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-5TH&FULTON PK	33092001 O	1	111.07
60206	CITY OF FT LUPTON-UTIL INVOICE	CPR-OCT'16 WATER USAGE-MUSEUM	33166001 O	1	195.15
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-VERIZON BLDG	55055501 O	1	61.03
60206	CITY OF FT LUPTON-UTIL INVOICE	CPR-OCT'16 WATER USAGE-COMM CTR	55057001 O	1	121.96
60206	CITY OF FT LUPTON-UTIL INVOICE	RC-OCT'16 WATER USAGE-REC CENTER	55057601 O	1	815.36
60206	CITY OF FT LUPTON-UTIL INVOICE	RC-OCT'16 WATER USAGE-IRRG REC CTR	55057701 O	1	921.61
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-LANCASTER PK	66092001 O	1	178.33
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-HERITAGE PARK	77109501 O	1	715.53
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-HERITAGE PARK	77116501 O	1	31.50
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-ROADSIDE PK	77229001 O	1	70.51
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-PEARSON PK IRRIG	77229501 O	1	604.93
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-PEARSON PK RESTROOM	77229601 O	1	33.28
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-IRRIG BURGER KING	77231101 O	1	31.50
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-S MCKINLEY PK	99004001 O	1	72.97
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-KOSHIO PARK RESTROOM	99004101 O	1	58.88
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-CITY HALL BLDG	99005001 O	1	132.54
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-IRRIG N ISLAND	99006001 O	1	126.61
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-IRRIG CITY HALL	99007001 O	1	91.37
60206	CITY OF FT LUPTON-UTIL INVOICE	GF-OCT'16 WATER USAGE-IRRIG S ISLAND	99008001 O	1	68.01
60206	CITY OF FT LUPTON-UTIL INVOICE	CEM-OCT'16 WATER USAGE-CEMETERY	99132001 O	1	11,564.69
Total 60206:					17,450.53
60207	CO ASSOC OF CHIEFS OF	GF-10 POST TEST-POLICE	POST TEST	1	246.88
Total 60207:					246.88
60208	COLONIAL LIFE	GF-NOV16 SUPPLEMENTAL INS	7816820-110	1	176.34
60208	COLONIAL LIFE	CPR-NOV16 SUPPLEMENTAL INS	7816820-110	2	87.96
Total 60208:					264.30
60209	COMCAST CABLE COMM, LLC	REC-10/14-10/13/16 CABLE MUSIC	6460117309	1	268.05
60209	COMCAST CABLE COMM, LLC	REC-10/14-10/13/16 FINANCE CHG	6460117309	2	9.50
60209	COMCAST CABLE COMM, LLC	CPR-10/25-11/24/16 CABLE SVCS	6460124495	1	141.17

Check No	Payee	Invoice Description	Invoice No	Seq	Seq Amount
Total 60209:					418.72
60210	COREN PRINTING, INC.	GF-BUSN CARDS/GROSSMAN-POLICE	81142	1	48.00
Total 60210:					48.00
60211	DANETTE LAGUNAS	GF-RESTITUTION CASE 119995-COURT	119995 #2	1	50.00
Total 60211:					50.00
60212	DAVID LINDBERG	GF-ACSO COMMAND SCHOOL-POLICE	OCT16 MILE	1	442.80
Total 60212:					442.80
60213	DIGETEKS, LLC	GF-IT SUPPORT-IT	5411	1	3,000.00
Total 60213:					3,000.00
60214	FEDEX	GF-DENVER-LEGAL FIRM-HR	5-591-78518	1	17.55
Total 60214:					17.55
60215	FORT LUPTON EAST LLP	GF-FORT LUPTON EAST DEV DEP REFUND-PLANNING	2005-2009 D	1	1,500.00
Total 60215:					1,500.00
60216	ITEDIUM, INC	GF-COBRA NOTIFICATION PACKAGE	5000757	1	63.45
Total 60216:					63.45
60217	JASON SUTHERLAND	GF-REFUND CONTRACTOR LIC-PLANNING	CONTRACT	1	75.00
Total 60217:					75.00
60218	LOUIS A GRESH	GF-2 ARRAIGNMENT, 1 TRIAL-COURT	OCT16 COU	1	1,500.00
Total 60218:					1,500.00
60219	MOTION PICTURE LICENSE CORP	RE-2016/17 MOTION PICTURE ANN LICENSE	504048438	1	575.70
Total 60219:					575.70
60220	OFFICE DEPOT	GF-BRIGHT PAPER-PLANNING	8732724880	1	7.76
Total 60220:					7.76
60221	PLATTE VALLEY MEDICAL CTR	GF-CLIENT BLOOD DRAW/CR1605563-POLICE	10638088	1	80.00
60221	PLATTE VALLEY MEDICAL CTR	GF-CLIENT BLOOD DRAW/CR1606251-POLICE	10678787	1	80.00
Total 60221:					160.00
60222	PUSH-PEDAL-PULL	REC-AMT REPAIR	179042	1	248.70
Total 60222:					248.70

Check No	Payee	Invoice Description	Invoice No	Seq	Seq Amount
60223	REACH	REC-11/13/-11/12/17 SOFTWARE RENEWAL	45945	1	500.00
Total 60223:					500.00
60224	TEAMVIEWER GMBH	GF-TEAMVIEWER EXTRA LICENSE-IT	1528090520	1	779.00
Total 60224:					779.00
60225	TODD HODGES DESIGN, LLC	GF-10/14-10/28/16 PLANNING SVCS-PLANNING	2918	1	5,777.50
60225	TODD HODGES DESIGN, LLC	GF-10/14-10/28/16 ECON DEV-PLANNING	2918	2	520.00
60225	TODD HODGES DESIGN, LLC	GF-10/14-10/28/16 DAVES EARTHWORK SPR2016-001	2918	3	93.75
60225	TODD HODGES DESIGN, LLC	GF-10/14-10/28/16 THOMAS MINOR MSD2016-001	2918	4	125.00
60225	TODD HODGES DESIGN, LLC	GF-10/14-10/28/16 ASSOC PLANNING SVCS-PLANNING	2918	5	1,693.33
60225	TODD HODGES DESIGN, LLC	GF-10/14-10/28/16 ASSOC DAVES EARTHWORK SPR2016-001	2918	6	133.33
60225	TODD HODGES DESIGN, LLC	GF-10/14-10/28/16 ASSOC FULTON VILLAGE ANX2016-001	2918	7	266.67
60225	TODD HODGES DESIGN, LLC	GF-10/14-10/28/16 ASSOC R & L tIRES ADM-2016-002	2918	8	62.67
60225	TODD HODGES DESIGN, LLC	GF-10/14-10/28/16 ASSOC THOMAS MINOR MSD2016-001	2918	9	980.00
60225	TODD HODGES DESIGN, LLC	GF-10/14-10/28/16 ASSOC TRANSWEST COZ2016-001	2918	10	432.00
Total 60225:					10,084.25
60226	VERIZON WIRELESS SVCS LLC	GOLF-SEP/OCT16 WIRELESS	9774398661	1	223.42
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-LEGIST	9774398661	2	51.21
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-COURT	9774398661	3	51.21
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-CITY CLERK	9774398661	4	36.22
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-CITY ADMIN	9774398661	5	103.61
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS EQUIPMENT-CITY ADMIN	9774398661	6	99.99
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-FINANCE	9774398661	7	52.40
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-HR	9774398661	8	36.22
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-IT	9774398661	9	46.22
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-POLICE	9774398661	10	774.66
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS EQUIPMENT-POLICE	9774398661	11	99.99
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-PUBLIC WORKS	9774398661	12	400.83
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-B&G	9774398661	13	289.69
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-INSPECTION	9774398661	14	40.01
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-PLANNING	9774398661	15	183.66
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-CODE	9774398661	16	36.22
60226	VERIZON WIRELESS SVCS LLC	GF-SEP/OCT16 WIRELESS-COMM SVCS	9774398661	17	36.22
60226	VERIZON WIRELESS SVCS LLC	UF-SEP/OCT16 WIRELESS-WATERLINE	9774398661	18	29.24
Total 60226:					2,591.02
60227	WALK RIGHT IN/	GF-CLIENT TESTING/CR1609485-POLICE	228693P735	1	74.02
60227	WALK RIGHT IN/	GF-CLIENT TESTING/CR1602963-POLICE	239874P480	1	184.00
Total 60227:					258.02
60228	WELD COUNTY ACCTG DEPART	GF-OCT16 FUEL-COMM SVCS	S0054995	1	17.80
60228	WELD COUNTY ACCTG DEPART	GF-OCT16 FUEL-POLICE	S0054995	2	173.24
60228	WELD COUNTY ACCTG DEPART	GF-OCT16 FUEL-B&G	S0054995	3	208.12
60228	WELD COUNTY ACCTG DEPART	CEM-OCT16 FUEL	S0054995	4	268.90
60228	WELD COUNTY ACCTG DEPART	GF-OCT16 FUEL-STREETS	S0054995	5	510.43

Check No	Payee	Invoice Description	Invoice No	Seq	Seq Amount	
60228	WELD COUNTY ACCTG DEPART	UF-OCT16 FUEL-WATERLINE	S0054995	6	510.43	
60228	WELD COUNTY ACCTG DEPART	UF-OCT16 FUEL-SEWERLINE	S0054995	7	255.22	
Total 60228:					1,944.14	
60229	WIRELESS ADVANCED	GF-SLIDE SWITCH,LABOR-POLICE	I-2217477	1	103.00	
Total 60229:					103.00	
60230	XCEL ENERGY-GAS	CPR-SEP/OCT16 GAS SERVICE	532035237-0	1	127.06	
60230	XCEL ENERGY-GAS	CPR-SEP/OCT16 GAS SERVICE-MUSEUM	532035237-0	2	73.71	
60230	XCEL ENERGY-GAS	GF-SEP/OCT16 GAS SERVICE-SHOP	532035237-0	3	137.46	
60230	XCEL ENERGY-GAS	GF-SEP/OCT16 GAS SERVICE-VERIZON BLDG	532035237-0	4	60.37	
Total 60230:					398.60	
9001320	COLORADO DEPT OF REVENUE	REC-SEP16 SALES TAX	SEP16 REC	1	24.73	M
9001320	COLORADO DEPT OF REVENUE	REC-SEP16 SALES TAX(OVERAGE)	SEP16 REC	2	2.59-	M
9001320	COLORADO DEPT OF REVENUE	REC-SEP16 SALES TAX	SEP16 REC	3	27.86	M
Total 9001320:					50.00	
9001321	COLORADO STATE TREASURER	GF-2016 3RD QTR SUTA	2016 3RD Q	1	2,130.05	M
9001321	COLORADO STATE TREASURER	GF-2016 3RD QTR SUTA	2016 3RD Q	4	403.11	M
9001321	COLORADO STATE TREASURER	CPR-2016 3RD QTR SUTA	2016 3RD Q	5	205.41	M
9001321	COLORADO STATE TREASURER	UF-2016 3RD QTR SUTA	2016 3RD Q	6	250.65	M
9001321	COLORADO STATE TREASURER	STORM-2016 3RD QTR SUTA	2016 3RD Q	7	8.93	M
9001321	COLORADO STATE TREASURER	REC-2016 3RD QTR SUTA	2016 3RD Q	8	431.55	M
9001321	COLORADO STATE TREASURER	GF-2016 3RD QTR SUTA	2016 3RD Q	11	370.99	M
9001321	COLORADO STATE TREASURER	CEM-2016 3RD QTR SUTA	2016 3RD Q	12	37.52	M
9001321	COLORADO STATE TREASURER	GF-2016 3RD QTR SUTA	2016 3RD Q	13	.07-	M
Total 9001321:					3,838.14	
9001322	FIRE & POLICE PENSION ASC	GF-10/14/16 FPPA CONTRIBUTIONS -POLICE	FPPA DUES	1	894.70	M
Total 9001322:					894.70	
9001323	WELLS FARGO BANK WEST N.A	UF-WINDY GAP 2016 PYMT-INTEREST	113440578	1	30,082.93	M
9001323	WELLS FARGO BANK WEST N.A	UF-WINDY GAP 2016 PYMT-PRINCIPAL	113440578	2	115,000.00	M
Total 9001323:					145,082.93	
9001324	BANK OF COLORADO	GF-OCT16 LOCK BOX FEES-UTIL BILL	OCT16 LOC	1	850.00	M
Total 9001324:					850.00	
9001325	FIRE & POLICE PENSION ASC	GF-10/28/16 FPPA CONTRIBUTIONS-POLICE	FPPA DUES	1	866.62	M
Total 9001325:					866.62	
9001326	PIVOTAL PAYMENTS	UF-OCT16 CRDT CARD FEES-UTIL BILL	CC FEES O	1	902.68	M
Total 9001326:					902.68	

Check No	Payee	Invoice Description	Invoice No	Seq	Seq Amount
Grand Totals:					483,141.02

Report Criteria:
Report type: GL detail
Check.Voided = {=} No
[Report].Check GL Account = "1000010100"-"2082059075" ,"3000010100"-"5082059090","7000010100"-"9999999999"

PO# 3097 - 2016 Street Paving Projects

Roy V

Invoice

Acklam Inc.
195 Telluride St., Suite 7
Brighton, CO 80601

303-659-6267

Date	Invoice #
10/11/2016	2318

Need W-9

Bill To
City of Ft. Lupton Roy L Vestal, P.E. 130 S. McKinley Fort Lupton, CO 80621

Project
169017- FORT LUPTON - CAD SUPPORT

APPROVER:
Roy Vestal, P.E.

JOB #	Date Range:	PURCHASE ORDER
	CAD Support	3097

DESCRIPTION	ITEM CODE	QTY.	U/M	RATE	AMOUNT
Coordination and review with Client	Licensed Surveyor Coordination	30		145.00	4,350.00
Draft plan and profile drawings for Hoover Street	CAD Drafter	57		80.00	4,560.00

POSTED

Thank you for your business.

TAX ID # 90-0725006

Total	$8,910.00
Payments/Credits	$0.00
Balance Due	$8,910.00

PAYMENT TERMS	Due on receipt

Date	Employee/Venc	Customer: Job	Service	Description	Hours
9/30/2016	Scott Norsen	OTHER: 169017- FORT LUPTON - CAD SUPPORT	DM:CAD Drafter	Setup project directory structure. Standardize profiles, setup styles, manipulate layers and layer names for plotting. Generate proposed corridor and corridor surface. Setup sheets and annotate. More time than anticipated was required to fix CAD files.	7.5
9/29/2016	Scott Norsen	OTHER: 169017- FORT LUPTON - CAD SUPPORT	DM:CAD Drafter	Cad design	8
9/28/2016	Scott Norsen	OTHER: 169017- FORT LUPTON - CAD SUPPORT	DM:CAD Drafter	cad design	8
9/27/2016	Sean Fred	OTHER: 169017- FORT LUPTON - CAD SUPPORT	DM:CAD Drafter	Worked on existing conditions maps for the FT Lupton project.	4.5
9/26/2016	Sean Fred	OTHER: 169017- FORT LUPTON - CAD SUPPORT	DM:CAD Drafter	Worked on existing conditions maps for the FT Lupton project.	7
9/26/2016	Wayne Chinn	OTHER: 169017- FORT LUPTON - CAD SUPPORT	DM:CAD Drafter	3rd Street Research & Exhibit Generation	5
9/23/2016	Sean Fred	OTHER: 169017- FORT LUPTON - CAD SUPPORT	DM:CAD Drafter	Worked on existing conditions maps for the FT Lupton project.	8
9/22/2016	Sean Fred	OTHER: 169017- FORT LUPTON - CAD SUPPORT	DM:CAD Drafter	Worked on existing conditions maps for the FT Lupton project.	9
9/29/2016	Mark A Hall	OTHER: 169017- FORT LUPTON - CAD SUPPORT	LS:Licensed Surveyor Coordination	Coord w/ Roy Vestal and Scott Norsen	57
9/28/2016	Mark A Hall	OTHER: 169017- FORT LUPTON - CAD SUPPORT	LS:Licensed Surveyor Coordination	Coord w/ Roy Vestal and Scott Norsen	3
9/27/2016	Mark A Hall	OTHER: 169017- FORT LUPTON - CAD SUPPORT	LS:Licensed Surveyor Coordination	Coord w/ Roy Vestal and Scott Norsen	3
9/26/2016	Mark A Hall	OTHER: 169017- FORT LUPTON - CAD SUPPORT	LS:Licensed Surveyor Coordination	Coord w/ Roy Vestal and Scott Norsen	2
9/23/2016	Mark A Hall	OTHER: 169017- FORT LUPTON - CAD SUPPORT	LS:Licensed Surveyor Coordination	Coord w/ Scott Norsen re: status update	4.25
9/21/2016	Mark A Hall	OTHER: 169017- FORT LUPTON - CAD SUPPORT	LS:Licensed Surveyor Coordination	Send CAD data, files, etc to Scott Norsen	4
9/20/2016	Mark A Hall	OTHER: 169017- FORT LUPTON - CAD SUPPORT	LS:Licensed Surveyor Coordination	Meeting w/ Roy Vestal and Scott Norsen to go over existing drawings and plan going forward; review data to send to Scott.	4.75
9/19/2016	Mark A Hall	OTHER: 169017- FORT LUPTON - CAD SUPPORT	LS:Licensed Surveyor Coordination	Coord and scheduling w/ Scott Norsen and Roy Vestal	7
					2
					30

thru 10.05.2016

WCR 16

GROUND ENGINEERING

Invoice

October 19, 2016
Invoice No: 161225.0 - 2

RECEIVED
OCT 24 2016
BY:

Mr. Roy Vestal, P.E.
City of Fort Lupton
130 South McKinley
Fort Lupton, CO 80621

Materials Testing and Special Inspection Services, Weld County Road 16 Reconstruction Project, Weld County Road 16 and US Highway 85, Fort Lupton, Colorado

2134

~~Current Billing Period: September 11, 2016 through October 8, 2016~~

Fees for Materials Testing Services

	Hours	Rate	Amount	
Soil Test:				
Engineering Technician	15.00	45.00	675.00	
Concrete Test:				
Engineering Technician	3.00	45.00	135.00	
Management/Meetings/Review:				
Project Manager	1.50	85.00	127.50	
Proof Roll:				
Engineering Technician	2.00	45.00	90.00	
Subtotal	21.50		1,027.50	
Total Labor				**1,027.50**

Unit Billing

Trip Charge	7.0 ea. @ 15.00	105.00	
Atterberg Limits	1.0 ea. @ 65.00	65.00	
Gradation Analysis Std. Sieves thru #200	1.0 ea. @ 60.00	60.00	
Proctor Modified Compaction	1.0 ea. @ 110.00	110.00	
Total Units		**340.00**	**340.00**
	Total This Invoice		**$1,367.50**

Outstanding Invoices

Number	Date	Balance		
1	9/21/2016	1,520.00		
Total		**1,520.00**		
			Total Now Due	**$2,887.50**

POSTED

GROUND
ENGINEERING

Invoice

September 21, 2016
Invoice No: 161225.0 - 1

RECEIVED
SEP 26 2016
BY:

Mr. Roy Vestal, P.E.
City of Fort Lupton
130 South McKinley
Fort Lupton, CO 80621

Materials Testing and Special Inspection Services, Weld County Road 16 Reconstruction Project, Weld County Road 16 and US Highway 85, Fort Lupton, Colorado

Current Billing Period: August 7, 2016 through September 10, 2016

Fees for Materials Testing Services

	Hours	Rate	Amount	
Soil Test:				
Engineering Technician	9.00	45.00	405.00	
Management/Meetings/Review:				
Project Manager	2.00	85.00	170.00	
Subtotal	11.00		575.00	
Total Labor				**575.00**
Unit Billing				
Specific Gravity of Aggregate		3.0 ea. @ 65.00	195.00	
Atterberg Limits		3.0 ea. @ 65.00	195.00	
Gradation Analysis Std. Sieves thru #200		3.0 ea. @ 60.00	180.00	
Proctor Modified Compaction		3.0 ea. @ 110.00	330.00	
Trip Charge		3.0 ea. @ 15.00	45.00	
Total Units			**945.00**	**945.00**
		Total This Invoice		**$1,520.00**

1490

J&T Consulting, Inc.
305 Denver Avenue - Suite D
Fort Lupton, CO 80631
303-857-6222

Invoice #: ***1923***

PO# 3064 Roy V

Bill to:
City of Fort Lupton
Attn: Roy Vestal, Public Works Director / City Engineer
130 South McKinley Avenue
Fort Lupton, CO 80621

Invoice Date: 10/18/2016
Date Due: 11/17/2016

Project: 2016 Cemetery Water Line Extension
Services Completed in September through October 14th

JT Project # 16110

Item Description	Staff	Hours	Hourly Rate		Amount
Construction Drawings and Specifications					
Draft For Bid Set Construction Drawings and Opinion of Probable Construction Costs	JCY	6	$ 105		$630.00
	TPY	12	$ 95		$1,140.00
	WS	20	$ 85		$1,700.00
				Subtotal:	*$3,470.00*
				Total:	**$3,470.00**

Expenses	Quantity	Rate	Amount
Copies (B&W - E-mails, copies, etc.)	67	$0.05	$3.35
Plots 11x17	33	$2.25	$74.25
		Total:	**$77.60**

Invoice total:	***$3,547.60***

Thank you for your business!

PO # 3064

Cemetery Waterline Extension
40-500-57500 $ 3,547.60

POSTED

1490

J&T Consulting, Inc.
305 Denver Avenue - Suite D
Fort Lupton, CO 80631
303-857-6222

Invoice #: **1924**

PO# 2955 Roy V

Bill to:
City of Fort Lupton
Attn: Roy Vestal, Public Works Director / City Engineer
130 South McKinley Avenue
Fort Lupton, CO 80621

Invoice Date: 10/18/2016
Date Due: 11/17/2016

Project: 2016 Hwy 85 and Hwy 52 Entrance Feature Design Services
Services Completed in September through October 14th.

JT Project # 16110

Item Description	Staff	Hours	Hourly Rate		Amount
Project Initiation, Coordination, and Field Investigations					
Coordination with steel fabricators, retaining wall suppliers, and contractors on potential costs and materials.	JCY	2	$ 105		$210.00
	TPY	2	$ 95		$190.00
				Subtotal:	*$400.00*
Construction Drawings and Specifications					
Proposed Retaining Wall Locations Map - Retaining Wall Layout at West Side of Existing Bridge, Foundation Locations for Overhead Sign, Overhead Sign Examples, Monument Sign Examples, Draft Opinion of Probable Cost	JCY	4	$ 105		$420.00
	TPY	8	$ 95		$760.00
	WS	12	$ 85		$1,020.00
				Subtotal:	*$2,200.00*
				Total:	**$2,600.00**

Expenses	Quantity	Rate	Amount
Copies (B&W - E-mails, copies, etc.)	32	$0.05	$1.60
Plots 11x17	6	$2.25	$13.50
		Total:	**$15.10**

Invoice total: ***$2,615.10***

Thank you for your business!

PO 2955 HWY 85/52 Beautification
20-310-53060 $ 2,615.10

POSTED

Invoice

PO #3035 Roy V 2121

Invoice Number: **322164**

FEIN: 41-1251208 | 651.490.2000 | 800.325.2055

BILL TO:

Roy Vestal
City of Fort Lupton
130 S McKinley Ave
Fort Lupton CO 80621

REMIT TO:

Short Elliott Hendrickson, Inc.
NW6262
PO Box 1450
Minneapolis, MN 55485-6262

Pay This Amount	**$31,359.90**
Due Date	10-NOV-16
Invoice Date	11-OCT-16
Bill Through Date	30-SEP-16
Terms	30 NET
SEH Client #	3631
Client Project #	
Agreement / PO #	138120
Authorized Amount	$142,545.00
Authorized Amount Remaining	$86,952.45

Project Manager / Email / Phone
Dan Schaefer / dschaefer@sehinc.com / 920.452.6603
Client Service Manager / Email / Phone
Kendall Dalton / kdalton@sehinc.com / 720.540.6800
Accounting Representative / Email / Phone
Janelle Stephens / jstephens@sehinc.com / 715.246.9906

Project #	Project Name	Project Description
138120	FORTL WWTP Expansion Study	Fort Lupton WWTP Process Study

Project Billing Summary

Brenda

	Current	Prior	To Date
Totals	**$31,359.90**	$24,232.65	$55,592.55

CC:

Michael Rousey

POSTED

Notes:

Invoice

Invoice Number: **322164**

FEIN: 41-1251208 | 651.490.2000 | 800.325.2055

Fee

Description	Amount	
(39% of $142,545.00) less previously billed of $24,232.65	$31,359.90	
		$31,359.90

Invoice total **$31,359.90**

SEH

Building a Better World for All of Us®

October 17, 2016

RE: September 2016 - Invoice No. 2
Fort Lupton WWTP Expansion Study
SEH No. 138120 14.00

Roy Vestal, PE
Director of Public Works/City Engineer
City of Fort Lupton
130 S McKinley Ave
Fort Lupton, CO 80621

Dear Mr. Vestal:

Enclosed please find the September 2016 invoice for the above referenced project. This invoice includes project progress through September 30, 2016. The primary focus during this billing period was on finalizing Tasks 1 and 2, and continuing work on Tasks 3 and 5 (Basis of Evaluation & Alternatives Evaluation). The treatment options workshop was conducted in September, and Technical Memorandums 1 and 2 were also submitted to the City.

The September invoice totals $31,359.90 which totals 39% of the lump sum project cost when added to the August invoice.

Please feel free to contact me at 920.287.0829 or dschaefer@sehinc.com with any questions or comments you may have.

Sincerely,

SHORT ELLIOTT HENDRICKSON INC.

Dan Schaefer

Dan Schaefer, PE
Project Manager

DLS
Enclosure: September 2016 Invoice
c: Mike Rousey, CH2M

document1

Todd Hodges Design, LLC
2412 Denby Court
Fort Collins, Colorado 80526
970-613-8556

Invoice

Date	Invoice #
10/31/2016	2918

Bill To
City of Fort Lupton Attn: Claud Hanes 130 S. McKinley Avenue Fort Lupton, Colorado 80621

Terms	Project	Project Number
Due on receipt	Thomas Minor Sub ...	Fort Lupton

Item	Description	Qty	Rate	Serviced	Amount
Associate	Coyote Creek Research	0.31667	80.00	10/14/2016	25.33
Associate	Advance Urgent Care FIling	1.73333	80.00	10/17/2016	138.67
Associate	City of Fort Lupton Coyote Creek Research	1.93333	80.00	10/18/2016	154.67
Associate	City of Fort Lupton Administrative	1.05	80.00	10/19/2016	84.00
Associate	City of Fort Lupton Coyote Creek Research	4.31667	80.00	10/19/2016	345.33
Associate	R & L Tire ADM2016-002 Filing	0.78333	80.00	10/19/2016	62.67
Associate	City of Fort Lupton Comprehensive Plan	1.73333	80.00	10/20/2016	138.67
Associate	City of Fort Lupton Administrative	0.33333	80.00	10/20/2016	26.67
Associate	Thomas Holton Variance Filing	0.7	80.00	10/20/2016	56.00
Associate	Fulton Village ANX2016-001 Filing	1.71667	80.00	10/20/2016	137.33
Associate	administrative	0.18333	80.00	10/24/2016	14.67
Associate	City of Fort Lupton Coyote Creek	1.75	80.00	10/25/2016	140.00
Associate	City of Fort Lupton Administrative	2.06667	80.00	10/25/2016	165.33
Associate	City of Fort Lupton Administrative	1.78333	80.00	10/26/2016	142.67
Associate	Fulton Village ANX2016-001 Zoning Check	1.61667	80.00	10/26/2016	129.33
Associate	City of Fort Lupton Cemetery Annexation	2.03333	80.00	10/26/2016	162.67
Associate	Kittredge AM revocation with Mari	0.41667	80.00	10/26/2016	33.33
Associate	Transwest Zoning COZ2016-001	0.26667	80.00	10/26/2016	21.33
Associate	City of Fort Lupton Administrative	0.66667	80.00	10/27/2016	53.33
Associate	Transwest COZ2016-001	2.96667	80.00	10/28/2016	237.33
Associate	City of Fort Lupton Administrative	0.15	80.00	10/28/2016	12.00
Associate	Transwest COZ2016-001	2.16667	80.00	10/31/2016	173.33
Associate	Dave's Earthworks PC Packets SPR2016-001	1.66667	80.00	10/28/2016	133.33

Please remit to above address. Thank you for your business.

Total	
Payments/Credits	
Balance Due	

Phone #
970-613-8556

Todd Hodges Design, LLC
2412 Denby Court
Fort Collins, Colorado 80526
970-613-8556

Invoice

Date	Invoice #
10/31/2016	2918

Bill To
City of Fort Lupton Attn: Claud Hanes 130 S. McKinley Avenue Fort Lupton, Colorado 80621

Terms	Project	Project Number
Due on receipt	Thomas Minor Sub ...	Fort Lupton

Item	Description	Qty	Rate	Serviced	Amount
Associate	Thomas MSD2016-001: neighbor notification and sign posting	1.45	80.00	10/14/2016	116.00
Associate	Thomas MSD2016-001 Minor Subdivision Sign Posting	3.46667	80.00	10/17/2016	277.33
Associate	Thomas MSD2016-001 Minor Subdivision Posting	1.5	80.00	10/20/2016	120.00
Associate	Thomas MSD2016-001 Sign Posting paperwork	0.08333	80.00	10/24/2016	6.67
Associate	Thomas review MSD2016-001	0.46667	80.00	10/25/2016	37.33
Associate	Thomas MSD2016-001 Site Visit	0.5	80.00	10/26/2016	40.00
Associate	Thomas MSD2016-001 PC Packets	3.66667	80.00	10/28/2016	293.33
Associate	Thomas MSD2016-001 PC Packets	1.11667 +44.59999	80.00	10/31/2016	89.33 3568.00 Clarion
Consulting 1	consulting services Oct 13-30, 2016	52.13	125.00		6,516.25
miles	mileage incurred for APA conf.	253	0.54		136.62
travel	Hotel for APA conf		145.13		145.13
					6798.00 Todd

Please remit to above address. Thank you for your business.

Total	$10,365.98
Payments/Credits	$0.00
Balance Due	10,366.00 $10,365.98

Phone #
970-613-8556

		TODD HODGES DESIGN, LLC	Vendor #1472	
		10/31/2016	2918	
		10/14-10/28		
	10-410-53060	Plan Svcs/Commercial	5777.50	
	10-410-55190	Economic Development	520.00	
	10-000-20180	Daves Earthwork SPR2016-001	93.75	
	10-000-20180	Thomas Minor MSD2016-001	125.00	6516.25
	10-410-53060	APA Conf Lodging-disallowed	0.00	
	10-410-53060	Mileage-Co Springs-disallowed	0.00	
		Total Todd Charges	6516.25	
	10-410-53060	Planning Svcs/Associate	1693.33	
	10-000-20180	Daves Earthwork SPR2016-001/Associate	133.33	
	10-000-20180	Fulton Village ANX2016-001/Associate	266.67	
	10-000-20180	R&L Tires ADM2016-002/Associate	62.67	
	10-000-20180	Thomas Minor MSD2016-001/Associate	980.00	
	10-000-20180	Transwest COZ2016-001/Associate	432.00	
		Total Associates	3568.00	
		Todd	6516.25	
		Angela	3568.00	
		Total Paid	10084.25	

POSTED

Job	Clocked In	Clocked Out	Duration	Comment
Fort Lupton 4622	10/13/2016 9:41	10/13/2016 10:04	0.38	Calls, emails, updates
Fort Lupton	10/19/2016 15:35	10/19/2016 17:43	2.13	Calls, emails, schedules
Fort Lupton	10/20/2016 7:18	10/20/2016 17:22	7.48	Calls, staff items, budget update, comp plan mtg, sites, code compli
Fort Lupton	10/21/2016 7:26	10/21/2016 12:00	4.57	Calls, emails, updates, staff items
Thomas Minor MSD2016-001 1	10/21/2016 12:00	10/21/2016 13:00	1	Mtg with Alex on conditions and processes
Economic dev 4-16	10/21/2016 13:00	10/21/2016 14:50	1.83	Calls, updates, schedules
Fort Lupton	10/24/2016 6:48	10/24/2016 18:30	10.87	70080-70333 APA conf, calls, emails
Fort Lupton	10/25/2016 7:11	10/25/2016 16:49	8.63	APA conf, calls, emails, mtg, sites
Fort Lupton	10/26/2016 7:40	10/26/2016 15:45	8.08	Calls, staff items, walk in mtgs, sites, emails, updates
Daves earthwork SPR2016-00 MS	10/27/2016 14:30	10/27/2016 15:15	0.75	Review for PC, correspondence
Fort Lupton	10/27/2016 11:45	10/27/2016 16:35	4.08	Emails, calls, updates, schedules
Economic dev	10/28/2016 10:25	10/28/2016 12:45	2.33	Calls, follow up, schedules
	total time:		52.13	

Todd Hodges

From: THDLLC <toddhodgesdesign@qwestoffice.net>
Sent: Monday, October 31, 2016 5:21 PM
To: toddhodgesdesign@qwestoffice.net
Subject: Time tracking data export
Attachments: CSVExport.csv; Untitled attachment 00337.txt; TotalsCSVExport.csv; Untitled attachment 00340.txt

Thu 10/13/16:
Fort Lupton, 9:41 AM to 10:04 AM (0.38h) at $125.00/hour for $47.92 (Calls, emails, updates)
Total: 0.38h ($47.92)

Wed 10/19/16:
Fort Lupton, 3:35 PM to 5:43 PM (2.13h) for $266.67 (Calls, emails, schedules)
Total: 2.13h ($266.67)

Thu 10/20/16:
Fort Lupton, 7:18 AM to 5:22 PM (7.48h) for $935.42 2.58h break, 11:00 AM to 1:35 PM

Calls, staff items, budget update, comp plan mtg, sites, code compliance

Total: 7.48h ($935.42)

Fri 10/21/16:
Fort Lupton, 7:26 AM to 12:00 PM (4.57h) for $570.83 (Calls, emails, updates, staff items) Thomas Minor MSD2016-001, 12:00 PM to 1:00 PM (1h) for $125.00 (Mtg with Alex on conditions and processes) Economic dev, 1:00 PM to 2:50 PM (1.83h) for $229.17 (Calls, updates, schedules)
Total: 7.4h ($925.00)

Mon 10/24/16:
Fort Lupton, 6:48 AM to 6:30 PM (10.87h) for $1,358.33 (70080-70333 APA conf, calls, emails) 0.83h break, 11:40 AM to 12:30 PM

Total: 10.87h ($1,358.33)

Tue 10/25/16:
Fort Lupton, 7:11 AM to 4:49 PM (8.63h) for $1,079.17 (APA conf, calls, emails, mtg, sites) 1h break, 12:15 PM to 1:15 PM

Total: 8.63h ($1,079.17)

Wed 10/26/16:
Fort Lupton, 7:40 AM to 3:45 PM (8.08h) for $1,010.42 Calls, staff items, walk in mtgs, sites, emails, updates

Total: 8.08h ($1,010.42)

Thu 10/27/16:
Daves earthwork SPR2016-00, 2:30 PM to 3:15 PM (0.75h) for $93.75 (Review for PC, correspondence) Fort Lupton, 11:45 AM to 4:35 PM (4.08h) for $510.42 (Emails, calls, updates, schedules) 0.75h break, 2:30 PM to 3:15 PM

Total: 4.83h ($604.17)

Fri 10/28/16:
Economic dev, 10:25 AM to 12:45 PM (2.33h) for $291.67 (Calls, follow up, schedules)
Total: 2.33h ($291.67)

Grand Total: 52.15h ($6,518.75)

2322

Wohnrade Civil Engineers, Inc.
11582 Colony Row
Broomfield, Colorado 80021

Invoice

Date	Invoice #
8/28/2016	1387

Bill To
Mr. Tom Martinez City of Fort Lupton P.O. Box 2618 Fort Lupton, Colorado 80621

Terms	Due Date	Account #	Project
Net 30	9/27/2016	1514.00-SPR	South Platte River Trail

Description	Amount
Engineering services to provide the design of the South Platte River Trail at Pearson Park, located in the City of Fort Lupton, Colorado. Provide ongoing project management and coordination with team consultants, City staff, and project surveyor. - Services provided from August 3 through August 28, 2016 - Address CDOT comments related to R.O.W. Plans Total at Associate Engineer Rate (7.77 hrs @ $120/hr)	932.58

PO 2978 S. Platte River Trail
10·330·57500 $932.58

POSTED

Total	$932.58
Balance Due	$932.58

Two percent (2%) per month charge on unpaid balance.

Phone #
720-259-0965

SUBCONTRACT APPLICATION FOR PAYMENT

Project #: N.A.
Project Name: South Platte River Trail at Pearson Park
Project Address: State Highways 52 and 85
Fort Lupton, Colorado

Subcontract #: N.A.
Title: Civil Engineering
Due Date: N.A.

Pay Application No. : 11
Vender Invoice No. : 1387

Subcontractor: Wohnrade Civil Engineers, Inc.
11582 Colony Row
Broomfield, Colorado 80021
Tel: 720-259-0965
Fax: 720-259-1519

Attn: Mary Wohnrade
Tel: 720-259-0965
Fax: 720-259-1519

C.O.	Task #	Task Description	Job	Phase	Cat.	Contract Amount	Previous Applications	Work Completed this Application	Total Completed to Date	Balance to Finish
000	01	Recreational Trail Design	N.A.	N.A.		$48,900.00	$49,424.73	$0.00	$49,424.73	($524.73)
001	01	Additional Topographic Survey	N.A.	N.A.		$600.00	$600.00	$0.00	$600.00	$0.00
002	01	Additional Topographic Survey	N.A.	N.A.		$1,300.00	$1,300.00	$0.00	$1,300.00	$0.00
002	02	Prepare Project Specifications	N.A.	N.A.		$2,800.00	$2,800.00	$0.00	$2,800.00	$0.00
002	03	Prepare Engineer's Estimate	N.A.	N.A.		$2,800.00	$2,800.00	$0.00	$2,800.00	$0.00
002	04	Prepare Structural Engineering Analysis	N.A.	N.A.		$2,000.00	$1,920.00	$0.00	$1,920.00	$80.00
002	05	Additional Meetings with CDOT	N.A.	N.A.		$2,500.00	$1,000.00	$500.00	$1,500.00	$1,000.00
003	01	Prepare CDOT R.O.W. Plans	N.A.	N.A.		$3,500.00	$2,265.58	$432.58	$2,698.16	$801.84
				Contract Amount:		**$64,400.00**	$62,110.31	$932.58	$63,042.89	$1,357.11

For labor and/or materials under the terms of the Subcontract for the period August 1, 2016 to August 28, 2016.

Signed: Mary B. Wohnrade, P.E.

Date: **August 28, 2016**

City of Fort Lupton Approval: _____

Date: _____

PURCHASE CARD TRANSACTIONS FOR SEPTEMBER 2016

Transaction Date	Merchant Name	Merchant City	Product Description	Net Cost
8/30/2016	SPORTS FLAGS AND PRODU	GRAYSLAKE	GF-SPORTS FLAG,PENDANTS-ADMIN	$63.45
9/1/2016	USPS 07322203930329023	FORT LUPTON	GF-PARCEL CHICAGO, IL-PLANNING	$3.59
9/3/2016	OFFICE DEPOT #1080	800-463-3768	GF-HILIGHTER,SA, GEL,FLYL-ADMIN	$9.98
9/6/2016	OFFICE DEPOT #1080	800-463-3768	GF-CLIP,PAPER,NSKID,OD,JMB,10PK-POLICE	$4.81
9/6/2016	OFFICE DEPOT #1080	800-463-3768	GF-TYLENOL,EXTRA-STRENGTH,50/BOX-PW SHOP	$9.74
9/6/2016	OFFICE DEPOT #1080	800-463-3768	GF-IBUPROFEN,PHYS CARE-PW SHOP	$7.57
9/6/2016	OFFICE DEPOT #1080	800-463-3768	GF-OUTGUIDE,TAB,1/5C,LTR-RECORDS	$35.79
9/6/2016	OFFICE DEPOT #1080	800-463-3768	GF-DUSTER,OFFICE DEPOT,10OZ,3PK-ADMIN	$14.44
9/6/2016	OFFICE DEPOT #1080	800-463-3768	GF-WIPES,DISINFECTING,CLOROX,3PK-ADMIN	$6.99
9/6/2016	OFFICE DEPOT #1080	800-463-3768	GF-END TAB FLDR STR LTR MAN REINF-RECORDS	$76.96
9/12/2016	OFFICE DEPOT #1080	800-463-3768	GF-PLATE,COATED,9",120PK-ADMIN	$42.36
9/12/2016	OFFICE DEPOT #1080	800-463-3768	GF-PAPER,LINEN,25%,24#,500RM,WHITE-ADMIN	$27.45
9/12/2016	OFFICE DEPOT #1080	800-463-3768	GF-PEN,GEL,LIQUID,RT,DZ,BLUE-ADMIN	$20.29
9/12/2016	OFFICE DEPOT #1080	800-463-3768	GF-PEN,BALLPOINT,FINE,RSVP,BLUE-PLANNING	$4.45
9/14/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-DECAF CANNED COFFEE/HOT-ADMIN	$4.49
9/14/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-AUTO DISHWASHING-ADMIN	$10.49
9/14/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MISC CHG-ADMIN	$0.89
9/14/2016	OFFICE DEPOT #1080	800-463-3768	GF-TONER,HP 81A,ORG LJ,BLACK-FINANCE	$171.99
9/16/2016	OFFICE DEPOT #1080	800-463-3768	GF-CLIP,BINDER,MED,1.25IN,144/PK-RECORDS	$7.04
9/19/2016	FAMILY DOLLAR #5949	FORT LUPTON	GF-NAPKINS-ADMIN	$5.88
9/23/2016	OFFICE DEPOT #1078	800-463-3768	GF-PAPER,ADD,3X100,50PK,W/W-ADMIN	$103.99
9/23/2016	OFFICE DEPOT #1080	800-463-3768	GF-CASES,STORG,TRMPK,200-POLICE	$56.31
9/23/2016	OFFICE DEPOT #1080	800-463-3768	GF-PEN,ROLRB,UNI-BALL VISION,FINE-POLICE	$36.70
9/23/2016	OFFICE DEPOT #1080	800-463-3768	GF-HIGHLIGHTER,MAJ ACC,YEL,DOZ-POLICE	$6.03
9/23/2016	OFFICE DEPOT #1080	800-463-3768	GF-HAND SANTZR,INSTANT,8OZ,PUMP-ADMIN	$19.62
9/23/2016	OFFICE DEPOT #1080	800-463-3768	GF-TYLENOL,EXTRA-STRENGTH,50/BOX-ADMIN	$19.48
9/23/2016	OFFICE DEPOT #1080	800-463-3768	GF-PEN,UNI-BALL,VISION,MAJESTIC,P-POLICE	$18.37
9/23/2016	OFFICE DEPOT #1080	800-463-3768	GF-SUGAR,CANNISTER,20 OZ,3PK-ADMIN	$11.19
9/23/2016	OFFICE DEPOT #1080	800-463-3768	GF-CANISTER,CREAMER-12 OZ.-ADMIN	$23.31
9/23/2016	OFFICE DEPOT #1080	800-463-3768	GF-PEN,BALL PT,UNI,VISION,FN,BLUE-POLICE	$18.35
9/23/2016	OFFICE DEPOT #1080	800-463-3768	GF-FORK,PLASTIC,1000CT,WHITE-ADMIN	$22.89
9/26/2016	TEA*THE GREAT COURSES	800-832-2412	GF-ENGLISH GRAMMER BOOT CAMP-CITY CLERK	$79.95
			TOTAL CITY CLERK & ADMINISTRATION	$944.84
8/30/2016	T J EXPRESS	FORT LUPTON	GF-UNL REG 86/87 OC-STREETS	$64.60
9/27/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-STREETS	$32.97
9/28/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-STREETS	$65.00
9/9/2016	PHILLIPS 66 - FT LUPTO	FORT LUPTON	GF-ETUNLREG-86/87OC-STREETS	$10.41
9/12/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-THREAD TAPE,COUPLINGS-STREETS	$4.57
9/12/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-GLV PLUGS-STREETS	$5.99
9/16/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-EXP JOINT FOR CONCRETE-STREETS	$18.99
9/22/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-DOWELS,DUCK TAPE-STREETS	$46.43
9/9/2016	T J EXPRESS	FORT LUPTON	GF-UNL REG 86/87 OC-STREETS	$60.33
9/16/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-PVC PIPE/SIDEWALK-STREETS	$19.99
9/19/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-HACKSAW,DRAIN,BLADE-STREETS	$23.07
9/19/2016	T J EXPRESS	FORT LUPTON	GF-UNL REG 86/87 OC-STREETS	$41.60
9/1/2016	ACE HARDWARE OF FORT L	FORT LUPTON	UF-CLAMPS,POLY INSERTS-WATERLINE	$46.33
9/2/2016	T J EXPRESS	FORT LUPTON	CEM-UNL REG 86/87 OC	$72.06
9/12/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CEM-ELBOWS,GALV NIPS,COUPLINGS	$46.04
9/13/2016	T J EXPRESS	FORT LUPTON	CEM-UNL REG 86/87 OC	$66.17
9/19/2016	T J EXPRESS	FORT LUPTON	CEM-UNL REG 86/87 OC	$50.02
9/28/2016	T J EXPRESS	FORT LUPTON	CEM-UNL REG 86/87 OC	$72.68
8/30/2016	T J EXPRESS	FORT LUPTON	GF-UNL REG 86/87 OC-STREETS	$49.69
9/7/2016	PAINT SPRAYERS	7027315688	GF-PAINT SPRAYER PARTS-STREETS	$113.05
9/12/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-FLAT HR,BULB,ROD,FASTENERS-B&G	$85.14
9/23/2016	DNOW-CO02	281-823-4560	UF-CPLG HS G 2 IN PART B F X-SEWERLINE	$3.82
9/23/2016	DNOW-CO02	281-823-4560	UF-CPLG HS G 2 IN PART B F X-SEWERLINE	$11.50
9/28/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-REPAIR PARTS.MOSQ.SPRAYER-STREETS	$44.52
9/28/2016	T J EXPRESS	FORT LUPTON	GF-UNL REG 86/87 OC-STREETS	$98.20
9/22/2016	T J EXPRESS	FORT LUPTON	CEM-UNL REG 86/87 OC	$13.21
9/28/2016	T J EXPRESS	FORT LUPTON	CEM-UNL REG 86/87 OC	$53.29
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-2X8-10 GDF/SIDEWALK-STREETS	$8.46
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-2X8-10 GDF/SIDEWALK-STREETS	$8.46
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-2X8-10 GDF/SIDEWALK-STREETS	$8.46

Transaction Date	Merchant Name	Merchant City	Product Description	Net Cost
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-2X8-10 GDF/SIDEWALK-STREETS	$8.46
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-2X8-10 GDF/SIDEWALK-STREETS	$8.46
9/14/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-STAKES-STREETS	$5.90
9/15/2016	SHELL OIL 57444420707	FORT LUPTON	GF-UNL REG 86/87 OC-STREETS	$50.29
9/16/2016	SHELL OIL 57444420707	FORT LUPTON	GF-UNL REG 86/87 OC-STREETS	$67.89
9/24/2016	BURRITO DELIGHT	FORT LUPTON	GF-FOOD FOR MEETING-SHOP	$69.28
9/7/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-MARK PAINT,PLUMBERS CLOTH-STREETS	$61.14
9/9/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-VEHICLE CLEANING PRODUCTS-STREETS	$37.54
9/20/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-KEYS MADE/NEW EMPLOYEE-STREETS	$9.56
			TOTAL PUBLIC WORKS	$1,563.57
8/30/2016	T J EXPRESS	FORT LUPTON	GF-UNL PRM-90/91OC-LEGIST	$64.82
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ICED BEVERAGE-LEGIST	$3.75
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ICED BEVERAGE-LEGIST	$4.75
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS FRAPPUCCINO-LEGIST	$4.75
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ESPRESSO BEVERAGES-LEGIST	$20.20
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ICED BEVERAGE-LEGIST	$5.10
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ESPRESSO BEVERAGES-LEGIST	$3.75
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ESPRESSO BEVERAGES-LEGIST	$3.75
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ESPRESSO BEVERAGES-LEGIST	$4.75
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS TEA-LEGIST	$8.50
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS OTHER BEVERAGE-LEGIST	$2.55
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS TEA-LEGIST	$2.75
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ICED BEVERAGE-LEGIST	$6.10
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MISC CHG-LEGIST	$4.87
9/28/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-CHOCOLATE CANDY-LEGIST	$9.99
9/28/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-CHOCOLATE CANDY-LEGIST	$11.99
9/28/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-PARTNER GIFT CARD-LEGIST	$25.00
9/28/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-PARTNER GIFT CARD-LEGIST	$25.00
9/28/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-PARTNER GIFT CARD-LEGIST	$25.00
9/28/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-PARTNER GIFT CARD-LEGIST	$25.00
9/28/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MISC CHG-LEGIST	$11.13
9/9/2016	COUNTERTRADE PRODUCTS	03034249710	GF-MOUNT KIT FOR FLAT WALL	$154.00
9/12/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-JABRA PRO 930 MS MONO LYNC-RECORDS	$123.89
9/13/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-CABLE MATTERS 3-FEET GOLD PLATED DI	$44.95
9/13/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-CABLE MATTERS 2-PACK, GOLD PLATED D	$75.96
9/16/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-JABRA PRO 920 MONO WIRELESS HEADSET-RECORDS	$154.95
9/17/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-JABRA PRO 930 MS MONO LYNC/RTN-RECORDS	-$123.89
9/18/2016	KING SOOPERS #0117	GREELEY	GF-PEET COFFEE/BASEMENT-ADMIN	$7.23
9/22/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-APC AP9630 UPS NETWORK MANAGEMENT C-IT	$204.98
9/23/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-HP NC522SFP DUAL PORT 10GBE SERVER-IT	$576.00
9/23/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-HP COMPATIBLE 455883-B21 - 10GBASE-IT	$488.00
9/23/2016	AMAZON.COM	AMZN.COM/BILL	GF-APC AP9335TH TEMPERATURE & HUMIDITY-IT	$106.99
9/28/2016	VSN*DOTGOVREGISTRATION	877-734-4688	GF-DOMAN REGISTER RENEWAL-IT	$125.00
9/28/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-J&D GOLD PLATED DISPLAYPORT TO HDMI-IT	$33.80
			TOTAL CITY ADMINISTRATION & MAYOR & IT	$2,245.36
9/20/2016	CLE INTERNATIONAL	03033776600	GF-CLE CONFERENCE-PLANNING	$1,190.00
9/8/2016	NOTARY TRAINING	8889932624	UF-NOTORY TRAINING CLASS-UTIL BILLING	$39.00
9/13/2016	OFFICE DEPOT #1080	800-463-3768	UF-BOOK,NOTARY PUBLIC RECORD-UTIL BILLING	$15.99
9/13/2016	OFFICE DEPOT #1080	800-463-3768	UF-MISC CHG-UTIL BILLING	$1.10
9/14/2016	SOS REGISTRATION FEE	03038942200	UF-NOTORY REGISTRY-UTIL BILL	$10.00
9/19/2016	OFFICE DEPOT #1080	800-463-3768	UF-STAMP,NOTARY,OD,PRE-INKED-UTIL BILL	$43.99
9/19/2016	OFFICE DEPOT #1080	800-463-3768	UF-MISC CHG-UTIL BILLING	$3.04
9/9/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ICED BEVERAGE-CITY ADMIN	$3.75
9/9/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ICED BEVERAGE-CITY ADMIN	$9.50
9/9/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ESPRESSO BEVERAGES-CITY ADMIN	$5.05
9/9/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ICED BEVERAGE-CITY ADMIN	$7.65
9/9/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ESPRESSO BEVERAGES-CITY ADMIN	$3.75
9/9/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS ESPRESSO BEVERAGES-CITY ADMIN	$9.50
9/9/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-STARBUCKS TEA-CITY ADMIN	$4.25
9/9/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MISC CHG-CITY ADMIN	$2.99
			TOTAL FINANCE	$1,349.56
8/31/2016	BIG DADDY BAGELS LONGM	LONGMONT	GF-BAGELS FOR TRAINING-HR	$41.12
9/8/2016	YOURMEMBER-CAREERS	7274976573	LIB-CHILD&FAMILY LIBRARIAN JOB POSTING	$325.00

Transaction Date	Merchant Name	Merchant City	Product Description	Net Cost
9/2/2016	INDEED	203-564-2400	GF-PUBLIC WORKS JOB POSTING-HR	$50.01
9/27/2016	CRAIGSLIST.ORG	04153995200	GOLF-GOLF COURSE MECH POSITION	$35.00
9/27/2016	CRAIGSLIST.ORG	04153995200	GOLF-GOLF COURSE MECH POSITION	$15.00
			TOTAL HR & ADMINISTATION	$466.13
9/9/2016	TBG SERVICE COMPANY	FORT LUPTON	GOLF-LIQ PROPANE GAS	$19.25
8/31/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-BRONCOS SOUVENIRS	$31.96
8/31/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-MISC CHG	$8.00
9/1/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-SHELL EGGS	$4.38
9/3/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-SANDWICH CHEESE	$11.98
9/3/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-SPECIALTY TEA	$2.01
9/3/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-SPECIALTY TEA	$2.01
9/3/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-MISC FOOD CHG	$0.98
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-LEMONS	$3.99
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-TEXAS TOAST	$3.98
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-MISC FOOD CHG	$2.00
9/8/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-COIN/BUTTON AND MEDICAL BATTERIE	$5.99
9/8/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-TONGS	$17.16
9/8/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-PARTY NAPKINS	$2.99
9/11/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-CHILI PEPPERS	$0.56
9/11/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-CILANTRO	$0.79
9/12/2016	KEGWORKS	BUFFALO	GOLF-BEER KEG PUMP,HANDLE	$341.81
9/17/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-WHITE ONIONS	$8.30
9/17/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-MISC CHG	$0.33
9/21/2016	RESTAURANT EQUIPPERS I	06144640505	GOLF-SOUP KETTLE,INSERT	$105.62
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-MR CLEAN	$7.98
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-MR CLEAN	$7.98
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-LEMONS	$3.99
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-BREAKFAST SYRUPS	$3.79
9/22/2016	SAFEWAY STORE 00010454	FT LUPTON	GOLF-ADHESIVE BANDAGES	$3.79
9/27/2016	THE HOME DEPOT #1547	BRIGHTON	GOLF-RCPMAX24AMR/MOP REFILL	$14.47
9/27/2016	THE HOME DEPOT #1547	BRIGHTON	GOLF-BEHR PREMIUM PAINT	$158.00
9/27/2016	THE HOME DEPOT #1547	BRIGHTON	GOLF-BEHR PREMIUM PAINT	$158.00
9/27/2016	THE HOME DEPOT #1547	BRIGHTON	GOLF-BEHR PREMIUM PAINT	$158.00
9/27/2016	THE HOME DEPOT #1547	BRIGHTON	GOLF-PAINT FEE	$4.80
8/31/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-FURN FEET,LYSOL,PLUG-INS-MUSEUM	$33.46
9/7/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-TRASH CAN,POSTBOARD,MARKERS-MUSEUM	$40.55
9/8/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-POSTERBOARD-MUSEUM	$2.58
9/8/2016	WAL-MART #1659	BRIGHTON	CPR-CRACKERS,ICE CREAM,SPOONS, CUPS-MUSEUM	$43.63
9/9/2016	WAL-MART #1659	BRIGHTON	CPR-BOWLS,STEREO-MUSEUM	$45.54
8/31/2016	SAFEWAY STORE 00010454	FT LUPTON	CPR-BREAKFAST DONUTS-SENIORS	$13.98
8/31/2016	SAFEWAY STORE 00010454	FT LUPTON	CPR-GO FRESH FRUIT CONVENIENCE-SENIORS	$5.00
8/31/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-KIDS DRINKS	$2.49
8/31/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-KIDS DRINKS	$4.98
9/13/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-KIDS DRINKS	$9.96
9/13/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-KIDS DRINKS	$4.98
9/13/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-KIDS DRINKS	$4.98
9/20/2016	ARC*SERVICES/TRAINING	800-733-2767	REC-SHALLOW WATER LIFEGUARD REVIEW	$27.00
9/24/2016	ACE HARDWARE OF FORT L	FORT LUPTON	REC-SCOUR PADS	$14.32
8/30/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-FIRE EXT	$54.99
9/3/2016	PARK SUPPLY OF AMERICA	03304329206	REC-STEM REPLACE KIT,CARTRIDGE,EX KIT	$217.71
9/3/2016	PARK SUPPLY OF AMERICA	03304329206	REC-POWER DIAL ASSEMBLY	$168.64
9/6/2016	ACE HARDWARE OF FORT L	FORT LUPTON	REC-WASH KILLER, SPRAY	$23.94
9/6/2016	ACE HARDWARE OF FORT L	FORT LUPTON	REC-GREASE,LUBE SPRAY	$31.95
9/12/2016	BATTERY PLEX INC	954-2478798	REC-BATTERY PACK,AGM BATTERY	$62.06
9/13/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-AIR FILTERS-GOV BLDG	$59.88
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-PLC32WT8CW LIGHT-GOV BLDG	$59.97
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-PLC32WT8CW LIGHT-GOV BLDG	$59.97
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-2L T12 ELC BALLAST-GOV BLDG	$14.97
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-2L T8 RESI BALLAST-GOV BLDG	$14.97
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-4L T8 RESI BALLAST-GOV BLDG	$19.97
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-4L T8 RESI BALLAST-GOV BLDG	$19.97
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-BALLAST-GOV BLDG	$26.97
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-BALLAST-GOV BLDG	$26.97

Transaction Date	Merchant Name	Merchant City	Product Description	Net Cost
9/14/2016	THE HOME DEPOT #1547	BRIGHTON	GF-3PKAPGLOVES-GOV BLDG	$9.88
9/14/2016	CES BRN486	BRIGHTON	REC-LIGHTED EXIT SIGN	$93.10
9/19/2016	THE HOME DEPOT #1547	BRIGHTON	REC-BALLAST	$21.97
9/19/2016	THE HOME DEPOT #1547	BRIGHTON	REC-MISC CHG	$1.87
9/19/2016	LOWES #02479*	BRIGHTON	REC-UNIVERSAL T-STAT GUARD - HW	$37.76
9/19/2016	THE HOME DEPOT #1547	BRIGHTON	GF-2L T12 ELC BALLAST/RTN-GOV BLDG	-$14.97
9/20/2016	SAFEWAY FUEL 10010452	FORT LUPTON	CPR-UNL REG 86/87 OC-SENIORS	$21.00
9/20/2016	SAFEWAY FUEL 10010452	FORT LUPTON	CPR-UNL REG 86/87 OC-SENIORS	$27.50
9/21/2016	HOMEDEPOT.COM	800-430-3376	REC-2 CARGO DOLLIES	$149.24
9/21/2016	ACE HARDWARE OF FORT L	FORT LUPTON	REC-SILICON AUTO	$13.98
8/29/2016	S&S WORLDWIDE	COLCHESTER	REC-GLUE,PAINT,PAPER-PRE-SCHOOL	$60.44
8/31/2016	WAL-MART #3867	WESTMINSTER	REC-SNACKES-PRE-SCHOOLS	$29.98
9/9/2016	LITTLE CAESARS PIZZA	FORT LUPTON	REC-PIZZA-TEENS	$60.46
9/12/2016	WM SUPERCENTER #1659	BRIGHTON	REC-BAGS,POP,WATER-PRE-SCHOOL	$14.30
			REC-PLATES,FABREZE-DAY CAMP	$8.42
			REC-LYSOL,FEBREZE	$24.60
9/13/2016	KAPLAN EARLY LEARNING	336-6766737	REC-ACTIVITY ITEMS-PRE-SCHOOL	$129.98
9/19/2016	WAL-MART #1659	BRIGHTON	REC-CORKBOARD,PINS	$9.44
9/27/2016	WAL-MART #1659	BRIGHTON	REC-HOOKS,OUTLET PLUGS,LOCK,BOARD	$19.51
9/27/2016	DOLLAR TREE	BRIGHTON	REC-HOLLOWEEN ITEMS	$30.00
9/5/2016	HOBBY-LOBBY #0034	LONGMONT	CPR-ARTS & CRAFT ITEMS-SENIORS	$58.38
9/7/2016	KING SOOPERS #0105	FIRESTONE	CPR-FRUIT,DONUTS-SENIORS	$17.03
9/7/2016	PEPPER JACKS GRILLE IN	FIRESTONE	CPR-DIRECTORS LUNCH-SENIORS	$14.40
9/14/2016	KING SOOPERS #0105	FIRESTONE	CPR-FRUIT,DONUTS,CREAMER-SENIORS	$17.26
9/16/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-MACARONI SALAD/SLVR SNEAKERS	$16.04
9/16/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-POTATO CHIPS/SLVR SNEAKERS	$7.18
9/16/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-MISC FOOD CHG/SLVR SNEAKERS	$5.36
9/16/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-COOKIES/SLVR SNEAKERS	$2.49
9/16/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-COOKIES/SLVR SNEAKERS	$2.49
9/16/2016	SAFEWAY STORE 00010454	FT LUPTON	REC-MISC FOOD CHG/SLVR SNEAKERS	$1.00
9/21/2016	KING SOOPERS #0105	FIRESTONE	CPR-DONUTS,FRUIT-SENIORS	$14.70
9/22/2016	CC & ROYAL GORGE RR	CANON CITY	CPR-DIRECTORS LUNCH-SENIORS	$34.00
9/23/2016	RANCHEROS RESTAURANT L	LONGMONT	CPR-PERSONAL EXP/PAID BACK	$42.75
9/27/2016	OLD CHICAGO LOVELAND	LOVELAND	CPR-DIRECTORS LUNCH-SENIORS	$10.60
9/28/2016	USPS 07322203930329023	FORT LUPTON	CPR-SENIOR NEWSLETTER	$169.20
9/28/2016	KING SOOPERS #0105	FIRESTONE	CPR-DONUTS,FRUIT-SENIORS	$16.18
8/30/2016	TBG SERVICE COMPANY	FORT LUPTON	GF-UNL REG 86/87 OC-B&G	$70.40
9/2/2016	TBG SERVICE COMPANY	FORT LUPTON	GF-UNL REG 86/87 OC-B&G	$41.00
9/14/2016	PHILLIPS 66 - FT LUPTO	FORT LUPTON	GF-ETUNLREG-86/87OC-B&G	$86.84
9/15/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-WOOD PATCH, SCREWS,CEMENT TOWEL-B&G	$21.47
9/16/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-VARIOUS PAINT ROLLERS-B&G	$21.26
9/16/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-PAINT,FEE-B&G	$29.74
9/19/2016	PHILLIPS 66 - FT LUPTO	FORT LUPTON	GF-ETUNLREG-86/87OC-B&G	$66.65
9/22/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-SPRAYPAINT,FASTENERS-B&G	$6.09
9/23/2016	PHILLIPS 66 - FT LUPTO	FORT LUPTON	GF-ETUNLREG-86/87OC-B&G	$29.43
9/28/2016	PHILLIPS 66 - FT LUPTO	FORT LUPTON	GF-ETUNLREG-86/87OC-B&G	$53.47
8/30/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-WIU COVER, GFI-B&G	$39.97
9/6/2016	BELARUS TRACTOR INTERN	MILWAUKEE	REC-V BELTS-B&G	$111.08
9/7/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-KEYS-B&G	$4.78
9/9/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC/PEARSON-ATHLETIC	$62.65
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-3" 15PCS/POLICE SHED-CITY HALL	$5.97
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-WD-40 2 PK-CITY HALL	$7.88
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-16D NAIL 1LB-CITY HALL	$3.72
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-112HGFS1-CITY HALL	$3.46
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-34HGFS1-CITY HALL	$3.46
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-92-5/8 STUD-CITY HALL	$29.26
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-4FTX10FT FAB-CITY HALL	$29.00
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-4FTX10FT FAB-CITY HALL	$29.00
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-WEDGE ANCH-CITY HALL	$2.24
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-WEDGE ANCH-CITY HALL	$2.24
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-WEDGE ANCH-CITY HALL	$2.24
9/9/2016	THE HOME DEPOT #1547	BRIGHTON	GF-WEDGE ANCH-CITY HALL	$2.24
9/9/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-TAPCUBE,CORD EXT-B&G	$42.48

Transaction Date	Merchant Name	Merchant City	Product Description	Net Cost
9/12/2016	V BELT GLOBAL SUPPLY	605-3359598	REC-VBELT	$23.09
9/14/2016	LU-TEK INC	ARVADA	GF-SKYLIGHT COVER DEPOSIT-CITY HALL	$437.50
9/15/2016	SAFEWAY STORE 00010454	FT LUPTON	CPR-GASOLINE	$40.00
9/15/2016	SAFEWAY STORE 00010454	FT LUPTON	CPR-GAS CAN-B&G	$14.99
9/15/2016	SAFEWAY STORE 00010454	FT LUPTON	CPR-MISC CHG-B&G	$1.02
9/15/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-TIMEMIST CLASSIC METERED AEROSOL FR-CITY HALL	$88.00
9/15/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GF-MISC CHG/TIMEMIST-CITY HALL	$6.99
9/20/2016	GORDON ELECTRIC SUPPLY	08159364700	REC-ELECTRIC SUPPLLIES	$92.59
9/23/2016	SAFEWAY FUEL 10010452	FORT LUPTON	CPR-UNL REG 86/87 OC-SENIORS	$49.77
9/23/2016	SAFEWAY FUEL 10010452	FORT LUPTON	CPR-UNL REG 86/87 OC-SENIORS	$43.50
9/23/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-CHAIN LINK,SPRING SNAP/PEARSON-ATHLETIC	$9.37
9/24/2016	BLINDS GALORE COM	858-6430050	REC-HORZ ALUMINUM BLINDS	$60.99
9/26/2016	ACE HARDWARE OF FORT L	FORT LUPTON	REC-LEVER HANDLE	$9.49
9/26/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-BATTERIES	$11.98
9/27/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-SANDPAPER-MUSEUM	$7.58
9/27/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-PAINT,TAPE, BRUSH,FEE-MUSEUM	$41.89
9/28/2016	OREILLY AUTO 00044891	FORT LUPTON	CPR-WIPER BLADE-SENIORS	$23.72
9/28/2016	OREILLY AUTO 00044891	FORT LUPTON	CPR-WIPER BLADE-SENIORS	$23.72
9/28/2016	OREILLY AUTO 00044891	FORT LUPTON	CPR-WIPER FLD-SENIORS	$4.49
9/29/2016	WWW.NEWEGG.COM	800-390-1119	GF-WALL HEATR ECOHE T400L R/KOSHIO-B&G	$356.97
9/1/2016	THE HOME DEPOT #1547	BRIGHTON	GOLF-ORTHO HAWK	$41.76
9/1/2016	THE HOME DEPOT #1547	BRIGHTON	GOLF-RNCH STOP PI	$20.16
9/15/2016	LU-TEK INC	ARVADA	REC-LIGHT FLTERING BLINDS	$637.50
9/16/2016	CHICK-FIL-A #02061	THORNTON	CPR-CHICKEN TRAYS-SENIORS	$145.50
9/16/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-TEE,COUPLINGS,CEMENT,PIPE-ATHLETIC	$9.95
9/20/2016	DS SERVICES STANDARD C	800-4928377	REC-COFFEE SUPPLIES	$21.90
9/27/2016	PICKLEBALLCENTRAL	KENT	REC-JUGS INDOOR PICKLEBALL	$18.18
8/30/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-TEE INSERT-B&G	$32.07
9/1/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-175 LES EXTRA DUTY-B&G	$9.89
9/1/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-PADLOCK,CHAIN COIL-B&G	$36.91
9/2/2016	FORT LUPTON PACK AN	FORT LUPTON	GF-PACKAGE TO CHARLOTTE, NC-B&G	$22.72
9/6/2016	PHILLIPS 66 - FT LUPTO	FORT LUPTON	GF-ETUNLSUP-92-94OC-B&G	$35.77
9/6/2016	PHILLIPS 66 - FT LUPTO	FORT LUPTON	GF-ETUNLREG-86/87OC-B&G	$54.04
9/6/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-REGULATOR,COUPLINGS-B&G	$15.87
9/7/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-KEYS-B&G	$14.34
9/7/2016	OREILLY AUTO 00044891	FORT LUPTON	GF-FUSE ASSRTMT-B&G	$16.99
9/8/2016	LOWES #02479*	BRIGHTON	GF-8-FT TREATED LANDSCP TIMBER-B&G	$71.46
9/19/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-FASTERNERS-B&G	$7.62
9/20/2016	RENEWABLE FIBER INC	FORT LUPTON	GF-AMENDED TOP SOIL/VOLLEYBALL-B&G	$26.55
9/21/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-CHAIN COIL/DOG PARK-B&G	$8.97
9/21/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-PHILLIPS HEAD-B&G	$20.99
9/21/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-CHAIN LAP,PADLOCK,FASTENERS-B&G	$66.13
9/22/2016	RENEWABLE FIBER INC	FORT LUPTON	GF-GRAY BREEZE/VOLLEY BALL CT-B&G	$21.45
9/22/2016	GREASE MONKEY #937	FT. LUPTON	GF-VEHICLE WORK-B&G	$43.25
9/28/2016	TBG SERVICE COMPANY	FORT LUPTON	GF-UNL REG 86/87 OC-B&G	$54.20
9/28/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-MOP,CEMENT,COUPLING-B&G	$27.96
9/1/2016	NEVCO INC	618-6640360	REC-CAPTION PLATE,LAMP	$106.10
9/1/2016	WAL-MART #1659	BRIGHTON	REC-MISC ITEMS	$10.59
9/2/2016	HASTY AWARDS	OTTAWA	CPR-XTREME SOCCER RIBBONS-ATHLETIC	$292.12
9/7/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-MARK PAINT,WEED FEED-ATHLETIC	$74.58
9/12/2016	BSN*SPORT SUPPLY GROUP	806-527-7510	REC-FITNESS ROPES - 2" 50' BLA	$190.00
9/13/2016	OLD CHICAGO GREELEY	GREELEY	CPR-DIRECTORS LUNCH-ATHLETIC	$15.87
9/15/2016	SHOPLET.COM	08007573015	CPR-COLORED PAPER-ATHLETIC	$77.89
9/15/2016	BSN*SPORT SUPPLY GROUP	806-527-7510	REC-6 LB - 10" - LIL' WRECKING	$87.00
9/15/2016	BSN*SPORT SUPPLY GROUP	806-527-7510	REC-8 LB - 10" - LIL' WRECKING	$91.00
9/15/2016	BSN*SPORT SUPPLY GROUP	806-527-7510	REC-10 LB - 10" - LIL' WRECKIN	$96.00
9/15/2016	BSN*SPORT SUPPLY GROUP	806-527-7510	REC-12 LB - 10" - LIL' WRECKIN	$100.00
9/15/2016	BSN*SPORT SUPPLY GROUP	806-527-7510	REC-14 LB - 14" - WRECKING BA	$110.00
9/15/2016	BSN*SPORT SUPPLY GROUP	806-527-7510	REC-MEDICINE BALL RACK 1 SIDE	$92.00
9/21/2016	ACE HARDWARE OF FORT L	FORT LUPTON	CPR-BATTERIES-ATHLETIC	$5.99
9/7/2016	PHILLIPS 66 - FT LUPTO	FORT LUPTON	GF-ETUNLREG-86/87OC-B&G	$57.15
9/7/2016	OREILLY AUTO 00044891	FORT LUPTON	GF-BATTERY-B&G	$82.26
9/12/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-MISC SUPPLIES-B&G	$14.98

Transaction Date	Merchant Name	Merchant City	Product Description	Net Cost
9/14/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-MISC SUPPLIES-B&G	$9.98
9/14/2016	IN *BRIGHTLINE DISTRIB	954-5884405	GF-MISC SUPPLIES-B&G	$138.54
9/15/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-MISC SUPPLIES-B&G	$0.30
9/20/2016	MAC EQUIPMENT INC (LOV	LOVELAND	GF-TRIMMER REPAIRS-B&G	$110.66
9/22/2016	PHILLIPS 66 - FT LUPTO	FORT LUPTON	GF-ETUNLREG-86/87OC-B&G	$63.04
9/28/2016	PHILLIPS 66 - FT LUPTO	FORT LUPTON	GF-ETUNLREG-86/87OC-B&G	$27.63
9/28/2016	PURIFOY CHEVROLET	FORT LUPTON	GF-VEHICLES PARTS-B&G	$6.73
9/13/2016	AMAZON MKTPLACE PMTS	AMZN.COM/BILL	GOLF-INSTANT READ THERMOMETER	$35.98
9/8/2016	RENEWABLE FIBER INC	FORT LUPTON	GF-GRAY BREEZE-PARKS	$24.65
9/9/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-CONCRETE,CHAIN OIL,CHAIN LINKS-B&G	$33.50
9/12/2016	TBG SERVICE COMPANY	FORT LUPTON	GF-UNL PRM-90/91OC-B&G	$40.55
9/13/2016	TBG SERVICE COMPANY	FORT LUPTON	GF-D2 LS PREM-B&G	$57.35
9/13/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-FASTENERS-B&G	$2.16
9/15/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-SANDPAPER-B&G	$2.29
9/15/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-TEES,ADAPTER,ELBOWS,SPRINKLER ADJ-B&G	$12.64
9/16/2016	TBG SERVICE COMPANY	FORT LUPTON	GF-UNL PRM-90/91OC-B&G	$41.75
9/22/2016	TBG SERVICE COMPANY	FORT LUPTON	GF-UNL PRM-90/91OC-B&G	$41.85
9/22/2016	TBG SERVICE COMPANY	FORT LUPTON	GF-D2 LS PREM-B&G	$37.60
9/28/2016	TBG SERVICE COMPANY	FORT LUPTON	GF-UNL PRM-90/91OC-B&G	$36.00
9/28/2016	ACE HARDWARE OF FORT L	FORT LUPTON	GF-PRUNERS-B&G	$33.98
9/5/2016	SAMSCLUB #4987	LONGMONT	CPR-CUPS	$16.65
			REC-PINESOL,ECOS	$32.28
			REC-MUFFINS	$23.88
9/6/2016	SAMS CLUB #4987	LONGMONT	REC-LAYS,FRANKS,BUNS	$60.96
9/9/2016	SAMS CLUB #4987	LONGMONT	REC-MUFFINS,CUPS	$57.44
9/16/2016	STAMPS.COM	855-608-2677	REC-POSTAGE SVCS	$17.99
9/29/2016	VISTAPR*WEBSITE PKG	866-8936743	REC-FREE PASS CARD	$14.98
9/29/2016	SAMSCLUB #4987	LONGMONT	REC-BATTERIES	$31.96
			REC-MUFFINS	$15.92
9/29/2016	STAPLES 00114348	LONGMONT	REC-ONE TOUCH COMPACT ASSORT	$1.00
9/29/2016	STAPLES 00114348	LONGMONT	REC-SCROLL ZIP-IT BINDER ENVEL	$1.00
9/29/2016	STAPLES 00114348	LONGMONT	REC-FASTENERS WHITE-DAY CAMP	$3.99
9/29/2016	STAPLES 00114348	LONGMONT	REC-DOTS ZIP-IT BINDER ENVELOP	$1.00
9/29/2016	STAPLES 00114348	LONGMONT	REC-COMPACT STAND UP STPLR ASS	$5.00
9/29/2016	STAPLES 00114348	LONGMONT	REC-CRAYOLA CRYSTAL-DAY CAMP	$2.00
9/29/2016	STAPLES 00114348	LONGMONT	REC-SPLS IJ BUSCARD MATTE IV 2	$50.00
9/29/2016	STAPLES 00114348	LONGMONT	REC-COMPACT STAND UP STPLR ASS	$5.00
9/29/2016	STAPLES 00114348	LONGMONT	REC-TORTOISE ZIP BNDR	$12.00
9/29/2016	STAPLES 00114348	LONGMONT	REC-INK RECYCLING LIMIT 10/MON	-$0.03
9/29/2016	STAPLES 00114348	LONGMONT	REC-ACME 3PK SCISSORS-DAY CAMP	$6.00
9/29/2016	STAPLES 00114348	LONGMONT	REC-COUPON-DAY CAMP	$0.01
9/29/2016	STAPLES 00114348	LONGMONT	REC-STAPLES FUNDED COUPON	$0.01
9/29/2016	STAPLES 00114348	LONGMONT	REC-STAPLES FUNDED COUPON	$0.01
			TOTAL PARKS & RECREATION	**$9,646.35**
9/1/2016	SOS REGISTRATION FEE	03038942200	GF-NOTORY REGISTER-POLICE	$10.00
9/2/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$37.83
9/3/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$37.12
9/3/2016	AMER ASSOC NOTARIESWE	713-644-2299	GF-NOTORY SUPPLIES-POLICE	$42.80
9/8/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$15.04
9/9/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$13.41
9/10/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$21.43
9/14/2016	QDOBA MEXICAN GRILLQPS	BRIGHTON	GF-LUNCH TRAINING-POLICE	$10.52
9/15/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$15.06
9/17/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$23.19
9/22/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$22.96
9/23/2016	OREILLY AUTO 00044891	FORT LUPTON	GF-WIPER BLADE-POLICE	$47.98
9/23/2016	OREILLY AUTO 00044891	FORT LUPTON	GF-MISC CHG-POLICE	$3.31
9/24/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$23.43
9/28/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$16.12
8/30/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$35.10
8/31/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$20.78
9/5/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$45.50
9/6/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$22.26

Transaction Date	Merchant Name	Merchant City	Product Description	Net Cost
9/7/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$19.00
9/15/2016	JIMMY JOHNS - 1688	DILLON	GF-CONF LUNCH FOOD-POLICE	$11.47
9/20/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$18.47
9/26/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$38.13
9/27/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$29.81
8/30/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$22.96
8/30/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$17.87
9/1/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$20.59
9/5/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$34.05
9/7/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$24.19
9/8/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$16.30
9/13/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$37.92
9/18/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$29.39
9/19/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$31.60
9/20/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$18.40
9/24/2016	SHELL OIL 57444420707	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$25.30
9/26/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$22.64
9/27/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$14.96
9/27/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$17.59
8/30/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$31.20
8/31/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$14.49
9/5/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$25.00
9/5/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$9.71
9/18/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$18.35
9/19/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$18.81
9/19/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$14.27
9/20/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$22.80
9/21/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$15.51
9/26/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$10.49
9/28/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$11.50
9/29/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$18.10
9/2/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$40.61
9/3/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$33.05
9/8/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$35.20
9/10/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$37.60
9/13/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$30.49
9/13/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$18.82
9/24/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$27.60
9/1/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$14.14
9/2/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$14.30
9/3/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$16.35
9/8/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$17.35
9/13/2016	VICEROY SNOWMASS R	SNOWMASS VILL	GF-LODGING FOR TRAINING-POLICE	$91.49
9/14/2016	HICKORY HOUSE - ASPEN	ASPEN	GF-DINNER FOR TRAINING-POLICE	$62.49
9/23/2016	SHELL OIL 57444420707	FORT LUPTON	GF-UNL MID-88/89OC-POLICE	$25.73
9/25/2016	CORNER STORE 4109	FT LUPTON	GF-UNL MID-88/89OC-POLICE	$24.57
9/12/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$23.50
9/14/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$25.10
9/1/2016	VICEROY SNOWMASS	SNOWMASS VILL	GF-LODGING FOR TRAINING-POLICE	$327.60
9/6/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$40.56
9/6/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$36.40
9/14/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$41.24
9/18/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$32.06
9/20/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$33.74
9/20/2016	OREILLY AUTO 00044891	FORT LUPTON	GF-23OZ BUG&TAR-POLICE	$6.49
9/20/2016	OREILLY AUTO 00044891	FORT LUPTON	GF-MISC CHG-POLICE	$0.45
8/31/2016	ANDERS FARM	FORT LUPTON	GF-PRODUCE-POLICE	$26.75
9/6/2016	#5718 EVERYDAY STORE	PLATTEVILLE	GF-UNL REG 86/87 OC-POLICE	$49.06
9/8/2016	THE HOME DEPOT #1548	BROOMFIELD	GF-7.5"NLTIW/MT/TRAP DAYS-POLICE	$8.87
9/8/2016	THE HOME DEPOT #1548	BROOMFIELD	GF-PAPPLYPROMO/TRAP DAYS-POLICE	$6.98
9/8/2016	THE HOME DEPOT #1548	BROOMFIELD	GF-PAPPLYPROMO/TRAP DAYS-POLICE	$6.98
9/8/2016	THE HOME DEPOT #1548	BROOMFIELD	GF-TAPE/TRAP DAYS-POLICE	$7.32
9/8/2016	THE HOME DEPOT #1548	BROOMFIELD	GF-MISC CHG/TRAP DAYS-POLICE	$2.56

Transaction Date	Merchant Name	Merchant City	Product Description	Net Cost
9/11/2016	PETRO JOHNSON CORNER	LOVELAND	GF-ETUNLREG-86/87OC-POLICE	$33.00
9/22/2016	BIMBO BAKERIES 9109	LOVELAND	GF-BREAD/HIGH SCHOOL-COMM SVCS	$48.20
9/22/2016	SAMSCLUB #4770	EVANS	GF-BEEF,CHEESE/HIGH SCHOOL-COMM SVCS	$179.38
9/25/2016	SHELL OIL 57444189302	MILLIKEN	GF-UNL REG 86/87 OC-POLICE	$52.08
8/30/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$28.69
9/5/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$25.21
9/5/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$16.85
9/6/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$16.01
9/18/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$18.96
9/20/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$21.91
9/20/2016	OREILLY AUTO 00044891	FORT LUPTON	GF-PROTCT WIPES-POLICE	$3.99
9/20/2016	OREILLY AUTO 00044891	FORT LUPTON	GF-MISC CHG-POLICE	$0.28
9/20/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$14.66
9/26/2016	WAE FORT LUPTON	FORT LUPTON	GF-COMPRSD NATL GAS-POLICE	$17.09
9/27/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$28.72
8/31/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$24.40
9/2/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$17.66
9/4/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$46.53
9/8/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$23.08
9/8/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$13.91
9/9/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$23.31
9/11/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$24.18
9/14/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$33.27
9/16/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$40.45
9/16/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$9.55
9/19/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$34.02
9/22/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$34.63
8/31/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$32.51
9/1/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$22.01
9/2/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$26.20
9/3/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$27.00
9/4/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$21.10
9/4/2016	CONOCO - SEI 36775	COMMERCE CITY	GF-MEAL/ASSIST CONCERT-POLICE	$6.07
9/4/2016	CONOCO - SEI 36775	COMMERCE CITY	GF-MEAL/ASSIST CONCERT-POLICE	$0.08
9/8/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$39.26
9/9/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$26.00
9/10/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$23.37
9/11/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$18.46
9/12/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$28.48
9/14/2016	QDOBA MEXICAN GRILLQPS	BRIGHTON	GF-LUNCH TRAINING-POLICE	$11.18
9/16/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$19.52
9/17/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$34.00
9/18/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$27.23
9/22/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$34.00
9/23/2016	SAFEWAY FUEL 10010452	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$14.42
8/30/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$36.21
8/31/2016	SHELL OIL 57444420707	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$21.62
9/5/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$20.27
9/6/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$18.84
9/8/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$38.51
9/13/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$32.71
9/14/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$14.49
9/14/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$23.80
9/20/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$37.53
9/26/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$37.48
9/28/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$25.74
8/31/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-POTATO SALAD/DRIVERS TRAINING-POLICE	$24.06
8/31/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MACARONI/DRIVERS TRAINING-POLICE	$16.04
8/31/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MISC FOOD CHG/DRIVERS TRAINING-POLICE	$9.90
9/1/2016	USPS 07322203930329023	FORT LUPTON	GF-VEHICLE IMPOUND POSTAGE-POLICE	$10.24
9/1/2016	KING SOOPERS #81	BRIGHTON	GF-FREEZER POP-COMM SVCS	$21.00
9/2/2016	USPS 07322203930329023	FORT LUPTON	GF-EVIDENCE POSTAGE-POLICE	$2.62
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-FOOD BAGS/SHOOTING RANGE-POLICE	$2.99

Transaction Date	Merchant Name	Merchant City	Product Description	Net Cost
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-FOOD BAGS/SHOOTING RANGE-POLICE	$1.99
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-COOKIES/SHOOTING RANGE-POLICE	$3.49
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-COOKIES/SHOOTING RANGE-POLICE	$3.49
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-COOKIES/SHOOTING RANGE-POLICE	$3.49
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-COOKIES/SHOOTING RANGE-POLICE	$3.49
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-COOKIES/SHOOTING RANGE-POLICE	$3.49
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-COOKIES/SHOOTING RANGE-POLICE	$3.49
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-COOKIES/SHOOTING RANGE-POLICE	$5.96
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-COOKIES/SHOOTING RANGE-POLICE	$5.00
9/7/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MISC CHG/SHOOTING RANGE-POLICE	$4.00
9/7/2016	USPS 07322203930329023	FORT LUPTON	GF-EVIDENCE POSTAGE-POLICE	$3.78
9/8/2016	BURGER KING #7461 Q07	FORT LUPTON	GF-MEALS FOR INMATES-POLICE	$10.84
9/9/2016	USPS 07322203930329023	FORT LUPTON	GF-VEHICLE IMPOUND POSTAGE-POLICE	$40.96
9/9/2016	WAL-MART #4567	THORNTON	GF-FOOD FOR VOLUNTEERS/TRAP DAYS-POLICE	$83.08
9/10/2016	SUBWAY 03162815	FORT LUPTON	GF-SUB SANDWICHES/TRAP DAYS-POLICE	$56.00
9/10/2016	SUBWAY 03162815	FORT LUPTON	GF-SUB SANDWICHES/TRAP DAYS-POLICE	$56.00
9/14/2016	USPS 07322203930329023	FORT LUPTON	GF-VEHICLE IMPOUND/EVIDENCE POSTAGE-POLICE	$44.57
9/15/2016	CONOCO - UNITED PACIFI	WHEAT RIDGE	GF-UNL REG 86/87 OC-COMM SVCS	$44.00
9/19/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-COOKIES-POLICE	$15.00
9/19/2016	KING SOOPERS #81	BRIGHTON	GF-CAKE-POLICE	$51.99
9/23/2016	USPS 07322203930329023	FORT LUPTON	GF-EVIDENCE POSTAGE-POLICE	$3.02
9/26/2016	USPS 07322203930329023	FORT LUPTON	GF-RETURN TASER BATTERY-POLICE	$3.40
9/27/2016	USPS 07322203930329023	FORT LUPTON	GF-VEHICLE IMPOUND POSTAGE-POLICE	$40.96
9/1/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$22.92
9/2/2016	SHELL OIL 57444420707	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$14.55
9/3/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$29.13
9/8/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$38.01
9/9/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$18.48
9/10/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$25.45
9/11/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$29.31
9/16/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$18.01
9/17/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$26.61
9/18/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$22.94
9/23/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-CHIPS/CHUNKS PICKLES/HIGH SCHL-COMM SVCS	$7.98
9/23/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MISC CHG/HIGH SCHL-COMM SVCS	$0.31
9/23/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-BUTTER-COMM/HIGH SCHL-COMM SVCS	$3.79
9/23/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MISC CHG/HIGH SCHOOL-COMM SVCS	$0.15
9/23/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-POLICE	$27.59
9/24/2016	SHELL OIL 57444420707	FORT LUPTON	GF-UNL REG 86/87 OC-POLICE	$11.55
			TOTAL COMMUNITY SERVICE & POLICE	$4,713.39
9/8/2016	GPS*CITY OF BLACK HAW	888-6047888	GF-WORKSHOP/HISTORIC RESTORATION-PLANNING	$21.50
9/10/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-CHOCOLATE/TRAP DAYS-LEGIST	$17.98
9/10/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-CHOCOLATE/TRAP DAYS-LEGIST	$13.98
9/10/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-CHOCOLATE/TRAP DAYS-LEGIST	$13.98
9/10/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MISC FOOD CHG/TRAP DAYS-LEGIST	$19.69
9/20/2016	AMERICAN PLANNING ASSO	312-431-9100	GF-2016 APA STATE CONFERENCE-PLANNING	$340.00
9/27/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-CHOCOLATE CANDY/CEM WALK-PLANNING	$9.99
9/27/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-HOT COCOA/CEM WALK-PLANNING	$2.34
9/27/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-HOT COCOA,TRI,NING GLOW/CEM WALK-PLANNING	$6.90
9/27/2016	SAFEWAY STORE 00010454	FT LUPTON	GF-MISC ITEMS/CEM WALK-PLANNING	$14.66
9/27/2016	WAL-MART #2752	COMMERCE CITY	GF-CIDER/CEM WALK-PLANNING	$11.88
9/27/2016	DOLLAR TREE	COMMERCE CITY	GF-STICKERS,CANDY BAGS/CEM WALK-PLANNING	$6.56
9/16/2016	CORNER STORE 4109	FT LUPTON	GF-UNL REG 86/87 OC-CITY ADMIN	$31.62
9/8/2016	CLERK AND RECORDER WEL	9703046530	GF-SEP16 GIS SYSTEM-PLANNING	$300.00
			TOTAL PLANNING	$811.08
			TOTAL SEPTEMBER 2016 PURCHASE CARDS	**$21,740.28**

RECORD OF PROCEEDINGS
FORT LUPTON CITY COUNCIL/ENTERPRISE BOARDS
October 3, 2016

The City Council of the City of Fort Lupton met in special session at the City Complex, 130 South McKinley Avenue, the regular meeting place of the City Council, on Monday, October 3, 2016. Mayor Pro Tem Chris Cross called the meeting to order at 7:00 p.m. and invited everyone to join him in the Pledge of Allegiance.

ROLL CALL

Mari Pena, City Planning Tech called the roll. Those present were Mayor Pro Tem Chris Cross, Councilmembers Chris Ceretto, Bob McWilliams, Shannon Rhoda, David Crespin and Zoe Stieber. Also, present were City Administrator Claud Hanes, Assistant City Administrator Aaron Herrera, Planner Alyssa Knutson, Finance Director Leann Perino and Police Chief Ken Poncelow.

PERSON TO ADDRESS COUNCIL

Lynette Kilpatrick, indicated she is running for County Commission; she provided information about her campaign.

APPROVAL OF AGENDA

It was moved by Shannon Rhoda and seconded by Zoe Stieber to approve the agenda as presented. Motion carried unanimously by a voice vote.

REVIEW OF OCTOBER 3, 2016 PAYABLES

Council reviewed the October 3, 2016 payables. There were no questions or comments.

CONSENT AGENDA

It was moved by Zoe Stieber and seconded by Chris Ceretto to approve the Consent Agenda as presented with the following items: 09192016, City Council Meeting Minutes, Approving Resolution 2016R036, A RESOLUTION OF THE CITY COUNCIL OF FORT LUPTON RATIFYING THE MAYOR'S APPOINTMENT OF THE ATTACHED LIST OF CANDIDATES (EXHIBIT "A") TO THE CORRESPONDING ADVISORY COMMITTEES FOR A TERM BEGINNING OCTOBER 3, 2016 AND ENDING DECEMBER 31, 2017, (AM 2016-139), and Approving Resolution 2016R037, A RESOLUTION OF THE CITY COUNCIL OF FORT LUPTON AUTHORIZING THE SUBMITTAL OF A GRANT APPLICATION FOR A GENERAL PLANNING GRANT TO THE STATE BOARD OF THE GREAT OUTDOORS COLORADO (GOCO)TRUST FUND FOR THE COMPLETION OF A PROFESSIONALLY DESIGNED AND ENGINEERED PLAN FOR A SPLASH PARK TO BE LOCATED AT COMMUNITY CENTER PARK (AM 2016-143)

Motion carried unanimously by a roll call vote.

RECORD OF PROCEEDINGS
FORT LUPTON CITY COUNCIL/ENTERPRISE BOARDS
October 3, 2016

PUBLIC HEARING

Public Hearing for Mountain Sky Subdivision

Mayor Pro Tem Chris Cross opened the public hearing at 7:11 p.m. Staff indicated Gene Osborne, the applicants representative has requested a continuance of the City Council public hearing for the Mountain Sky Subdivision PUD Development Plan, Preliminary PUD Plat and Final PUD Plat – Filing 1, scheduled for October 3, 2016. The applicant requested the hearing be continued and to November 21, 2016 at 7:00 p.m. There being no questions or comments the public hearing was closed at 7:12 p.m.

It was moved by David Crespin and seconded by Bob McWilliams to continue the Mountain Sky Subdivision public hearing to November 21, 2016 at 7:00 p.m. Motion carried unanimously by a roll call vote.

Public Hearing for FL Mountain HZ Wells

Mayor opened the public hearing at 7:13 p.m. Staff indicated the applicant, Kerr-McGee Oil and Gas Onshore LP, requested a continuance of the public hearings for the FL Mountain HZ Wells Oil and Gas Permit application scheduled for tonight's meeting. The applicant requested the hearing be continued to November 7, 2016, 7:00 p.m. There being no questions or comments the public hearing was closed at 7:14 p.m.

It was moved by Zoe Stieber and seconded by Bob McWilliams to continue the FL Mountain HZ Wells Oil and Gas Permit public hearing to November 7, 2016 at 7:00 p.m. Motion carried unanimously by a roll call vote.

ACTION AGENDA

AM 2016-138, Purchase Two Snow Plows For The New F 250 Trucks From G & G Equipment For the Amount of $12,977.40

The proposed request is to purchase two snow plows for the new F 250 parks trucks. The new plows will add two more trucks to the snow removal process and expedite the removal of snow. The purchase will also reduce the load and stress on employees and other equipment used in this endeavor. It will also reduce time spent by employees clearing snow. G & G Equipment was the lowest bidder; their bid came in at $12,977.40. A total of three bids were received; Mac Equipment at $13,154.20 and Frontier Truck Equipment at $13,632.50.

It was moved by Zoe Stieber and seconded by David Crespin to approve the purchase of two snow plows from G & G Equipment for an amount not to exceed #12,977.40. Motion carried unanimously by a roll call vote.

AM 2016-140, Ratifying the Mayor's Signature for Deed of Perpetual Easement For Water Line on Pilot Thomas Logistics Property

The development at the Pilot Thomas site requires a fire hydrant extended into the front corner of the project site. The hydrant was connected to city water line at County Road 27 (South Denver Avenue) and extended approximately 210 feet into the property. The City will maintain ownership of the pipe and hydrant.

It was moved by David Crespin and seconded by Chris Ceretto ratifying the Mayor's signature for Deed of Perpetual Easement for the waterline on the Pilot Thomas Logistics Property. The motion carried unanimously by a roll call vote.

AM 2016-141, Award Contract for 2016 Street Paving Projects Drafting Support to Acklam, Inc. for $33,800 as Additional Appropriation to Engineering in General Fund

The Public Works staff requested Council to award the contract for 2016 Street Paving Projects drafting support to Acklam, Inc. for $33,800, allocated from the General Fund.

Council directed the City Engineer to provide paving for Hoover Avenue from 6th Street to 9th Street, 6th Street from Fulton Avenue to McKinley Avenue, 3rd Street from Grand Avenue to Fulton Avenue and 2nd Street from Fulton Avenue to McKinley Avenue. The projects are anticipated to be complete by December 1, 2016.

It was moved by Zoe Stieber and seconded by Chris Ceretto to award the drafting support for the 2016 Street Projects to Acklam, Inc. for an amount not to exceed $33,800, allocated from the general fund. Motion carried unanimously by a roll call vote.

AM 2016-142, Award Contract for 2016 Street Paving Projects Material Testing to Cesare Inc. for $10,000 as Additional Appropriation to Engineering in General Fund

The Public Works staff requested Council to award the contract for the 2016 Street Paving Projects material testing to Cesare Inc. for an amount not to exceed $10,000, allocated from the General Fund.

Council directed the City Engineer to provide paving for Hoover Avenue from 6th Street to 9th Street, 6th Street from Fulton Avenue to McKinley Avenue, 3rd Street from Grand Avenue to Fulton Avenue and 2nd Street from Fulton Avenue to McKinley Avenue. The projects are anticipated to be complete by December 1, 2016.

It was moved by Zoe Stieber and seconded by Bob McWilliams to award the material testing for the 2016 Street Project to Cesare Inc. for an amount not to exceed $10,000, allocated from the general fund. Motion carried unanimously by a roll call vote.

STAFF REPORTS

No reports.

RECORD OF PROCEEDINGS
FORT LUPTON CITY COUNCIL/ENTERPRISE BOARDS
October 3, 2016

MAYOR/COUNCIL REPORTS

No reports

FUTURE CITY EVENTS

October 1, 2016	Cemetery Walk – 13750 CR 12- Hillside Cemetery – 2:00 p.m.
October 12, 2016	Budget Retreat – Coyote Creek Golf Course – 222 Clubhouse Drive - 6:30 p.m.
October 15, 2016	Budget Retreat – City Hall – 130 S. McKinley Avenue – 9:00 a.m.
October 19, 2016	Comprehensive Plan Community Workshop – 203 South Harrison Avenue – 6:30 p.m.
October 20, 2016	Comprehensive Plan Business Workshop – 203 South Harrison Avenue – 7:30 a.m.
October 26, 2016	Town Hall Meeting – 130 South McKinley Avenue – 6:30 p.m.

ADJOURNMENT

It was moved by Zoe Stieber and seconded by Bob McWilliams to adjourn the October 3, 2016, at 7:18 p.m.

Motion carried on voice vote.

Respectfully submitted,

_____
Nanette S. Fornof, City Clerk

Approved by City Council

_____
Tommy Holton, Mayor

RECORD OF PROCEEDINGS
FORT LUPTON CITY COUNCIL/ENTERPRISE BOARDS
October 12, 2016

The City Council of the City of Fort Lupton met in special session at the Coyote Creek Golf Course, 222 Clubhouse Drive, on Wednesday, October 12, 2016. Mayor Tommy Holton called the meeting to order at 6:30 p.m.

ROLL CALL

City Clerk Nanette Fornof called the roll. Those present were Mayor Tommy Holton, Mayor Pro Tem Chris Cross, Councilmembers Bob McWilliams, David Crespin, Chris Ceretto, Shannon Rhoda and Zo Hubbard. Also present were City Administrator Claud Hanes, Assistant City Administrator Aaron Herrera, Chief of Police Ken Poncelow, and Finance Director Leann Perino.

PRESENTATION OF THE 2016 PRELIMINARY BUDGET

Leann Perino, Finance Director presented the 2017 Preliminary Budget to the City Council, per Colorado State Statute.

It was moved by Bob McWilliams and seconded by Chris Ceretto to accept the 2017 Preliminary Budget. Motion carried unanimously by a voice call vote.

ADJOURNMENT

It was moved by David Crespin and seconded by Chris Ceretto to adjourn the October 12, 2016, at 6:32 p.m.

Motion carried on voice vote.

Respectfully submitted.

_____
Nanette S. Fornof, City Clerk

Approved by City Council

_____
Tommy Holton, Mayor

RECORD OF PROCEEDINGS
FORT LUPTON CITY COUNCIL/ENTERPRISE BOARDS
October 12, 2016

The City Council of the City of Fort Lupton met in special session at the Coyote Creek Golf Course, 222 Clubhouse Drive, on Wednesday, October 12, 2016. Mayor Tommy Holton called the meeting to order at 6:30 p.m.

ROLL CALL

City Clerk Nanette Fornof called the roll. Those present were Mayor Tommy Holton, Mayor Pro Tem Chris Cross, Councilmembers Bob McWilliams, David Crespin, Chris Ceretto, Shannon Rhoda and Zo Hubbard. Also present were City Administrator Claud Hanes, Assistant City Administrator Aaron Herrera, Chief of Police Ken Poncelow, and Finance Director Leann Perino.

PRESENTATION OF THE 2016 PRELIMINARY BUDGET

Leann Perino, Finance Director led the discussion regarding the proposed 2017 Preliminary Budget. Each department within City government presented their 2017 budget requests. The Council then made recommendation to either accept the request, amend the request or deny the request.

ADJOURNMENT

It was moved by David Crespin and seconded by Chris Ceretto to adjourn the October 12, 2016, at 9:15 p.m.

Motion carried on voice vote.

Respectfully submitted.

_____
Nanette S. Fornof, City Clerk

Approved by City Council

_____
Tommy Holton, Mayor

RECORD OF PROCEEDINGS
FORT LUPTON CITY COUNCIL/ENTERPRISE BOARDS
October 15, 2016

The City Council of the City of Fort Lupton met in special session at the City Hall, 130 South McKinley, on Saturday, October 15, 2016. Mayor Tommy Holton called the meeting to order at 9:00 a.m.

ROLL CALL

City Clerk Nanette Fornof called the roll. Those present were Mayor Tommy Holton, Mayor Pro Tem Chris Cross, Councilmembers Bob McWilliams, Chris Ceretto, Shannon Rhoda and Zo Hubbard. Also present were City Administrator Claud Hanes, Assistant City Administrator Aaron Herrera, and Finance Director Leann Perino.

PRESENTATION OF THE 2016 PRELIMINARY BUDGET

Leann Perino, Finance Director led the discussion regarding the proposed 2017 Preliminary Budget. Each department within City government presented their 2017 budget requests. The Council then made recommendation to either accept the request, amend the request or deny the request.

Also, the service groups came in and made requests for 2017 funding. The groups included Boys and Girls Club, Fort Lupton Food and Clothing Bank, Fort Lupton Senior Advisory Committee, Vets Working, A Woman's Place, Fort Lupton Methodist Church and Hope and Miracle House.

ADJOURNMENT

It was the consensus of Council to adjourn the Special Meeting at 1:30p.m.

Motion carried on voice vote.

Respectfully submitted.

_____
Nanette S. Fornof, City Clerk

Approved by City Council

_____
Tommy Holton, Mayor

RECORD OF PROCEEDINGS
FORT LUPTON CITY COUNCIL/ENTERPRISE BOARDS
October 17, 2016

The City Council of the City of Fort Lupton met in special session at the City Complex, 130 South McKinley Avenue, the regular meeting place of the City Council, on Monday, October 17, 2016. Mayor Pro Tem Chris Cross called the meeting to order at 7:00 p.m. and invited everyone to join him in the Pledge of Allegiance.

ROLL CALL

Nanette Fornof, City Clerk, called the roll. Those present were Mayor Tommy Holton, Mayor Pro Tem Chris Cross, Councilmembers Chris Ceretto, Bob McWilliams, David Crespin and Zoe Stieber. Also, present were Assistant City Administrator Aaron Herrera, Planner Alyssa Knutson, Finance Director Leann Perino and Police Chief Ken Poncelow.

PERSON TO ADDRESS COUNCIL

No one signed up to speak to Council.

APPROVAL OF AGENDA

It was moved by Chris Ceretto and seconded by Zoe Stieber to approve the agenda as presented. Motion carried unanimously by a voice vote.

REVIEW OF OCTOBER 17, 2016 PAYABLES

Council reviewed the October 17, 2016 payables. There were no questions or comments.

CONSENT AGENDA

It was moved by Bob McWilliams and seconded by David Crespin to approve the Consent Agenda as presented with the following items: Approve Resolution 2016R038, A RESOLUTION OF THE CITY COUNCIL OF FORT LUPTON RATIFYING THE APPOINTMENT OF PAUL WEBER BY THE MAYOR TO SERVE AS A MEMBER ON THE PLANNING COMMISSION (AM 2016-145), Approve Resolution 2016R039, A RESOLUTION OF THE CITY COUNCIL OF FORT LUPTON RATIFYING THE MAYOR'S APPOINTMENT OF THE ATTACHED LIST OF CANDIDATES (EXHIBIT "A") TO THE PICTURE FORT LUPTON PLANNING ADVISORY COMMITTEE FOR A TERM TO EXPIRE AT THE COMPLETION OF THE COMPREHENSIVE PLAN UPDATE (AM 2016-148) and Ratifying the Mayor's Signature on an Amendment of Oil and Gas Lease with Kerr McGee Oil and Gas Onshore LP for Pooling Resources(AM 2016-150).

Motion carried unanimously by a roll call vote.

ACTION AGENDA

AM 2016-152, Bunker Renovation at Coyote Creek Golf Course

The sand traps (bunkers) on Coyote Creek Golf Course have been neglected and are in need of major repair. The bunker are the most complained about aspect of Coyote Creek Golf Course. Most of the bunkers have grown in over four to six feet at each edge, they are riddled with weeds, and don't drain as necessary to maintain playability. Some have drainage pipe exposed above the playable surface other have pea gravel from the drainage contaminating the playable sand. In the current state the bunkers are unplayable and can be considered an eye sore.

The work needed to be completed includes re-shaping to reflect their original size and shape, removal of all old debris, proper drainage installed, re-facing of bunker edges, as well as new sand placed inside each bunker.

The project has been scheduled to be completed in three phases. The first phase, which has the largest impact on playability is the green side bunkers. This make up twenty-eight (28) of the forty-nine (49) on the course. The bunkers will be address this winter.

The available cash balance in the Golf Course Fund in October 2016 is $477,535. In order to make it through the winter months (November – March) a minimum of $262,000 will be needed. This will leave a cash balance of $215,749 available for this project.

It was moved by Zoe Stieber and seconded by Chris Cross to accept the bid from Modern Golf for an amount not to exceed $105,660 allocated from the Golf Course Fund. Motion carried unanimously by a roll call vote.

AM 2016-151, Furnishing and Delivering of USGA Bunker Sand for the Coyote Creek Golf Course

The sand bunkers at Coyote Creek Golf Course have been neglected and are in need of major repair. The bunkers are the most complained about aspect of Coyote Creek Golf Course. Most of the bunkers have grown in over four to six feet at each edge, they are riddled with weeds and don't drain as necessary to maintain playability. Some have drainage pipe exposed above the playable surface, others have pea gravel from the drainage contaminating the playable sand. The current state of the bunkers are unplayable and can be an eye sore to the golfers.

The sand will save money by eliminating the retail markup of the sand which would typically be purchased to the renovation contractor. The furnishing company will also remove the spoils from the bunker renovation and haul off site.

It was moved by Zoe Stieber and seconded by Chris Ceretto to accept the bid from Golf and Sport Solutions for an amount not to exceed $18,733. Motion carried unanimously by a roll call vote.

AM 2016-153, Approve Renewals and Changes for Various Employee Benefit Insurance Plans – Total Cost Change $23,594.38 per Year

The employee insurance benefits are currently on a policy year that runs from January 1st to December 31st. The various benefits up for renewal are the following; Health, Health Reimbursement Arrangement (HRA), Vision, Employee Assistance Program (EAP), Dental, Flexible Spending Accounts and COBRA Administration. Long-term benefit is not up for renewal, however staff is proposing a change. The following benefits are not up for renewal because rates are guaranteed until the date indicated next to the benefit: Voluntary short-term disability (STD) – 2019 and Voluntary life and accidental death and dismemberment (AD&D) – 2019.

There are proposed changes to the health plan and associated structure. There are proposed changes to the vision and dental rates. There are no proposed changes to the EAP benefits and rates, the Flexible Spending Accounts and the COBRA Administration.

The proposed changes across the board have a net change of $23,594.38, annually.

STAFF REPORTS

Alyssa Knutson, Planner reminded the Council, staff and citizens of the upcoming Comprehensive Plan Community and Business Workshops.

MAYOR/COUNCIL REPORTS

No reports

FUTURE CITY EVENTS

October 19, 2016	Comprehensive Plan Community Workshop – 203 South Harrison Avenue – 6:30 p.m.
October 20, 2016	Comprehensive Plan Business Workshop – 203 South Harrison Avenue – 7:30 a.m.
October 26, 2016	Town Hall Meeting – 130 South McKinley Avenue – 6:30 p.m.

ADJOURNMENT

It was moved by Zoe Stieber and seconded by Bob McWilliams to adjourn the October 17, 2016, at 7:18 p.m.

Motion carried on voice vote.

Respectfully submitted,

_____

Nanette S. Fornof, City Clerk

RECORD OF PROCEEDINGS
FORT LUPTON CITY COUNCIL/ENTERPRISE BOARDS
October 17, 2016

Approved by City Council

_____

Tommy Holton, Mayor

CITY OF FORT LUPTON
CITY COUNCIL

CITY OF Fort Lupton EST 1836

COME PAINT YOUR FUTURE WITH US

AM 2016-154

RATIFY COUNCIL SIGNATURES ON NEW OIL AND GAS EXEMPTION APPLICATION

I. **Agenda Date:** Council Meeting – November 7, 2016

II. **Attachments:** a. New Oil & Gas Exemption Application

III. **Summary Statement:**

Application to the State of Colorado Department of Local Affairs (DOLA) for the certification of new primary oil and gas production valuations used in the calculation of property tax revenue limits.

IV. **Submitted by:** Leann Perino
Finance Director

V. **Finance Reviewed** Leann Perino
Finance Director

VI. **Approved for Presentation:**
City Administrator

VII. **Attorney Reviewed** Approved Pending Approval

VIII. **Certification of Council Approval:**
City Clerk Date

IX. Detail of Issue/Request:

In 2004 the citizens voted in a general election to exempt the City from the revenue limits imposed by Article X Section 20 of the Colorado Constitution (TABOR). Because of this exemption the property tax revenue and mill levy are calculated using the 5.5% limit in CRS 29-1-30.

An application to DOLA is required to exempt the assessed valuation from new oil and gas production from the 5.5% limit calculation. The operator of record has 20 days to respond to the application.

If the exemption request is granted the City will receive $496,079 in property tax to be used to offset the cost of increased services due to the existence of the wells within City limits.

X. Legal/Political Considerations:

C.R.S. 29-1-30(b) any taxing entity may apply to the division of local government in the department of local affairs for authorization to exclude the following from the computation of the limitation set forth in paragraph (a) of this subsection (1): All or any portion of the increased valuation for assessment attributable to new primary oil or gas production for the preceding year from any producing oil and gas leasehold or land if such oil and gas leasehold or land is wholly or partially within the taxing entity and if such new primary oil or gas production has caused or will cause an increase in the level of services provided by the taxing entity.

XI. Alternatives/Options:

None

XII. Financial Considerations:

The increased property tax of $496,079, if the exemption is received, will be used for street projects and will be added to the 2017 budget before it is adopted by council in December.

XIII. Staff Recommendation:

Ratify the signatures of the council on the Application for Exclusion from the 5.5% Limit of Assessed Valuation Attributed to New Primary New Oil or Gas Production for Budget Year 2017.

APPLICATION FOR EXCLUSION FROM THE 5.5% LIMIT of ASSESSED VALUATION ATTRIBUTABLE TO NEW PRIMARY OIL OR GAS PRODUCTION

BUDGET YEAR 2017

TO: Division of Local Government
1313 Sherman Street, Room 521
Denver, CO 80203

The City of Fort Lupton (governing body) of the Public Works Department (unit of government) hereby requests the Division of Local Government to exclude $24,204,280 of assessed valuation certified by the county assessor from the calculation of the statutory property tax revenue limitation, also known as the "5.5%" limit, set forth in Section 29-1-301(1), C.R.S. This increased valuation for assessment is attributable to **new primary oil or gas production** for the preceding year from producing oil or gas leaseholds or land wholly or partially within this taxing entity. (Section 29-1-301(1)(b), C.R.S.)

This new primary oil or gas production has or will cause an increase in the level of services provided by Public Works Department (unit of government).

Therefore Public Works (unit of government) submits this application which provides the following **required** information pursuant to Section 29-1-301(1)(c), C.R.S.)

1. Explain the causal relationship between the new primary oil or gas production and the increase in the level of services provided or to be provided by this taxing entity:
   Kerr-McGee Oil and its support companies Halliburton, Baker Hughes, Pilot Thomas, Wehr, JW Power, FMC, Select Energy, Martin Marietta, FTS and Shawcor use the street in Fort Lupton to get their equipment to the well sites. The weight of the trucks cause damage to the streets more quickly than would be expected with normal privately owned vehicles driven by the citizens of Fort Lupton.

2. **a.** If the exclusion **is** authorized, the total **statutory*** mill levy will be:
   21.732 mills.
   b. If the exclusion **is** authorized, the total estimated revenue to be collected would be:
   $2,647,520.

3. **a.** If the exclusion **is not** authorized, the total **statutory*** mill levy will be:
   17.885 mills.
   b. If the exclusion **is not** authorized, the total estimated revenue to be collected would be:
   $2,178,817.

4. **a.** If the exclusion **is** authorized, provide a description of the expenditures that will be made from the increased revenue collected, which ". . . shall be exclusively for any increase in the level of services provided by the taxing entity which occur as a result of the new primary oil or gas production. . ." (Section 29-1-301(1)(d),C.R.S.). South Denver Avenue (Weld County Road 27) will be reconstructed

* The mill levy of the statutory property tax revenue limitation. The applicant may be subject to other mill levy limitations.

in 2017 for a cost of $1,500,000. The oil and gas related companies listed in 1. Above are all located on South Denver Avenue.

b. If the exclusion **is** authorized, the expenditures made from increased revenue collected would total: $496,079.

NOTE: THIS APPLICATION WILL NOT BE PROCESSED IF THE FOLLOWING INFORMATION IS NOT SUPPLIED. Please attach additional pages as necessary.

New primary oil or gas production is from the following oil or gas wells:

1.	Name of Well:	BURKHARDT #13C-3HZ
	Location:	NWNW 3 1N66W 6 PM // 40.086167/-104.768478
	Legal Description:	LEASEHOLD INT NWNW 3 1 66 BURKHARDT 13C-3HZ
	Name of Operator(s) of Record:	KERR-MCGEE OIL & GAS ONSHORE LP
	Address of Operator(s) of Record:	ATTN: CHERYL LIGHT P O BOX 173779 DENVER , CO 80217-3779
2.	Name of Well:	BURKHARDT #14N-3HZ
	Location:	NWNW 3 1N66W 6 PM // 40.086167/-104.768263
	Legal Description:	LEASEHOLD INT NWNW 3 1 66 BURKHARDT 14N-3HZ
	Name of Operator(s) of Record:	KERR-MCGEE OIL & GAS ONSHORE LP
	Address of Operator(s) of Record:	ATTN: CHERYL LIGHT P O BOX 173779 DENVER , CO 80217-3779
3.	Name of Well:	BURKHARDT #34N-3HZ
	Location:	NWNW 3 1N66W 6 PM // 40.086168/-104.768585
	Legal Description:	LEASEHOLD INT NWNW 3 1 66 BURKHARDT 34N-3HZ
	Name of Operator(s) of Record:	KERR-MCGEE OIL & GAS ONSHORE LP
	Address of Operator(s) of Record:	ATTN: CHERYL LIGHT P O BOX 173779 DENVER , CO 80217-3779
4.	Name of Well:	BURKHARDT #35N-3HZ
	Location:	NWNW 3 1N66W 6 PM // 40.086167/-104.768371
	Legal Description:	LEASEHOLD INT NWNW 3 1 66 BURKHARDT 35N-3HZ
	Name of Operator(s) of Record:	KERR-MCGEE OIL & GAS ONSHORE LP
	Address of Operator(s) of Record:	ATTN: CHERYL LIGHT P O BOX 173779 DENVER , CO 80217-3779

5.	Name of Well:	BURKHARDT #36C-3HZ
	Location:	NWNW 3 1N66W 6 PM // 40.086169/-104.768155
	Legal Description:	LEASEHOLD INT NWNW 3 1 66 BURKHARDT 36C-3HZ
	Name of Operator(s) of Record:	KERR-MCGEE OIL & GAS ONSHORE LP
	Address of Operator(s) of Record:	ATTN: CHERYL LIGHT P O BOX 173779 DENVER , CO 80217-3779
6.	Name of Well:	BURKHARDT #15N-3HZ
	Location:	NWNE 3 1N66W 6 PM // 40.086145/-104.760687
	Legal Description:	LEASEHOLD INT NWNE 3 1 66 BURKHARDT 15N-3HZ
	Name of Operator(s) of Record:	KERR-MCGEE OIL & GAS ONSHORE LP
	Address of Operator(s) of Record:	ATTN: CHERYL LIGHT P O BOX 173779 DENVER , CO 80217-3779
7.	Name of Well:	BURKHARDT #16C-3HZ
	Location:	NWNE 3 1N66W 6 PM // 40.086145/-104.760473
	Legal Description:	LEASEHOLD INT NWNE 3 1 66 BURKHARDT 16C-3HZ
	Name of Operator(s) of Record:	KERR-MCGEE OIL & GAS ONSHORE LP
	Address of Operator(s) of Record:	ATTN: CHERYL LIGHT P O BOX 173779 DENVER , CO 80217-3779
8.	Name of Well:	BURKHARDT #37N-3HZ
	Location:	NWNE 3 1N66W 6 PM // 40.086145/-104.760576
	Legal Description:	LEASEHOLD INT NWNE 3 1 66 BURKHARDT 37N-3HZ
	Name of Operator(s) of Record:	KERR-MCGEE OIL & GAS ONSHORE LP
	Address of Operator(s) of Record:	ATTN: CHERYL LIGHT P O BOX 173779 DENVER , CO 80217-3779
9.	Name of Well:	BURKHARDT #38N-3HZ
	Location:	NWNE 3 1N66W 6 PM // 40.086145/-104.760366
	Legal Description:	LEASEHOLD INT NWNE 3 1 66 BURKHARDT 38N-3HZ
	Name of Operator(s) of Record:	KERR-MCGEE OIL & GAS ONSHORE LP
	Address of Operator(s) of Record:	ATTN: CHERYL LIGHT P O BOX 173779 DENVER , CO 80217-3779

Submitted by the **Governing Body** of: the City of Fort Lupton on October 28, 2016.

Name (signature)	(Title)
	10/27/16 Mayor
	10/27/16 Mayor Pro Tem
	27 Oct 16 Treasurer
Shannon Rhoda	Council
	Council
	Council
	Council

Contact Person: Leann Perino
Telephone Number: 720-466-6120
Email Address: LPerino@FortLupton.org

Must be submitted to the Division of Local Government no later than November 1.

CITY OF FORT LUPTON
CITY COUNCIL

CITY OF Fort Lupton EST 1836

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AM 2016-156

DECLARE SURPLUS AND AUTHORIZE SALE

I. **Agenda Date:** Council Meeting – November 7, 2016

II. **Attachments:**

III. **Summary Statement:**

The City has vehicles that have been deemed unusable by the departments and should be disposed.

IV. **Submitted by:** Leann Perino
Leann Perino, Finance Director

V. **Finance Reviewed** Leann Perino
Finance Director

VI. **Approved for Presentation:**
City Administrator

VII. **Attorney Reviewed** Approved Pending Approval

VIII. **Certification of Council Approval:**
City Clerk Date

IX. Detail of Issue/Request:

disposed

Equipment List:

Make	Model	Year	VIN	Mileage	Department
FORD	F150	2000	1FTRF17W5YNC24109	*84,763*	*PARKS*
FORD	F150	2001	1FTZF17261NB49701	*75,536*	*PARKS*
CHEVROLET	PASSENGER VAN	2000	1GAHG39R9Y1274944	*73,831*	*PARKS*

X. Legal/Political Considerations:

Non

XI. Alternatives/Options:

1. *Sell vehicles at auction*
2. *Sell the vehicles*
3. *Store surplus equipment*

XII. Financial Considerations:

The vehicles are no longer usable by the departments selling them at auction will generate a small amount of revenue for the City.

XIII. Staff Recommendation:

Staff recommends declaring surplus and authorizing the sale of the equipment through auction.

CITY OF FORT LUPTON
CITY COUNCIL

Tommy Holton, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Chris Cross, Ward 3

David Crespin, Ward 1
Zoe A. Stieber, Ward 2
Bob McWilliams, Ward 3

CITY OF Fort Lupton EST 1836
COME PAINT YOUR FUTURE WITH US

AM 2016-160

APPROVE ACCEPTANCE OF THE ENERGY & MINERAL IMPACT ASSISTANT GRANT (EIAF 9094) FROM THE COLORADO DEPARTMENT OF LOCAL AFFAIRS TO RECONSTRUCT A PORTION OF WELD COUNTY ROAD 16 FOR A MAXIMUM GRANT AMOUNT $750,000.00 WITH MATCHING FUNDS OF $750,000.00

I. **Agenda Date:** Council Meeting – November 7, 2016

II. **Attachments:** a. DOLA Grant Agreement

III. **Summary Statement:**

The City applied for and has been awarded an Energy and Mineral Impact Assistance Grant from the Department of Local Affairs to reconstruct a South Denver Avenue from Kahill Street (CR 12) to County Road 6.25. The grant budgets a total of $1,500,000.00 for the project, $750,000.00 in grant funds with $750,000.00 in matching funds from the City.

IV. **Submitted by:** _____
Public Works Director / City Engineer

V. **Finance Reviewed** _____
Finance Director

VI. **Approved for Presentation:** _____
City Administrator

VII. **Attorney Reviewed** _____ Approved _____ Pending Approval

VIII. **Certification of Council Approval:** _____ _____
City Clerk Date

IX. Detail of Issue/Request:

The City applied for and has been awarded an Energy and Mineral Impact Assistance Grant from the Department of Local Affairs to reconstruct a South Denver Avenue from Kahill Street (CR 12) to County Road 6.25. The grant budgets a total of $1,500,000.00 for the project, $750,000.00 in grant funds with $750,000.00 in matching funds from the City.

Design of the project and bid documents preparation are under way with anticipated completion in November 2016. Project is to be bid out beginning of December 2016 with construction to begin in spring of 2017.

X. Legal/Political Considerations:

Not Applicable

XI. Alternatives/Options:

- *Approve the acceptance of the grant*
- *Do not approve the acceptance of the grant*

XII. Financial Considerations:

This project is budgeted in the 2017 cycle. Half of the budget $750,000 is in the General Fund offset by a DOLA grant. The rest of the budget $750,000 is in the Street Sales Tax Fund.

XIII. Staff Recommendation:

Approve the acceptance of the $750,000.00 in Energy & Mineral Impact Assistance Grant funds from DOLA with matching funds of $750,000.00 from the City.

GRANT AGREEMENT

Between

STATE OF COLORADO
DEPARTMENT OF LOCAL AFFAIRS

And

CITY OF FORT LUPTON

Summary		
	Award Amount:	$750,000.00
Identification #s:		
Encumbrance #:	F17S8185	*(DOLA's primary identification #)*
Contract Management System #:	93470	*(State of Colorado's tracking #)*
Project Information:		
Project/Award Number:	EIAF 8185	
Project Name:	Fort Lupton South Denver Ave. Rehabilitation	
Performance Period:	Start Date: _____	End Date: 11/30/2017
Brief Description of Project / Assistance:	The Project consists of the reconstruction of Denver Avenue from Kahill to Fulton all in the city limits.	
Program & Funding Information:		
Program Name	Energy & Mineral Impact Assistance Fund	
Funding source:	State Funds	
Catalog of Federal Domestic Assistance (CFDA) Number (if federal funds):	N/A	
Funding Account Codes:	_____	
	_____	

TABLE OF CONTENTS

1. PARTIES

This Agreement (hereinafter called "Grant") is entered into by and between the **CITY OF FORT LUPTON** (hereinafter called "Grantee"), and the STATE OF COLORADO acting by and through the Department of Local Affairs for the benefit of the Division of Local Government (hereinafter called the "State" or "DOLA").

2. EFFECTIVE DATE AND NOTICE OF NONLIABILITY.

This Grant shall not be effective or enforceable until it is approved and signed by the Colorado State Controller or designee (hereinafter called the "Effective Date"). The State shall not be liable to pay or reimburse Grantee for any performance hereunder, including, but not limited to costs or expenses incurred, or be bound by any provision hereof prior to *(see checked option(s) below):*

A. ☒ The Effective Date.

B. ☐ The Effective Date; provided, however, that all Project costs, if specifically authorized by the federal funding authority, incurred on or after March 1, 20XX, may be submitted for reimbursement as if incurred after the Effective Date.

C. ☐ insert date for authorized Pre-agreement Costs (as such term is defined in **§4)** , if specifically authorized by the funding authority . Such costs may be submitted for reimbursement as if incurred after the Effective Date.

3. RECITALS

A. Authority, Appropriation, and Approval

Authority to enter into this Grant exists in C.R.S. 24-32-106 and 29-3.5-101 and funds have been budgeted, appropriated and otherwise made available pursuant to C.R.S. 39-29-110 (Local Government Severance Tax Fund) and a sufficient unencumbered balance thereof remains available for payment. Required approvals, clearance and coordination have been accomplished from and with appropriate agencies.

B. Consideration

The Parties acknowledge that the mutual promises and covenants contained herein and other good and valuable consideration are sufficient and adequate to support this Grant.

C. Purpose

The purpose of this Grant is described in **Exhibit B**.

D. References

All references in this Grant to sections (whether spelled out or using the § symbol), subsections, exhibits or other attachments, are references to sections, subsections, exhibits or other attachments contained herein or incorporated as a part hereof, unless otherwise noted.

4. DEFINITIONS

The following terms as used herein shall be construed and interpreted as follows:

A. Budget

"Budget" means the budget for the Project and/or Work described in **Exhibit B**.

B. Closeout Certification

"Closeout Certification" means the Grantee's certification of completion of Work submitted on a form provided by the State.

C. Evaluation

"Evaluation" means the process of examining Grantee's Work and rating it based on criteria established in **§6** and **Exhibit B.**

D. Exhibits and other Attachments

The following are attached hereto and incorporated by reference herein:

i. Exhibit B (Scope of Project)
ii. Exhibit G (Form of Option Letter)

E. Goods

"Goods" means tangible material acquired, produced, or delivered by Grantee either separately or in conjunction with the Services Grantee renders hereunder.

F. Grant

"Grant" means this agreement, its terms and conditions, attached exhibits, documents incorporated by reference pursuant to the terms of this Grant, and any future modifying agreements, exhibits, attachments or references incorporated herein pursuant to Colorado State law, Fiscal Rules, and State Controller Policies.

G. Grant Funds

"Grant Funds" means available funds payable by the State to Grantee pursuant to this Grant.

H. Party or Parties

"Party" means the State or Grantee and "Parties" means both the State and Grantee.

I. Pay Request(s)

"Pay Request(s)" means the Grantee's reimbursement request(s) submitted on form(s) provided by the State.

J. Pre-agreement costs

"Pre-agreement costs," when applicable, means the costs incurred on or after the date as specified in **§2** above, and prior to the Effective Date of this Grant. Such costs shall have been detailed in Grantee's grant application and specifically authorized by the State and incorporated herein pursuant to **Exhibit B**.

K. Project

"Project" means the overall project described in **Exhibit B**, which includes the Work.

L. Project Closeout
"Project Closeout" means the submission by the Grantee to the State of an actual final Pay Request, a final Status Report and a Closeout Certification.

M. Program
"Program" means the grant program specified on the first page of this Grant that provides the funding for this Grant.

N. Review
"Review" means examining Grantee's Work to ensure that it is adequate, accurate, correct and in accordance with the criteria established in **§6** and **Exhibit B.**

O. Services
"Services" means the required services to be performed by Grantee pursuant to this Grant.

P. Status Report(s)
"Status Report(s)" means the Grantee's status report(s) on the Work/Project submitted on form(s) provided by the State.

Q. Subcontractor
"Subcontractor" means third-parties, if any, engaged by Grantee to carry out specific vendor related services.

R. Subgrantee
"Subgrantee" means third-parties, if any, engaged by Grantee to aid in performance of its obligations. Subgrantee is bound by the same overall programmatic and grant requirements as Grantee.

S. Subject Property
"Subject Property" means the real property, if any, for which Grant Funds are used to acquire, construct, or rehabilitate.

T. Substantial Progress in the Work
"Substantial Progress in the Work" means Grantee meets all deliverables and performance measures within the time frames specified in **Exhibit B**.

U. Work
"Work" means the tasks and activities Grantee is required to perform to fulfill its obligations under this Grant and **Exhibit B**, including the performance of the Services and delivery of the Goods.

V. Work Product
"Work Product" means the tangible or intangible results of Grantee's Work, including, but not limited to, software, research, reports, studies, data, photographs, negatives or other finished or unfinished documents, drawings, models, surveys, maps, materials, or work product of any type, including drafts.

5. TERM

A. Initial Term-Work Commencement
Unless otherwise permitted in **§2** above, the Parties' respective performances under this Grant shall commence on the Effective Date. This Grant shall terminate on **November 30, 2017** unless sooner terminated or further extended as specified elsewhere herein.

B. Two Month Extension
The State, at its sole discretion upon written notice to Grantee as provided in **§16,** may unilaterally extend the term of this Grant for a period not to exceed two months if the Parties are negotiating a replacement Grant (and not merely seeking a term extension) at or near the end of any initial term or any extension thereof. The provisions of this Grant in effect when such notice is given, including, but not limited to prices, rates, and delivery requirements, shall remain in effect during the two month extension. The two-month extension shall immediately terminate when and if a replacement Grant is approved and signed by the Colorado State Controller.

6. STATEMENT OF WORK

A. Completion

Grantee shall complete the Work and its other obligations as described herein and in **Exhibit B**. Except as specified in §2 above, the State shall not be liable to compensate Grantee for any Work performed prior to the Effective Date or after the termination of this Grant.

B. Goods and Services

Grantee shall procure Goods and Services necessary to complete the Work. Such procurement shall be accomplished using the Grant Funds and shall not increase the maximum amount payable hereunder by the State.

C. Employees

All persons employed by Grantee or Subgrantees shall be considered Grantee's or Subgrantees' employee(s) for all purposes hereunder and shall not be employees of the State for any purpose as a result of this Grant.

7. PAYMENTS TO GRANTEE

The State shall, in accordance with the provisions of this §7, pay Grantee in the following amounts and using the methods set forth below:

A. Maximum Amount

The maximum amount payable under this Grant to Grantee by the State is **$750,000.00 (SEVEN HUNDRED FIFTY THOUSAND and XX/100 DOLLARS)**, as determined by the State from available funds. Grantee agrees to provide any additional funds required for the successful completion of the Work. Payments to Grantee are limited to the unpaid obligated balance of the Grant as set forth in **Exhibit B**.

B. Payment

i. Advance, Interim and Final Payments

Any payment allowed under this Grant or in **Exhibit B** shall comply with State Fiscal Rules and be made in accordance with the provisions of this Grant or such Exhibit. Grantee shall initiate any payment requests by submitting invoices to the State in the form and manner set forth and approved by the State.

ii. Interest

The State shall not pay interest on Grantee invoices. The State shall fully pay each invoice within 45 days of receipt thereof if the amount invoiced represents performance by Grantee previously accepted by the State.

iii. Available Funds-Contingency-Termination

The State is prohibited by law from making fiscal commitments beyond the term of the State's current fiscal year. Therefore, Grantee's compensation is contingent upon the continuing availability of State appropriations as provided in the Colorado Special Provisions, set forth below. If federal funds are used with this Grant in whole or in part, the State's performance hereunder is contingent upon the continuing availability of such funds. Payments pursuant to this Grant shall be made only from available funds encumbered for this Grant and the State's liability for such payments shall be limited to the amount remaining of such encumbered funds. If State or federal funds are not fully appropriated, or otherwise become unavailable for this Grant, the State may immediately terminate this Grant in whole or in part to the extent of funding reduction without further liability in accordance with the provisions herein.

iv. Erroneous Payments

At the State's sole discretion, payments made to Grantee in error for any reason, including, but not limited to overpayments or improper payments, and unexpended or excess funds received by Grantee, may be recovered from Grantee by deduction from subsequent payments under this Grant or other grants or agreements between the State and Grantee or by other appropriate methods and collected as a debt due to the State. Such funds shall not be paid to any person or entity other than the State.

C. Use of Funds

Grant Funds shall be used only for eligible costs identified herein and/or in **Exhibit B**.

i. **Budget Line Item Adjustments.**
Modifications to uses of such Grant Funds shall be made in accordance with **§4.4** of **Exhibit B**. For line item adjustments, the State will provide written notice to Grantee in a form substantially equivalent to **Exhibit G** ("**Option Letter**"). If exercised, the provisions of the Option Letter shall become part of, and be incorporated into, this Grant.

D. Matching/Leveraged Funds
Grantee shall provide matching and/or leveraged funds in accordance with **Exhibit B**.

8. REPORTING - NOTIFICATION
Reports, Evaluations, and Reviews required under this **§8** shall be in accordance with the procedures of and in such form as prescribed by the State and in accordance with **§19**, if applicable.

A. Performance, Progress, Personnel, and Funds
State shall submit a report to the Grantee upon expiration or sooner termination of this Grant, containing an Evaluation and Review of Grantee's performance and the final status of Grantee's obligations hereunder. In addition, Grantee shall comply with all reporting requirements, if any, set forth in **Exhibit B.**

B. Litigation Reporting
Within 10 days after being served with any pleading in a legal action filed with a court or administrative agency, related to this Grant or which may affect Grantee's ability to perform its obligations hereunder, Grantee shall notify the State of such action and deliver copies of such pleadings to the State's principal representative as identified herein. If the State's principal representative is not then serving, such notice and copies shall be delivered to the Executive Director of DOLA.

C. Performance Outside the State of Colorado and/or the United States
[Not applicable if Grant Funds include any federal funds]
Following the Effective Date, Grantee shall provide written notice to the State, in accordance with **§16 (Notices and Representatives)**, within 20 days of the earlier to occur of Grantee's decision to perform, or its execution of an agreement with a Subgrantee to perform, Services outside the State of Colorado and/or the United States. Such notice shall specify the type of Services to be performed outside the State of Colorado and/or the United States and the reason why it is necessary or advantageous to perform such Services at such location or locations. All notices received by the State pursuant to this **§8.C** shall be posted on the Colorado Department of Personnel & Administration's website. Knowing failure by Grantee to provide notice to the State under this **§8.C** shall constitute a material breach of this Grant.

D. Noncompliance
Grantee's failure to provide reports and notify the State in a timely manner in accordance with this **§8** may result in the delay of payment of funds and/or termination as provided under this Grant.

E. Subgrants/Subcontracts
Copies of any and all subgrants and subcontracts entered into by Grantee to perform its obligations hereunder shall be submitted to the State or its principal representative upon request by the State. Any and all subgrants and subcontracts entered into by Grantee related to its performance hereunder shall comply with all applicable federal and state laws and shall provide that such subgrants be governed by the laws of the State of Colorado.

9. GRANTEE RECORDS
Grantee shall make, keep, maintain and allow inspection and monitoring of the following records:

A. Maintenance
Grantee shall make, keep, maintain, and allow inspection and monitoring by the State of a complete file of all records, documents, communications, notes and other written materials, electronic media files, and communications, pertaining in any manner to the Work or the delivery of Services (including, but not limited to the operation of programs) or Goods hereunder. Grantee shall maintain such records (the "Record Retention Period") until the last to occur of the following:

(i) a period of five years after the date this Grant is completed or terminated, or final payment is made hereunder, whichever is later, or
(ii) for such further period as may be necessary to resolve any pending matters, or

(iii) if an audit is occurring, or Grantee has received notice that an audit is pending, then until such audit has been completed and its findings have been resolved.

B. Inspection

Grantee shall permit the State, the federal government (if Grant Funds include federal funds) and any other duly authorized agent of a governmental agency to audit, inspect, examine, excerpt, copy and/or transcribe Grantee's records related to this Grant during the Record Retention Period for a period of five years following termination of this Grant or final payment hereunder, whichever is later, to assure compliance with the terms hereof or to evaluate Grantee's performance hereunder. The State reserves the right to inspect the Work at all reasonable times and places during the term of this Grant, including any extension. If the Work fails to conform to the requirements of this Grant, the State may require Grantee promptly to bring the Work into conformity with Grant requirements, at Grantee's sole expense. If the Work cannot be brought into conformance by re-performance or other corrective measures, the State may require Grantee to take necessary action to ensure that future performance conforms to Grant requirements and exercise the remedies available under this Grant, at law or in equity in lieu of or in conjunction with such corrective measures.

C. Monitoring

Grantee shall permit the State, the federal government (if Grant Funds include federal funds), and other governmental agencies having jurisdiction, in their sole discretion, to monitor all activities conducted by Grantee pursuant to the terms of this Grant using any reasonable procedure, including, but not limited to: internal evaluation procedures, examination of program data, special analyses, on-site checking, formal audit examinations, or any other procedures. All monitoring controlled by the State shall be performed in a manner that shall not unduly interfere with Grantee's performance hereunder.

D. Final Audit Report

Grantee shall provide a copy of its audit report(s) to DOLA as specified in **Exhibit B.**

10. CONFIDENTIAL INFORMATION-STATE RECORDS

Grantee shall comply with the provisions of this **§10** if it becomes privy to confidential information in connection with its performance hereunder. Confidential information, includes, but is not necessarily limited to, state records, personnel records, and information concerning individuals.

A. Confidentiality

Grantee shall keep all State records and information confidential at all times and comply with all laws and regulations concerning confidentiality of information. Any request or demand by a third party for State records and information in the possession of Grantee shall be immediately forwarded to the State's principal representative.

B. Notification

Grantee shall notify its agent, employees, Subgrantees, and assigns who may come into contact with State records and confidential information that each is subject to the confidentiality requirements set forth herein, and shall provide each with a written explanation of such requirements before they are permitted to access such records and information.

C. Use, Security, and Retention

Confidential information of any kind shall not be distributed or sold to any third party or used by Grantee or its agents in any way, except as authorized by this Grant or approved in writing by the State. Grantee shall provide and maintain a secure environment that ensures confidentiality of all State records and other confidential information wherever located. Confidential information shall not be retained in any files or otherwise by Grantee or its agents, except as permitted in this Grant or approved in writing by the State.

D. Disclosure-Liability

Disclosure of State records or other confidential information by Grantee for any reason may be cause for legal action by third parties against Grantee, the State or their respective agents. Grantee shall, to the extent permitted by law, indemnify, save, and hold harmless the State, its employees and agents, against any and all claims, damages, liability and court awards including costs, expenses, and attorney fees and related costs, incurred as a result of any act or omission by Grantee, or its employees, agents, Subgrantees, or assignees pursuant to this **§10.**

11. CONFLICTS OF INTEREST

Grantee shall not engage in any business or personal activities or practices or maintain any relationships which conflict in any way with the full performance of Grantee's obligations hereunder. Grantee acknowledges that with respect to this Grant, even the appearance of a conflict of interest is harmful to the State's interests. Absent the State's prior written approval, Grantee shall refrain from any practices, activities or relationships that reasonably appear to be in conflict with the full performance of Grantee's obligations to the State hereunder. If a conflict or appearance exists, or if Grantee is uncertain whether a conflict or the appearance of a conflict of interest exists, Grantee shall submit to the State a disclosure statement setting forth the relevant details for the State's consideration. Failure to promptly submit a disclosure statement or to follow the State's direction in regard to the apparent conflict constitutes a breach of this Grant.

12. REPRESENTATIONS AND WARRANTIES

Grantee makes the following specific representations and warranties, each of which was relied on by the State in entering into this Grant.

A. Standard and Manner of Performance

Grantee shall perform its obligations hereunder in accordance with the highest standards of care, skill and diligence in the industry, trades or profession and in the sequence and manner set forth in this Grant.

B. Legal Authority – Grantee and Grantee's Signatory

Grantee warrants that it possesses the legal authority to enter into this Grant and that it has taken all actions required by its procedures, by-laws, and/or applicable laws to exercise that authority, and to lawfully authorize its undersigned signatory to execute this Grant, or any part thereof, and to bind Grantee to its terms. If requested by the State, Grantee shall provide the State with proof of Grantee's authority to enter into this Grant within 15 days of receiving such request.

C. Licenses, Permits, Etc.

Grantee represents and warrants that as of the Effective Date it has, and that at all times during the term hereof it shall have, at its sole expense, all licenses, certifications, approvals, insurance, permits, and other authorization required by law to perform its obligations hereunder. Grantee warrants that it shall maintain all necessary licenses, certifications, approvals, insurance, permits, and other authorizations required to properly perform this Grant, without reimbursement by the State or other adjustment in Grant Funds. Additionally, all employees and agents of Grantee performing Services under this Grant shall hold all required licenses or certifications, if any, to perform their responsibilities. Grantee, if a foreign corporation or other foreign entity transacting business in the State of Colorado, further warrants that it currently has obtained and shall maintain any applicable certificate of authority to transact business in the State of Colorado and has designated a registered agent in Colorado to accept service of process. Any revocation, withdrawal or non-renewal of licenses, certifications, approvals, insurance, permits or any such similar requirements necessary for Grantee to properly perform the terms of this Grant shall be deemed to be a material breach by Grantee and constitute grounds for termination of this Grant.

13. INSURANCE

Grantee and its Subgrantees shall obtain and maintain insurance as specified in this section at all times during the term of this Grant: All policies evidencing the insurance coverage required hereunder shall be issued by insurance companies satisfactory to Grantee and the State.

A. Grantee

i. Public Entities

If Grantee is a "public entity" within the meaning of the Colorado Governmental Immunity Act, CRS §24-10-101, et seq., as amended (the "GIA"), then Grantee shall maintain at all times during the term of this Grant such liability insurance, by commercial policy or self-insurance, as is necessary to meet its liabilities under the GIA. Grantee shall show proof of such insurance satisfactory to the State, if requested by the State. Grantee shall require each subgrant with Subgrantees that are public entities, providing Goods or Services hereunder, to include the insurance requirements necessary to meet Subgrantee's liabilities under the GIA.

ii. Non-Public Entities

If Grantee is not a "public entity" within the meaning of the GIA, Grantee shall obtain and maintain during the term of this Grant insurance coverage and policies meeting the same requirements set forth in **§13(B)** with respect to Subgrantees that are not "public entities".

B. Grantees, Subgrantees and Subcontractors

Grantee shall require each subgrant with Subgrantees and each contract with Subcontractors, other than those that are public entities, providing Goods or Services in connection with this Grant, to include insurance requirements substantially similar to the following:

i. Workers' Compensation

Workers' Compensation Insurance as required by State statute, and Employer's Liability Insurance covering all of Grantee, Subgrantee and Subcontractor employees acting within the course and scope of their employment.

ii. General Liability

Commercial General Liability Insurance written on ISO occurrence form CG 00 01 10/93 or equivalent, covering premises operations, fire damage, independent contractors, products and completed operations, blanket contractual liability, personal injury, and advertising liability with minimum limits as follows: **(a)** $1,000,000 each occurrence; **(b)** $1,000,000 general aggregate; **(c)** $1,000,000 products and completed operations aggregate; and **(d)** $50,000 any one fire.

iii. Automobile Liability

Automobile Liability Insurance covering any auto (including owned, hired and non-owned autos) with a minimum limit of $1,000,000 each accident combined single limit.

iv. Malpractice/Professional Liability Insurance

This section ☒ shall | ☐ shall not apply to this Grant.

Grantee, Subgrantees and Subcontractors shall maintain in full force and effect a Professional Liability Insurance Policy in the minimum amount of $1,000,000 per occurrence and $1,000,000 in the aggregate, written on an occurrence form, that provides coverage for its work undertaken pursuant to this Grant. If a policy written on an occurrence form is not commercially available, the claims-made policy shall remain in effect for the duration of this Grant and for at least two years beyond the completion and acceptance of the work under this Grant, or, alternatively, a two year extended reporting period must be purchased. The Grantee, Subgrantee or Subcontractor shall be responsible for all claims, damages, losses or expenses, including attorney's fees, arising out of or resulting from such party's performance of professional services under this Grant, a subcontract or subgrant.

v. Umbrella Liability Insurance

For construction projects exceeding $10,000,000, Grantee, Subgrantees and Subcontractors shall maintain umbrella/excess liability insurance on an occurrence basis in excess of the underlying insurance described in **§13B(i)-(iv)** above. Coverage shall follow the terms of the underlying insurance, included the additional insured and waiver of subrogation provisions. The amounts of insurance required in subsections above may be satisfied by the Grantee, Subgrantee and Subcontractor purchasing coverage for the limits specified or by any combination of underlying and umbrella limits, so long as the total amount of insurance is not less than the limits specified in each section previously mentioned. The insurance shall have a minimum amount of $5,000,000 per occurrence and $5,000,000 in the aggregate.

vi. Property Insurance

This subsection shall apply if Grant Funds are provided for the acquisition, construction, or rehabilitation of real property.

Insurance on the buildings and other improvements now existing or hereafter erected on the premises and on the fixtures and personal property included in the Subject Property against loss by fire, other hazards covered by the so called "all risk" form of policy and such other perils as State shall from time to time require with respect to properties of the nature and in the geographical area of the Subject Property, and to be in an amount at least equal to the replacement cost value of the Subject Property. Grantor will at its sole cost and expense, from time to time and at any time, at the request of State provide State with evidence satisfactory to State of the replacement cost of the Subject Property.

vii. Flood Insurance

If the Subject Property or any part thereof is at any time located in a designated official flood hazard area, flood insurance insuring the buildings and improvements now existing or hereafter erected on the Subject Property and the personal property used in the operation thereof in an amount equal to the lesser of the amount required for property insurance identified in **§vi** above or the maximum limit of coverage made available with respect to such buildings and improvements and personal property under applicable federal laws and the regulations issued thereunder.

viii. Builder's Risk Insurance

This subsection shall apply if Grant Funds are provided for construction or rehabilitation of real property.

Grantee, Subgrantee and/or Subcontractor shall purchase and maintain property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial construction/rehabilitation costs, plus value of subsequent modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made or until no person or entity other than the property owner has an insurable interest in the property.

a) The insurance shall include interests of the property owner, Grantee, Subgrantee, Subcontractors in the Project as named insureds.

b) All associated deductibles shall be the responsibility of the Grantee, Subcontractor and Subgrantee. Such policy may have a deductible clause but not to exceed $10,000.

c) Property insurance shall be on an "all risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Grantee's, Subgrantee's and Subcontractor's services and expenses required as a result of such insured loss.

d) Builders Risk coverage shall include partial use by Grantee and/or property owner.

e) The amount of such insurance shall be increased to include the cost of any additional work to be done on the Project, or materials or equipment to be incorporated in the Project, under other independent contracts let or to be let. In such event, Subgrantee and Subcontractor shall be reimbursed for this cost as his or her share of the insurance in the same ratio as the ratio of the insurance represented by such independent contracts let or to be let to the total insurance carried.

ix. Pollution Liability Insurance

If Grantee and/or its Subgrantee or Subcontractor is providing directly or indirectly work with pollution/environmental hazards, they must provide or cause those conducting the work to provide Pollution Liability Insurance coverage. Pollution Liability policy must include contractual liability coverage. The policy limits shall be in the amount of $1,000,000 with maximum deductible of $25,000 to be paid by the Grantee's Subcontractor and/or Subgrantee.

C. Miscellaneous Insurance Provisions

Certificates of Insurance and/or insurance policies required under this Grant shall be subject to the following stipulations and additional requirements:

i. Deductible. Any and all deductibles or self-insured retentions contained in any Insurance policy shall be assumed by and at the sole risk of the Grantee, its Subgrantees or Subcontractors,

ii. In Force. If any of the said policies shall fail at any time to meet the requirements of the Grant as to form or substance, or if a company issuing any such policy shall be or at any time cease to be approved by the Division of Insurance of the State of Colorado, or be or cease to be in compliance with any stricter requirements of the Grant, the Grantee, its Subgrantee and its Subcontractor shall promptly obtain a new policy.

iii. Insurer. All requisite insurance shall be obtained from financially responsible insurance companies, authorized to do business in the State of Colorado and acceptable to Grantee,

iv. Additional Insured
Grantee and the State shall be named as additional insureds on the Commercial General Liability and Automobile Liability Insurance policies (leases and construction Grants require additional insured coverage for completed operations on endorsements CG 2010 11/85, CG 2037, or equivalent).

v. Primacy of Coverage
Coverage required of Grantee, Subgrantees and Subcontractors shall be primary over any insurance or self-insurance program carried by Grantee or the State.

vi. Cancellation
The above insurance policies shall include provisions preventing cancellation or non-renewal without at least 45 days prior notice to the Grantee and Grantee shall forward such notice to the State in accordance with **§16** (Notices and Representatives) within seven days of Grantee's receipt of such notice.

vii.Subrogation Waiver
All insurance policies in any way related to this Grant and secured and maintained by Grantee or its Subgrantees and Subcontractors as required herein shall include clauses stating that each carrier shall waive all rights of recovery, under subrogation or otherwise, against Grantee or the State, its agencies, institutions, organizations, officers, agents, employees, and volunteers.

D. Certificates
Grantee, Subgrantee and Subcontractor shall provide certificates showing insurance coverage required hereunder to the State within seven business days of the Effective Date of this Grant or of their respective subcontract or subgrant. No later than 15 days prior to the expiration date of any such coverage, Grantee, Subgrantee and Subcontractor shall deliver to the State or Grantee certificates of insurance evidencing renewals thereof. In addition, upon request by the State at any other time during the term of this Grant, subgrant or subcontract, Grantee, Subgrantee and Subcontractor shall, within 10 days of such request, supply to the State evidence satisfactory to the State of compliance with the provisions of this **§13**.

14. BREACH

A. Defined
In addition to any breaches specified in other sections of this Grant, the failure of either Party to perform any of its material obligations hereunder in whole or in part or in a timely or satisfactory manner, constitutes a breach. The institution of proceedings under any bankruptcy, insolvency, reorganization or similar law, by or against Grantee, or the appointment of a receiver or similar officer for Grantee or any of its property, which is not vacated or fully stayed within 20 days after the institution or occurrence thereof, shall also constitute a breach.

B. Notice and Cure Period
In the event of a breach, notice of such shall be given in writing by the aggrieved Party to the other Party in the manner provided in **§16**. If such breach is not cured within 30 days of receipt of written notice, or if a cure cannot be completed within 30 days, or if cure of the breach has not begun within 30 days and pursued with due diligence, the State may exercise any of the remedies set forth in **§15**. Notwithstanding anything to the contrary herein, the State, in its sole discretion, need not provide advance notice or a cure period and may immediately terminate this Grant in whole or in part if reasonably necessary to preserve public safety or to prevent immediate public crisis.

15. REMEDIES

If Grantee is in breach under any provision of this Grant or if the State terminates this Grant pursuant to **§15(B)**, the State shall have the remedies listed in this **§15** in addition to all other remedies set forth in other sections of this Grant following the notice and cure period set forth in **§14(B)**, if applicable. The State may exercise any or all of the remedies available to it, in its sole discretion, concurrently or consecutively.

A. Termination for Cause and/or Breach
If Grantee fails to perform any of its obligations hereunder with such diligence as is required to ensure its completion in accordance with the provisions of this Grant and in a timely manner, the State may notify

Grantee of such non-performance in accordance with the provisions herein. If Grantee thereafter fails to promptly cure such non-performance within the cure period, the State, at its option, may terminate this entire Grant or such part of this Grant as to which there has been delay or a failure to properly perform. Exercise by the State of this right shall not be deemed a breach of its obligations hereunder. Grantee shall continue performance of this Grant to the extent not terminated, if any.

i. **Obligations and Rights**
To the extent specified in any termination notice, Grantee shall not incur further obligations or render further performance hereunder past the effective date of such notice, and shall terminate outstanding orders and subgrants/subcontracts with third parties. However, Grantee shall complete and deliver to the State all Work, Services and Goods not cancelled by the termination notice and may incur obligations as are necessary to do so within this Grant's terms. At the sole discretion of the State, Grantee shall assign to the State all of Grantee's right, title, and interest under such terminated orders or subgrants/subcontracts. Upon termination, Grantee shall take timely, reasonable and necessary action to protect and preserve property in the possession of Grantee in which the State has an interest. All materials owned by the State in the possession of Grantee shall be immediately returned to the State.

ii. **Payments**
The State shall reimburse Grantee only for accepted performance up to the date of termination. If, after termination by the State, it is determined that Grantee was not in breach or that Grantee's action or inaction was excusable, such termination shall be treated as a termination in the public interest and the rights and obligations of the Parties shall be the same as if this Grant had been terminated in the public interest, as described herein.

iii. **Damages and Withholding**
Notwithstanding any other remedial action by the State, Grantee also shall remain liable to the State for any damages sustained by the State by virtue of any breach under this Grant by Grantee and the State may withhold any payment to Grantee for the purpose of mitigating the State's damages, until such time as the exact amount of damages due to the State from Grantee is determined. The State may withhold any amount that may be due to Grantee as the State deems necessary to protect the State, including loss as a result of outstanding liens or claims of former lien holders, or to reimburse the State for the excess costs incurred in procuring similar goods or services.

B. Early Termination in the Public Interest

The State is entering into this Grant for the purpose of carrying out the public policy of the State of Colorado, as determined by its Governor, General Assembly, and/or Courts. If this Grant ceases to further the public policy of the State, the State, in its sole discretion, may terminate this Grant in whole or in part. Exercise by the State of this right shall not constitute a breach of the State's obligations hereunder. This subsection shall not apply to a termination of this Grant by the State for cause or breach by Grantee, which shall be governed by **§15(A)** or as otherwise specifically provided for herein.

i. **Method and Content**
The State shall notify Grantee of such termination in accordance with **§16**. The notice shall specify the effective date of the termination and whether it affects all or a portion of this Grant.

ii. **Obligations and Rights**
Upon receipt of a termination notice, Grantee shall be subject to and comply with the same obligations and rights set forth in **§15(A)(i)**.

iii. **Payments**
If this Grant is terminated by the State pursuant to this **§15(B)**, Grantee shall be paid an amount which bears the same ratio to the total reimbursement under this Grant as the Services satisfactorily performed bear to the total Services covered by this Grant, less payments previously made. Additionally, if this Grant is less than 60% completed, the State may reimburse Grantee for a portion of actual out-of-pocket expenses (not otherwise reimbursed under this Grant) incurred by Grantee which are directly attributable to the uncompleted portion of Grantee's obligations hereunder; provided that the sum of any and all reimbursement shall not exceed the maximum amount payable to Grantee hereunder.

C. Termination for No Substantial Progress in the Work

The State may elect to terminate this Grant upon receipt and review of any Quarterly Progress Report, submitted per the time periods defined in **Exhibit B**, if such Quarterly Progress Report fails to evidence Substantial Progress in the Work as directed, defined and expected under **Exhibit B**. Further, the State may elect to terminate this Grant if the Grantee fails to complete Project Closeout within **three months** of completion of the Work. Exercise by the State of this right shall not be deemed a breach of its obligations hereunder.

i. **Obligations and Rights**
To the extent specified in any termination notice, Grantee shall not incur further obligations or render further performance hereunder past the effective date of such notice, and shall terminate outstanding orders and subgrants/subcontracts with third parties. However, Grantee shall complete and deliver to the State all Work, Services and Goods not cancelled by the termination notice and may incur obligations as are necessary to do so within this Grant's terms. At the sole discretion of the State, Grantee shall assign to the State all of Grantee's right, title, and interest under such terminated orders or subgrants/subcontracts. Upon termination, Grantee shall take timely, reasonable and necessary action to protect and preserve property in the possession of Grantee in which the State has an interest. All materials owned by the State in the possession of Grantee shall be immediately returned to the State.

ii. **Payments**
The State shall reimburse Grantee only for accepted performance up to the date of termination.

iii. **Damages and Withholding**
Notwithstanding any other remedial action by the State, Grantee also shall remain liable to the State for any damages sustained by the State by virtue of any breach under this Grant by Grantee and the State may withhold any payment to Grantee for the purpose of mitigating the State's damages, until such time as the exact amount of damages due to the State from Grantee is determined. The State may withhold any amount that may be due to Grantee as the State deems necessary to protect the State, including loss as a result of outstanding liens or claims of former lien holders, or to reimburse the State for the excess costs incurred in procuring similar goods or services.

D. Remedies Not Involving Termination

The State, at its sole discretion, may exercise one or more of the following remedies in addition to other remedies available to it:

i. **Suspend Performance**
Suspend Grantee's performance with respect to all or any portion of this Grant pending necessary corrective action as specified by the State without entitling Grantee to an adjustment in price/cost or performance schedule. Grantee shall promptly cease performance and incurring costs in accordance with the State's directive and the State shall not be liable for costs incurred by Grantee after the suspension of performance under this provision.

ii. **Withhold Payment**
Withhold payment to Grantee until corrections in Grantee's performance are satisfactorily made and completed.

iii. **Deny Payment**
Deny payment for those obligations not performed, that due to Grantee's actions or inactions, cannot be performed or, if performed, would be of no value to the State; provided, that any denial of payment shall be reasonably related to the value to the State of the obligations not performed.

iv. **Removal**
Demand removal of any of Grantee's employees, agents, or Subgrantees whom the State deems incompetent, careless, insubordinate, unsuitable, or otherwise unacceptable, or whose continued relation to this Grant is deemed to be contrary to the public interest or not in the State's best interest.

v. **Intellectual Property**
If Grantee infringes on a patent, copyright, trademark, trade secret or other intellectual property right while performing its obligations under this Grant, Grantee shall, at the State's option **(a)** obtain for the

State or Grantee the right to use such products and services; **(b)** replace any Goods, Services, or other product involved with non-infringing products or modify them so that they become non-infringing; or, **(c)** if neither of the foregoing alternatives are reasonably available, remove any infringing Goods, Services, or products and refund the price paid therefore to the State.

16. NOTICES and REPRESENTATIVES

Each individual identified below is the principal representative of the designating Party. All notices required to be given hereunder shall be hand delivered with receipt required or sent by certified or registered mail to such Party's principal representative at the address set forth below. In addition to, but not in lieu of a hard-copy notice, notice also may be sent by e-mail to the e-mail addresses, if any, set forth below. Either Party may from time to time designate by written notice substitute addresses or persons to whom such notices shall be sent. Unless otherwise provided herein, all notices shall be effective upon receipt.

A. State:

Chantal Unfug, Division Director
Division of Local Government
Colorado Department of Local Affairs
1313 Sherman Street, Room 521
Denver, Colorado 80203
Email: chantal.unfug@state.co.us

B. Grantee:

Tommy Holton, Mayor
City of Fort Lupton
130 McKinley Ave
CO, Colorado 80621
Email: tholton@fortlupton.org

17. RIGHTS IN DATA, DOCUMENTS, AND COMPUTER SOFTWARE

This section ☐ shall | ☒ shall not apply to this Grant.

Any software, research, reports, studies, data, photographs, negatives or other documents, drawings, models, materials, or Work Product of any type, including drafts, prepared by Grantee in the performance of its obligations under this Grant shall be the exclusive property of the State and, all Work Product shall be delivered to the State by Grantee upon completion or termination hereof. The State's exclusive rights in such Work Product shall include, but not be limited to, the right to copy, publish, display, transfer, and prepare derivative works. Grantee shall not use, willingly allow, cause or permit such Work Product to be used for any purpose other than the performance of Grantee's obligations hereunder without the prior written consent of the State.

18. GOVERNMENTAL IMMUNITY

Notwithstanding any other provision to the contrary, nothing herein shall constitute a waiver, express or implied, of any of the immunities, rights, benefits, protection, or other provisions of the GIA. Liability for claims for injuries to persons or property arising from the negligence of the State of Colorado, its departments, institutions, agencies, boards, officials, and employees is controlled and limited by the provisions of the GIA and the risk management statutes, CRS §24-30-1501, et seq., as amended.

19. STATEWIDE CONTRACT MANAGEMENT SYSTEM

If the maximum amount payable to Grantee under this Grant is greater than $100,000 either on the Effective Date or at anytime thereafter, this **§19** applies.

Grantee agrees to be governed, and to abide, by the provisions of CRS §24-102-205, §24-102-206, §24-103-601, §24-103.5-101 and §24-105-102 concerning the monitoring of vendor performance on state Grants and inclusion of Grant performance information in a statewide Contract Management System.

Grantee's performance shall be subject to Evaluation and Review in accordance with the terms and conditions of this Grant, State law, including CRS §24-103.5-101, and State Fiscal Rules, Policies and Guidance. Evaluation and Review of Grantee's performance shall be part of the normal Grant administration process and Grantee's performance will be systematically recorded in the statewide Contract Management System. Areas of Evaluation

and Review shall include, but shall not be limited to quality, cost and timeliness. Collection of information relevant to the performance of Grantee's obligations under this Grant shall be determined by the specific requirements of such obligations and shall include factors tailored to match the requirements of Grantee's obligations. Such performance information shall be entered into the statewide Contract Management System at intervals established herein and a final Evaluation, Review and Rating shall be rendered within 30 days of the end of the Grant term. Grantee shall be notified following each performance Evaluation and Review, and shall address or correct any identified problem in a timely manner and maintain work progress.

Should the final performance Evaluation and Review determine that Grantee demonstrated a gross failure to meet the performance measures established hereunder, the Executive Director of the Colorado Department of Personnel and Administration (Executive Director), upon request by the Department of Local Affairs, and showing of good cause, may debar Grantee and prohibit Grantee from receiving future grants and bidding on future contracts. Grantee may contest the final Evaluation, Review and Rating by: **(a)** filing rebuttal statements, which may result in either removal or correction of the evaluation (CRS §24-105-102(6)), or **(b)** under CRS §24-105-102(6), exercising the debarment protest and appeal rights provided in CRS §§24-109-106, 107, 201 or 202, which may result in the reversal of the debarment and reinstatement of Grantee, by the Executive Director, upon a showing of good cause.

20. RESTRICTION ON PUBLIC BENEFITS

This section ☐ shall | ☒ shall not apply to this Grant.

Grantee must confirm that any individual natural person is lawfully present in the United States pursuant to CRS §24-76.5-101 et seq. when such individual applies for public benefits provided under this Grant by requiring the applicant to:

A. Produce an identification document in accordance with §2.1.1 through §2.1.3 of Colorado Department of Revenue's Rule #1 CCR 201-17, Rule for Evidence of Lawful Presence, as amended.

B. Execute an affidavit herein attached as **Form 1**, Residency Declaration, stating

i. That he or she is a United States citizen or legal permanent resident; or

ii. That he or she is otherwise lawfully present in the United States pursuant to federal law.

[The following applies if Grant is funded with federal funds].

Notwithstanding the foregoing, to the extent that there is any conflict with the provisions above or those set forth in the Residency Declaration attached hereto as **Form 1** and any provision of federal law, the provisions of federal law shall prevail.

21. GENERAL PROVISIONS

A. Assignment and Subgrants

Grantee's rights and obligations hereunder are personal and may not be transferred, assigned or subgranted without the prior, written consent of the State. Any attempt at assignment, transfer, or subgranting without such consent shall be void. All assignments, subgrants, or subcontracts approved by Grantee or the State are subject to all of the provisions hereof. Grantee shall be solely responsible for all aspects of subgranting and subcontracting arrangements and performance.

B. Binding Effect

Except as otherwise provided in **§21(A)**, all provisions herein contained, including the benefits and burdens, shall extend to and be binding upon the Parties' respective heirs, legal representatives, successors, and assigns.

C. Captions

The captions and headings in this Grant are for convenience of reference only, and shall not be used to interpret, define, or limit its provisions.

D. Counterparts

This Grant may be executed in multiple identical original counterparts, all of which shall constitute one agreement.

E. Entire Understanding

This Grant represents the complete integration of all understandings between the Parties and all prior representations and understandings, oral or written, are merged herein. Prior or contemporaneous additions, deletions, or other changes hereto shall not have any force or effect whatsoever, unless embodied herein.

F. Indemnification-General

Grantee shall, to the extent permitted by law, indemnify, save, and hold harmless the State, its employees and agents, against any and all claims, damages, liability and court awards including costs, expenses, and attorney fees and related costs, incurred as a result of any act or omission by Grantee, or its employees, agents, Subgrantees, or assignees pursuant to the terms of this Grant; however, the provisions hereof shall not be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protection, or other provisions, of the GIA, or the Federal Tort Claims Act, 28 U.S.C. 2671 et seq., as applicable, as now or hereafter amended.

G. Jurisdiction and Venue

All suits, actions, or proceedings related to this Grant shall be held in the State of Colorado and exclusive venue shall be in the City and County of Denver.

H. Applicable Laws

At all times during the performance of this Grant, Grantee shall comply with all applicable Federal and State laws and their implementing regulations, currently in existence and as hereafter amended. Grantee also shall require compliance with such laws and regulations by subgrantees under subgrants permitted by this Grant.

I. Use Covenants

This section ☐ shall | ☒ shall not apply to this Grant:

For Subject Property that is owned by Grantee upon execution of this Grant, Grantee shall record a Use Covenant substantially equivalent to **Exhibit F** with the county in which the property resides as soon as reasonably practicable after execution of this Grant. For Subject Property acquired by Grantee using Grant Funds, Grantee shall record a Use Covenant substantially equivalent to **Exhibit F** with the county in which the property resides as soon as reasonably practicable after acquisition of such property.

J. Modification

i. By the Parties

If either the State or the Grantee desire to modify the terms of this Grant to either increase or decrease total awarded funds, make budget line item adjustments to Grant Funds, and/or change the performance period or term of the Grant, this may be achieved unilaterally by DOLA through an Option Letter (**Exhibit G**). Except as otherwise provided in this Grant, no modification shall be effective unless agreed to in writing by the Parties in an amendment, properly executed and approved in accordance with applicable Colorado State law, State Fiscal Rules, and Office of the State Controller Policies. Changes to the Grant shall be authorized for approval by the following State or DOLA parties:

a) Approval by Division Director
The Division Director of DOLA, or his delegee, shall have authority to approve changes to the Responsible Administrator and Key Personnel specified in **§5** of **Exhibit B** and the Principal Representative in **§16**.

b) Approval by DOLA Controller
The DOLA Controller shall have authority to approve all changes to the Grant which are not reserved to the Division Director above.

ii. By Operation of Law

This Grant is subject to such modifications as may be required by changes in Federal or Colorado State law, or their implementing regulations. Any such required modification automatically shall be incorporated into and be part of this Grant on the effective date of such change, as if fully set forth herein.

K. Order of Precedence

The provisions of this Grant shall govern the relationship of the Parties. In the event of conflicts or inconsistencies between this Grant and its exhibits and attachments including, but not limited to, those

provided by Grantee, such conflicts or inconsistencies shall be resolved by reference to the documents in the following order of priority:

i. Colorado Special Provisions
ii. The provisions of the main body of this Grant (excluding the cover page)
iii. Any executed Option Letters
iv. Exhibit B (Scope of Project)
v. The cover page of this Grant

L. Severability

Provided this Grant can be executed and performance of the obligations of the Parties accomplished within its intent, the provisions hereof are severable and any provision that is declared invalid or becomes inoperable for any reason shall not affect the validity of any other provision hereof.

M. Survival of Certain Grant Terms

Notwithstanding anything herein to the contrary, provisions of this Grant requiring continued performance, compliance, or effect after termination hereof, shall survive such termination and shall be enforceable by the State if Grantee fails to perform or comply as required.

N. Taxes

The State is exempt from all federal excise taxes under IRC Chapter 32 (No. 84-730123K) and from all State and local government sales and use taxes under CRS §§39-26-101 and 201 et seq. Such exemptions apply when materials are purchased or services rendered to benefit the State; provided however, that certain political subdivisions (e.g., City of Denver) may require payment of sales or use taxes even though the product or service is provided to the State. Grantee shall be solely liable for paying such taxes as the State is prohibited from paying for or reimbursing Grantee for them.

O. Third Party Beneficiaries

Enforcement of this Grant and all rights and obligations hereunder are reserved solely to the Parties, and not to any third party. Any services or benefits which third parties receive as a result of this Grant are incidental to the Grant, and do not create any rights for such third parties.

P. Waiver

Waiver of any breach of a term, provision, or requirement of this Grant, or any right or remedy hereunder, whether explicitly or by lack of enforcement, shall not be construed or deemed as a waiver of any subsequent breach of such term, provision or requirement, or of any other term, provision, or requirement.

Q. CORA Disclosure

To the extent not prohibited by federal law, this Grant and the performance measures and standards under CRS §24-103.5-101, if any, are subject to public release through the Colorado Open Records Act, CRS §24-72-101, et seq.

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22. COLORADO SPECIAL PROVISIONS

A. The Special Provisions apply to all Grants except where noted in *italics*.

i. CONTROLLER'S APPROVAL. CRS §24-30-202 (1).
This Grant shall not be deemed valid until it has been approved by the Colorado State Controller or designee.

ii. FUND AVAILABILITY. CRS §24-30-202(5.5).
Financial obligations of the State payable after the current fiscal year are contingent upon funds for that purpose being appropriated, budgeted, and otherwise made available.

iii. GOVERNMENTAL IMMUNITY.
No term or condition of this Grant shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protections, or other provisions, of the Colorado Governmental Immunity Act, CRS §24-10-101 et seq., or the Federal Tort Claims Act, 28 U.S.C. §§1346(b) and 2671 et seq., as applicable now or hereafter amended.

iv. INDEPENDENT CONTRACTOR
Grantee shall perform its duties hereunder as an independent Grantee and not as an employee. Neither Grantee nor any agent or employee of Grantee shall be deemed to be an agent or employee of the State. Grantee and its employees and agents are not entitled to unemployment insurance or workers compensation benefits through the State and the State shall not pay for or otherwise provide such coverage for Grantee or any of its agents or employees. Unemployment insurance benefits shall be available to Grantee and its employees and agents only if such coverage is made available by Grantee or a third party. Grantee shall pay when due all applicable employment taxes and income taxes and local head taxes incurred pursuant to this Grant. Grantee shall not have authorization, express or implied, to bind the State to any Grant, liability or understanding, except as expressly set forth herein. Grantee shall (a) provide and keep in force workers' compensation and unemployment compensation insurance in the amounts required by law, (b) provide proof thereof when requested by the State, and (c) be solely responsible for its acts and those of its employees and agents.

v. COMPLIANCE WITH LAW.
Grantee shall strictly comply with all applicable federal and State laws, rules, and regulations in effect or hereafter established, including, without limitation, laws applicable to discrimination and unfair employment practices.

vi. CHOICE OF LAW.
Colorado law, and rules and regulations issued pursuant thereto, shall be applied in the interpretation, execution, and enforcement of this grant. Any provision included or incorporated herein by reference which conflicts with said laws, rules, and regulations shall be null and void. Any provision incorporated herein by reference which purports to negate this or any other Special Provision in whole or in part shall not be valid or enforceable or available in any action at law, whether by way of complaint, defense, or otherwise. Any provision rendered null and void by the operation of this provision shall not invalidate the remainder of this Grant, to the extent capable of execution.

vii. BINDING ARBITRATION PROHIBITED.
The State of Colorado does not agree to binding arbitration by any extra-judicial body or person. Any provision to the contrary in this Grant or incorporated herein by reference shall be null and void.

viii. SOFTWARE PIRACY PROHIBITION. Governor's Executive Order D 002 00.
State or other public funds payable under this Grant shall not be used for the acquisition, operation, or maintenance of computer software in violation of federal copyright laws or applicable licensing restrictions. Grantee hereby certifies and warrants that, during the term of this Grant and any extensions, Grantee has and shall maintain in place appropriate systems and controls to prevent such improper use of public funds. If the State determines that Grantee is in violation of this provision, the State may exercise any remedy available at law or in equity or under this Grant, including, without

limitation, immediate termination of this Grant and any remedy consistent with federal copyright laws or applicable licensing restrictions.

ix. EMPLOYEE FINANCIAL INTEREST. CRS §§24-18-201 and 24-50-507.

The signatories aver that to their knowledge, no employee of the State has any personal or beneficial interest whatsoever in the service or property described in this Grant. Grantee has no interest and shall not acquire any interest, direct or indirect, that would conflict in any manner or degree with the performance of Grantee's services and Grantee shall not employ any person having such known interests.

x. VENDOR OFFSET. CRS §§24-30-202 (1) and 24-30-202.4.

[*Not applicable to intergovernmental agreements*] Subject to CRS §24-30-202.4 (3.5), the State Controller may withhold payment under the State's vendor offset intercept system for debts owed to State agencies for: (a) unpaid child support debts or child support arrearages; (b) unpaid balances of tax, accrued interest, or other charges specified in CRS §39-21-101, et seq.; (c) unpaid loans due to the Student Loan Division of the Department of Higher Education; (d) amounts required to be paid to the Unemployment Compensation Fund; and (e) other unpaid debts owing to the State as a result of final agency determination or judicial action.

xi. PUBLIC GRANTS FOR SERVICES. CRS §8-17.5-101.

[*Not applicable to agreements relating to the offer, issuance, or sale of securities, investment advisory services or fund management services, sponsored projects, intergovernmental Agreements, or information technology* services *or products and services*] Grantee certifies, warrants, and agrees that it does not knowingly employ or contract with an illegal alien who shall perform work under this Grant and shall confirm the employment eligibility of all employees who are newly hired for employment in the United States to perform work under this Grant, through participation in the E-Verify Program or the State program established pursuant to CRS §8-17.5-102(5)(c), Grantee shall not knowingly employ or contract with an illegal alien to perform work under this Grant or enter into a grant with a Subgrantee that fails to certify to Grantee that the Subgrantee shall not knowingly employ or contract with an illegal alien to perform work under this Grant. Grantee (a) shall not use E-Verify Program or State program procedures to undertake pre-employment screening of job applicants while this Grant is being performed, (b) shall notify the Subgrantee and the granting State agency within three days if Grantee has actual knowledge that a Subgrantee is employing or contracting with an illegal alien for work under this Grant, (c) shall terminate the Subgrant if a Subgrantee does not stop employing or contracting with the illegal alien within three days of receiving the notice, and (d) shall comply with reasonable requests made in the course of an investigation, undertaken pursuant to CRS §8-17.5-102(5), by the Colorado Department of Labor and Employment. If Grantee participates in the State program, Grantee shall deliver to the granting State agency, Institution of Higher Education or political subdivision, a written, notarized affirmation, affirming that Grantee has examined the legal work status of such employee, and shall comply with all of the other requirements of the State program. If Grantee fails to comply with any requirement of this provision or CRS §8-17.5-101 et seq., the granting State agency, institution of higher education or political subdivision may terminate this Grant for breach and, if so terminated, Grantee shall be liable for damages.

xii. PUBLIC GRANTS WITH NATURAL PERSONS. CRS §24-76.5-101.

Grantee, if a natural person eighteen (18) years of age or older, hereby swears and affirms under penalty of perjury that he or she (a) is a citizen or otherwise lawfully present in the United States pursuant to federal law, (b) shall comply with the provisions of CRS §24-76.5-101 et seq., and (c) has produced one form of identification required by CRS §24-76.5-103 prior to the Effective Date of this Grant.

(Special Provisions - effective 1/1/09)

CMS# 93470

SIGNATURE PAGE

THE PARTIES HERETO HAVE EXECUTED THIS GRANT

*** Persons signing for Grantee hereby swear and affirm that they are authorized to act on Grantee's behalf and acknowledge that the State is relying on their representations to that effect.**

GRANTEE
CITY OF FORT LUPTON

By: _____
Name of Authorized Individual (print)

Title: _____
Official Title of Authorized Individual

_____
*Signature

Date: _____

STATE OF COLORADO
John W. Hickenlooper, GOVERNOR
DEPARTMENT OF LOCAL AFFAIRS

By: _____
Irv Halter, Executive Director

Date: _____

PRE-APPROVED FORM CONTRACT REVIEWER

By: _____
Stacy Romero, State Grants Manager

Date: _____

ALL GRANTS REQUIRE APPROVAL BY THE STATE CONTROLLER

CRS §24-30-202 requires the State Controller to approve all State grants. This Grant is not valid until signed and dated below by the State Controller or delegate. Grantee is not authorized to begin performance until such time. If Grantee begins performing prior thereto, the State of Colorado is not obligated to pay Grantee for such performance or for any goods and/or services provided hereunder.

STATE CONTROLLER
Robert Jaros, CPA

By: _____
Janet Miks, CPA, Controller Delegate

Date: _____

EXHIBIT B – SCOPE OF PROJECT (SOP)

1. **PURPOSE**
   - **1.1. Energy Impact**. The purpose of the Energy and Mineral Impact Assistance Program is to assist political subdivisions that are socially and/or economically impacted by the development, processing, or energy conversion of minerals and mineral fuels.
2. **DESCRIPTION OF THE PROJECT(S) AND WORK**
   - **2.1. Project Description**. The Project consists of the reconstruction of Denver Avenue from Kahill to Fulton all in the City limits.
   - **2.2. Work Description**. The City of Fort Lupton (Grantee) will reconstruct Denver Avenue within the city limits from Kahill Street to Weld County Road 6.25. The City will rebuild the road with full depth reconstruction of the base as well as paving the surface. The Project will include 4 foot paved shoulders. Grantee will own all improvements and, in accordance with **§9** below, a contractor will be hired to complete the Work.
   - **2.3. Responsibilities**. Grantee shall be responsible for the completion of the Work and to provide required documentation to DOLA as specified herein.
     - **2.3.1.** Grantee shall notify DOLA at least 30 days in advance of Project Completion.
   - **2.4. Recapture of Advanced Funds**. To maximize the use of Grant Funds, the State shall evaluate Grantee's expenditure of the Grant Funds for timeliness and compliance with the terms of this Grant. DOLA reserves the right to recapture advanced Grant Funds when Grantee has not or is not complying with the terms of this Grant.
   - **2.5. Eligible Expenses**. Eligible expenses shall include: Eligible Expenses include construction costs for the Denver Avenue roadway improvements including full depth reconstruction and paving of the road. The City will be responsible for all non-construction costs such as engineering and project management.
3. **DEFINITIONS**
   - **3.1.** "Cumulative Budgetary Line Item Changes" means a cumulative or increasing accumulation of additional expenses within a specific line item as listed in **§6.2** Budget within this **Exhibit B**.
   - **3.2.** Project Budget Line Items.
     - **3.2.1.** "Architectural/Engineering Services" means professional architectural/engineering fees, RFP/bid advertisements, survey work, water/sewer testing fees, electrical inspection and testing fees, CDPHE permit fees, and attorney's fees.
     - **3.2.2.** "Construction/Improvement of Public Roadways" means labor and materials costs, bond and insurance costs, bid advertisements, attorney's fees, and right-of-way acquisition costs.
   - **3.3.** "Substantial Completion" means the Work is sufficiently complete in accordance with the Grant so it can be utilized for its intended purpose without undue interference.
4. **DELIVERABLES**
   - **4.1. Outcome.** The final outcome of this Grant is a newly reconstructed Denver Ave roadway within the City of Fort Lupton.
   - **4.2. Service Area.** The performance of the Work described within this Grant shall be located in City of Fort Lupton, Colorado, within Weld County.
   - **4.3. Performance Measures.** Grantee shall comply with the following performance measures:

Milestone/Performance Measure/Grantee will:	**By:**
Put Project out to bid.	Within 120 days after the Effective Date of this Grant Agreement.

Provide DOLA with Project Timeline	Within 90 days after the Effective Date of this Grant Agreement.
Submit Quarterly Pay Requests	**See §4.5.2 below**
Submit Quarterly Status Reports	**See §4.5.2 below**
Submit Project Final Report	February 28, 2018

4.4. Budget Line Item Adjustments.

4.4.1. Grantee may request that DOLA move Grant Funds between and among budget line items, so long as the total amount of Grant Funds remains unchanged. To make such budget line item changes, DOLA will use an Option Letter (**Exhibit G**).

4.4.2. Grantee may increase or decrease the amount of any one or any combination of budget line items of "Other Funds" as described in **§6.1**, or move funds between and among budget line items of such "Other Funds," so long as the total amount of such "Other Funds" is not less than the amount set forth in **§6.1** below. Grantee may increase the Total Project Cost with "Other Funds" and such change does not require an amendment. DOLA will verify the Grantee's contribution of "Other Funds" and compliance with this section at Project Closeout.

4.5. Quarterly Pay Request and Status Reports. Beginning 30 days after the end of the first quarter following execution of this Grant and for each quarter thereafter until termination of this Grant, Grantee shall submit Pay Requests and Status Reports using a form provided by the State. The State shall pay the Grantee for actual expenditures made in the performance of this Grant based on the submission of statements in the format prescribed by the State. The Grantee shall submit Pay Requests setting forth a detailed description and provide documentation of the amounts and types of reimbursable expenses. Pay Requests and Status Reports are due within 30 days of the end of the quarter but may be submitted more frequently at the discretion of the Grantee.

4.5.1. For quarters in which there are no expenditures to reimburse, Grantee shall indicate zero (0) in the request and specify status of the Work in the Status Report. The report will contain an update of expenditure of funds by line item as per **§6.2** of this **Exhibit B** Scope of Project as well as a projection of all Work expected to be accomplished in the following quarter, including an estimate of Grant Funds to be expended.

4.5.2. Specific submittal dates.

Quarter	Year	Due Date	Pay Request	Status Report
3rd (Jul-Sep)	**2016**	**October 30, 2016**	**Yes**	**Yes**
4th (Oct-Dec)	**2016**	**January 30, 2017**	**Yes**	**Yes**
1st (Jan-Mar)	**2017**	**April 30, 2017**	**Yes**	**Yes**
2nd (Apr-Jun)	**2017**	**July 30, 2017**	**Yes**	**Yes**
3rd (Jul-Sep)	**2017**	**October 30, 2017**	**Yes**	**Yes**
4th (Oct-Dec)	**2017**	**January 30, 2017**	**Yes**	**Yes**

4.6. DOLA Acknowledgment. The Grantee agrees to acknowledge the Colorado Department of Local Affairs in any and all materials or events designed to promote or educate the public about the Work and the Project, including but not limited to: press releases, newspaper articles, op-ed pieces, press conferences, presentations and brochures/pamphlets.

5. PERSONNEL

5.1. Replacement. Grantee shall immediately notify the State if any key personnel specified in **§5** of this **Exhibit B** cease to serve. Provided there is a good-faith reason for the change, if Grantee wishes to

replace its key personnel, it shall notify the State and seek its approval, which shall be at the State 's sole discretion, as the State executed this Grant in part reliance on Grantee's representations regarding key personnel. Such notice shall specify why the change is necessary, who the proposed replacement is, what their qualifications are, and when the change will take effect. Anytime key personnel cease to serve, the State, in its sole discretion, may direct Grantee to suspend Work until such time as replacements are approved. All notices sent under this subsection shall be sent in accordance with **§16** of the Grant.

5.2. Responsible Administrator. Grantee's performance hereunder shall be under the direct supervision of **Aaron Herrera, Assistant City Manager (aherrera@fortlupton.org)**, an employee or agent of Grantee, who is hereby designated as the responsible administrator of this Project. Such administrator shall be updated through the approval process in **§5.1**. If this person is an agent of the Grantee, such person must have signature authority to bind the Grantee and must provide evidence of such authority.

5.3. Other Key Personnel. **Claud Hanes, City Manager (chanes@fortlupton.org).** Such key personnel shall be updated through the approval process in **§5.1**.

5.4. DLG Regional Manager: **Don Sandoval, (970) 679-4501, (don.sandoval@state.co.us)**

5.5. DLG Regional Assistant: **Robert Thompson, (970) 679-4503, (robert.thompson@state.co.us)**

6. FUNDING

The State provided funds shall be limited to the amount specified under the "Grant Funds" column of **§6.2**, Budget, below.

6.1. Matching/Other Funds. Grantee shall provide at least $750,000.00 of the Total Project Cost as documented by Grantee and verified by DOLA at Project Closeout. Initial estimates of Grantee's contribution are noted in the "Other Funds" column of **§6.2** below. Increases to Grantee's contribution to Total Project Cost do not require modification of this Grant Agreement and/or **Exhibit B**.

6.2. Budget

Budget Line Item(s)	Total Cost	Grant Funds	Other Funds	Other Funds Source
Architectural/Engineering Services	$141,312	$0	$141,312	Grantee
Construction/Improvement of Public Roadways	$1,358,688	$750,000	$608,688	Grantee
Total	**$1,500,000**	**$750,000**	**$750,000**	

7. PAYMENT

Payments shall be made in accordance with this section and the provisions set forth in **§7** of the Grant.

7.1. Payment Schedule. If Work is subcontracted or subgranted and such Subcontractors and/or Subgrantees are not previously paid, Grantee shall disburse Grant Funds received from the State to such Subcontractor or Subgrantee within fifteen days of receipt. Excess funds shall be returned to DOLA.

Payment	Amount	
Interim Payment(s)	$712,500	Paid upon receipt of actual expense documentation and written Pay Requests from the Grantee for reimbursement of eligible approved expenses.
Final Payment	$37,500	Paid upon Substantial Completion of the Project (as determined by the State in its sole discretion), provided that the Grantee has submitted, and DOLA has accepted, all required reports.
Total	**$750,000**	

7.2. Interest. Grantee or Subgrantee may keep interest earned from Grant Funds up to $100 per year for administrative expenses.

8. ADMINISTRATIVE REQUIREMENTS

8.1. Reporting. Grantee shall submit the following reports to DOLA using the State-provided forms. DOLA may withhold payment(s) if such reports are not submitted timely.

8.1.1. Quarterly Pay Request and Status Reports. Quarterly Pay Requests shall be submitted to DOLA in accordance with **§4.6** of this **Exhibit B**.

8.1.2. Final Reports. Within 90 days after the completion of the Project, Grantee shall submit the final Pay Request and Status Report to DOLA.

8.2. Monitoring. DOLA shall monitor this Work on an as-needed basis. DOLA may choose to audit the records for activities performed under this Grant. Grantee shall maintain a complete file of all records, documents, communications, notes and other written materials or electronic media, files or communications, which pertain in any manner to the operation of activities undertaken pursuant to an executed Grant. Such books and records shall contain documentation of the Grantee's pertinent activity under this Grant in accordance with Generally Accepted Accounting Principles.

8.2.1. Subgrantee/Subcontractor. Grantee shall monitor its Subgrantees and/or Subcontractors, if any, during the term of this Grant. Results of such monitoring shall be documented by Grantee and maintained on file.

8.3. Bonds. If Project includes construction or facility improvements, Grantee and/or its contractor (or subcontractors) performing such work shall secure the bonds hereunder from companies holding certificates of authority as acceptable sureties pursuant to 31 CFR Part 223 and are authorized to do business in Colorado.

8.3.1. Bid Bond. A bid guarantee from each bidder equivalent to 5 percent of the bid price. The "bid guarantee" shall consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder shall, upon acceptance of his bid, execute such contractual documents as may be required within the time specified.

8.3.2. Performance Bond. A performance bond on the part of the contractor for 100 percent of the contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

8.3.3. Payment Bond. A payment bond on the part of the contractor for 100 percent of the contract price. A "payment bond" is one executed in connection with a contract to assure payment as required by statute of all persons supplying labor and material in the execution of the work provided for in the contract.

8.3.4. Substitution. The bonding requirements in this **§8.3** may be waived in lieu of an irrevocable letter of credit if the price is less than $50,000.

9. CONSTRUCTION/RENOVATION.

The following subsections shall apply to construction and/or renovation related projects/activities:

9.1. Plans & Specifications. Construction plans and specifications shall be drawn up by a qualified engineer or architect licensed in the State of Colorado, or pre-engineered in accordance with Colorado law, and hired by the Grantee through a competitive selection process.

9.2. Procurement. A construction contract shall be awarded to a qualified construction firm through a formal selection process with the Grantee being obligated to award the construction contract to the lowest responsive, responsible bidder meeting the Grantee's specifications.

9.3. Subcontracts. Copies of any and all contracts entered into by the Grantee in order to accomplish this Project shall be submitted to DOLA upon request, and any and all contracts entered into by the Grantee or any of its Subcontractors shall comply with all applicable federal and state laws and shall be governed by the laws of the State of Colorado.

9.4. Standards. Grantee, Subgrantees and Subcontractors shall comply with all applicable statutory design and construction standards and procedures that may be required, including the standards required by Colorado Department of Public Health and Environment, and shall provide the State with documentation of such compliance.

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EXHIBIT G – Sample OPTION LETTER

OPTION LETTER ____

Date:	Original Grant Agreement CMS #:		CMS Routing #

1) **OPTIONS:** Choose all applicable options listed in §1 and in §2
   - ☐ a. Option to extend *(use this option for Extension of Time)*
   - ☐ b. Change in the maximum Grant Funds dollar amount within current term *(use this option for an Increase or Decrease in Grant Funds, including Supplemental funding awards)*
   - ☐ c. Budget Line Item Adjustment(s) – reallocation of awarded Grant Funds to Budget Line Item(s) *(use this Option to redistribute existing Grant Funds between budget lines)*

2) **REQUIRED PROVISIONS**. All Option Letters shall contain the appropriate provisions set forth below:

a. For use with Option 1(a): In accordance with **Section 5(A)** of the original Grant Agreement between the State of Colorado, acting by and through the Colorado Department of Local Affairs, and **Grantee's Name**, the State hereby exercises its option for an additional term beginning **Insert start date** and ending on **Insert ending date**. Tables in **Sections 4.3 and 4.5.2** of **Exhibit B** are deleted and replaced with the following:

Milestone/Performance Measure	By:
Put Project out to bid.	Within __ days of the Effective Date of this Grant Agreement.
Award and finalize subcontract(s) and/or sub-grant(s).	[give target date]
Provide DOLA with Project Timeline	Within __ days of the Effective Date of the subcontract(s).
Contractor mobilization/begin Work.	Within __ days of the Effective Date of the subcontract(s).
On-site walk through inspection(s) of Work Site(s)	[give target date]
Submit Quarterly Pay Requests	**See §4.5.2 below**
Submit Quarterly Status Reports	**See §4.5.2 below**
Submit Project Final Report	[give date certain]

Quarter	Year	Due Date	Pay Request	Status Report
1st (Jan-Mar)	2016	April 30, 2016	Yes	Yes
2nd (Apr-Jun)	2016	July 30, 2016	Yes	Yes
3rd (Jul-Sep)	2016	October 30, 2016	Yes	Yes
4th (Oct-Dec)	2016	January 30, 2017	Yes	Yes
1st (Jan-Mar)	2017	April 30, 2016	Yes	Yes

b. For use with Option 1(b): In accordance with **Section 7(A)** of the original Grant Agreement between the State of Colorado, acting by and through the Colorado Department of Local Affairs, and **Grantee's Name**, the State hereby exercises its option to increase/decrease Grant Funds awarded for this Project in an amount equal to **amt of increase or (decrease)**, from **beginning dollar amt** to **ending dollar amt**. The maximum amount in **Section 7.A.** of the main body of the Grant is hereby changed to **ending dollar amt**. The Budget table in **Section 6.2** and the Payment Schedule in **Section 7.1**, both of **Exhibit B**, are deleted and replaced with the following:

Budget Line Item(s)	Total Cost	Grant Funds	Other Funds	Other Funds Source
Architectural/Engineering Services	$ 0.00			Grantee
Building or Facility Construction				Grantee
Total	**$ 0.00**	**$ 0.00**	**$ 0.00**	

Payment	Amount	
Interim Payment(s)		Paid upon receipt of actual expense documentation and written Pay Requests from the Grantee for reimbursement of eligible approved expenses.
Final Payment		Paid upon Substantial Completion of the Project (as determined by the State in its sole discretion), provided that the Grantee has submitted, and DOLA has accepted, all required reports.
Total		

c. **For use with Option 1(c):** In accordance with **Section 6.2** of **Exhibit B** of the original Grant Agreement between the State of Colorado, acting by and through the Colorado Department of Local Affairs, and **Grantee's Name**, the State hereby exercises its option to re-allocate awarded Grant Funds within the Project Budget. The Budget table in **Section 6.2** of **Exhibit B** is deleted and replaced with the following:

Budget Line Item(s)	Total Cost	Grant Funds	Other Funds	Other Funds Source
Architectural/Engineering Services	$ 0.00			Grantee
Building or Facility Construction				Grantee
Total	**$ 0.00**	**$ 0.00**	**$ 0.00**	

3) **Effective Date**. The effective date of this Option Letter is upon approval of the State Controller or _____, whichever is later.

STATE OF COLORADO
John W. Hickenlooper GOVERNOR
Colorado Department of Local Affairs

By: _____
Irv Halter, Executive Director

Date: _____

ALL CONTRACTS REQUIRE APPROVAL BY THE STATE CONTROLLER

CRS §24-30-202 requires the State Controller to approve all State contracts. This Option Letter is not valid until signed and dated below by the State Controller or delegate. Contractor is not authorized to begin performance until such time. If Contractor begins performing prior thereto, the State of Colorado is not obligated to pay Contractor for such performance or for any goods and/or services provided hereunder.

STATE CONTROLLER
Robert Jaros, CPA, MBA, JD

By: _____
Janet Miks, CPA, Controller Delegate

Date: _____

CITY OF FORT LUPTON
CITY COUNCIL

Tommy Holton, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Chris Cross, Ward 3

David Crespin, Ward 1
Zoe A. Stieber, Ward 2
Bob McWilliams, Ward 3

CITY OF Fort Lupton EST 1836
COME PAINT YOUR FUTURE WITH US

AM 2016-158

APPROVING RESOLUTION 2016Rxxx RATIFYING THE MAYOR'S APPOINTMENT OF THE ATTACHED LIST OF CANDIDATES (EXHIBIT "A") TO THE CORRESPONDING ADVISORY COMMITTEES FOR A TERM BEGINNING NOVEMBER 7, 2016 AND ENDING DECEMBER 31, 2017

I. **Agenda Date:** Council Meeting – November 7, 2016

II. **Attachments:**
a. Resolution 2016Rxx
b. Advisory Committee Application

III. **Summary Statement:**

Terms of all members of all advisory committees shall commence on January 1st following every regular municipal election and continue until December 31st following the next regular municipal election. The newly elected Mayor shall appoint members to all advisory committees to be ratified by the City Council and members so appointed shall serve at the pleasure of the mayor. As a result, letters with re-appointment applications (attached) were sent to current committee members advising them that their terms will expire December 31, 2017. It was requested that they submit a new application as to their desire regarding continued membership. In addition, a number of other individuals have also submitted applications for consideration.

All voting members of advisory committees shall live within one of the following zones (school district, fire district, or Fort Lupton zip code.

IV. **Fiscal Note:** None noted.

Finance Department Use Only

Finance Director

V. **Submitted by:**

City Clerk

VI. **Approved for Presentation:**

City Administrator

VII. **Certification of Council Approval:**

City Clerk — Date

VIII. Detail of Issue/Request:

As indicated, letters and applications were sent to all existing advisory committee members during the month of November. In addition, vacancies for committee appointments have been solicited at City Council meetings, workshops, Channel 16, the City web page, public postings, in the Mayor's monthly newsletter, and the media.

Exhibit "A" represents a list of the active general advisory committees with the proposed member list. Current policy establishes that, "Newly elected Mayors shall appoint members to all advisory committees to be ratified by the City Council and members so appointed shall serve at the pleasure of the Mayor."

It is anticipated that another round of appointments may need to occur in the future.

IX. Legal/Political Considerations:

None noted.

X. Alternatives/Options:

Continue to solicit for applications through announcements at City Council meetings and workshops, Channel 16, the City web page, the Mayor's monthly newsletter, and the media for vacancies that remain unfilled.

XI. Financial Considerations:

None noted.

XII. Staff Recommendation:

Approve the proposed resolution

RESOLUTION 2016Rxxx

A RESOLUTION OF THE CITY COUNCIL OF FORT LUPTON RATIFYING THE MAYOR'S APPOINTMENT OF THE ATTACHED LIST OF CANDIDATES (EXHIBIT "A") TO THE CORRESPONDING ADVISORY COMMITTEES FOR A TERM BEGINNING NOVEMBER 7, 2016 AND ENDING DECEMBER 31, 2017.

WHEREAS, each candidate has submitted a request in the form of an application for the Mayor to consider appointment or reappointment to committee positions allowing them the opportunity to serve the City of Fort Lupton.

NOW THEREFORE BE IT RESOLVED that the Fort Lupton City Council hereby ratifies the Mayor's appointment of the attached list of candidates to the corresponding Advisory Committees for a term beginning November 7, 2016 and ending December 31, 2017.

APPROVED AND PASSED BY A MAJORITY VOTE OF THOSE ELECTED TO THE CITY COUNCIL THIS 7th DAY OF NOVEMBER 2016.

City of Fort Lupton, Colorado

_____
Tommy Holton, Mayor

Attest:

_____
Nanette S. Fornof, MMC
City Clerk

Approved as to form:

_____
Andy Ausmus, City Attorney

EXHIBIT "A"
Advisory Committee Appointments

Public Safety Committee		
Name	***Term***	***Position***
Robert Mealy	11/7/2016 – 12/31/2017	

RECEIVED
OCT - 3 2016
BY:

CITY OF Fort Lupton EST 1876
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CITY OF FORT LUPTON APPLICATION FOR CITIZEN ADVISORY BOARD/ COMMISSION APPOINTMENT

City Boards and Commissions play an important role in forming City policy. To be considered as a candidate, please complete this application and return it to the City Clerk's Office at 130 South McKinley Avenue, Fort Lupton, CO 80621; Phone: 720-466-6101. The City Clerk will submit your application to the Mayor for review. Thank you for your interest!

Date: 10-3-16 **City of Fort Lupton Resident? Yes** ☑ **No** ☐

Name: ROBERT MEALY **Home Phone:** 970-674-5776
Address: 1992 SILVERADO LN **Cell Phone:** 970-402-2373
FORT LUPTON, CO. 80621 **Work Phone:**
Occupation: RETIRED **e-mail:** rmealy@q.com

Board or Commission you are applying for: (Please use a separate application if applying for more than one.)
PUBLIC SAFETY - SHOOTING RANGE

1. **Please list your work experience, community involvement, and other interests which apply to this Board or Commission:** (Information may be continued on back of form or attached.)
CITY GOLF ADVISORY COMMITTEE
9 YRS. SECURITY OFFICER (ARMED) IN LAS VEGAS NV.

2. **List any licenses, certificates of special training, or education which apply to this Board or Commission:**
TRAINING IN "USE OF FORCE", FIREARMS USE AND SECURITY, FIRST AID (BASIC), USE OF A.E.D.

3. **Briefly describe the reasons for your interest in serving on this City Board or Commission:**
WOULD LIKE TO HAVE AND USE A SHOOTING FACILITY IN OR NEAR FT. LUPTON.

4. **Please list supporting documents if not continued on other side:**

Signature of Applicant: by signing this application I agree that I have received a copy of the City Council Code of Ethics and Conduct.

Robert L. Mealy

OK
RSB

CITY OF FORT LUPTON
CITY COUNCIL

Tommy Holton, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Chris Cross, Ward 3

David Crespin, Ward 1
Zoe A. Stieber, Ward 2
Bob McWilliams, Ward 3

CITY OF Fort Lupton EST 1836
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AM 2016-159

APPROVAL TO AUTHORIZE THE MAYOR TO SIGN A RESOLUTION ADOPTING THE WELD COUNTY MULTI-JURSDICTIONAL HAZARD MITIGATION PLAN

I. **Agenda Date:** Council Meeting – November 7, 2016

II. **Attachments:**
a. Exhibit 1: Adoption Resolution
b. Weld County Multi-Jurisdictional Hazard Mitigation Plan

III. **Summary Statement:**

Authorize the mayor to sign the Weld County Multi-Jurisdictional Hazard Mitigation Plan.

IV. **Submitted by:** _____ Chief of Police

V. **Finance Reviewed** _____ Finance Director

VI. **Approved for Presentation:** _____ City Administrator

VII. **Attorney Reviewed** _____ Approved _____ Pending Approval

VIII. **Certification of Council Approval:** _____ City Clerk _____ Date

IX. Detail of Issue/Request:

This is a Multi-Jurisdictional hazard mitigation plan developed in cooperation with several jurisdictions within the county outlining the duties and responsibilities of individual jurisdictions during emergency situations. This plan fulfills the FEMA requirements for C.F.R. 201.6 and has been approved by the Federal Emergency Management Administration.

X. Legal/Political Considerations:

Participation in this plan enables the city to better serve its citizens in emergency situations, it coordinates emergency responses to those situations, and enhances the federal response to local emergencies.

XI. Alternatives/Options:

1. *Direct the mayor to sign.*
2. *Direct the mayor not to sign.*

XII. Financial Considerations:

There is no financial contribution for this plan.

XIII. Staff Recommendation:

Staff recommends signing this resolution and adopting the plan.

RESOLUTION 2016Rxxx

WHEREAS, The City of Fort Lupton, with the assistance from Weld County has gathered information and prepared the Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, the Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan has been prepared in accordance with FEMA requirements at 44 C.F.R. 201.6; and,

WHEREAS, the City of Fort Lupton is a local unit of government that has afforded the citizens an opportunity to comment and provide input in the Plan and the actions in the Plan; and

WHEREAS, the City of Fort Lupton has reviewed the Plan and affirms that the Plan will be updated no less than every five years;

NOW THEREFORE, BE IT RESOLVED by the Fort Lupton City Council that the City of Fort Lupton adopts the Weld County Multi-Jurisdictional Hazard Mitigation Plan, as approved by FEMA, as this jurisdiction's Multi-Hazard Mitigation Plan, and resolves to execute the actions in the Plan.

APPROVED AND PASSED BY A MAJORITY VOTE OF THOSE ELECTED TO THE CITY COUNCIL THIS 15th DAY OF AUGUST 2016.

City of Fort Lupton

_____
Tommy Holton, Mayor

Attest:

_____
Nanette S. Fornof, MMC
City Clerk

Approved as to form:

_____
Andy Ausmus, City Attorney

WELD COUNTY 2016 MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

EMERGENCY MANAGEMENT

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EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

Table of Contents

EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

Tables

Figures

1 Certification of Annual Plan Review Meetings

The Weld County Hazard Mitigation Planning Committee (HMPC) has agreed to review the contents of this Hazard Mitigation Plan annually. See Chapter 7 of this Plan for further details regarding the following table. The following table hereby certifies this review.

YEAR	DATE	SIGNATURE
2016		
2017		
2018		
2019		
2020		

2 Executive Summary

In July 2015 a diverse group of stakeholders came together to update the Weld County Multi-Jurisdictional Hazard Mitigation Plan. This is the first time Weld County developed a Hazard Mitigation Plan on its own and the major goals of the planning effort were to re-evaluate local risk and vulnerability to hazards, to develop cross-jurisdictional partnerships and public outreach processes, and to develop a new, robust, county-specific hazard mitigation strategy.

In September of 2013 Weld County experienced the most devastating flood in the county's history, resulting in damages to homes, businesses, public buildings and infrastructure. The flood event damaged over 2,000 residential parcels in Weld County, as well as over 1,400 agricultural and over 300 commercial parcels. One Hundred Sixty Weld County roads were under water or affected in some way by the flood and over 20 municipalities within Weld County were impacted by the event. Due to the flood event, a key priority of the county and its local jurisdictions was to update the hazard profile included in the existing Northeast Colorado Regional Multi-Jurisdictional Hazard Mitigation Plan with improved floodplain information that was collected after the 2013 floods. One of the long-term goals of the updated plan is to guide development away from high hazard areas and to use improved hazard mapping products to better communicate risk to local residents and stakeholders.

The Weld County Office of Emergency Management (Weld OEM), in coordination with other county departments, assumed the lead role in the development of the 2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan. In order to ensure a meaningful planning process, Weld OEM actively encouraged participation from all jurisdictions within the county. Weld OEM fostered participation by prioritizing continuous contact (for example, by sending out regular email reminders and following up with phone calls to discuss action items and challenges). Weld OEM also met one-on-one with local jurisdictions to discuss the results of the risk assessment, to identify feasible mitigation actions, and to help with action prioritization. Developing ongoing relationships and collaboration related to the hazard mitigation plan remains a high priority for Weld County. Moving forward, the Weld County Hazard Mitigation Planning Committee will build off of the relationships developed during this planning process and will continue to play an active role in annual plan reviews and resilience-building efforts

3 The Planning Process

This section of the Plan describes the mitigation planning process undertaken by Weld County and participating jurisdictions in the preparation of this Multi-Jurisdictional Hazard Mitigation Plan. This chapter consists of the following subsections:

- Background
- Hazard Mitigation Planning
- Local Methodology and Update Process
- The Planning Team
- Planning Meetings and Documentation
- Public and Stakeholder Participation
- Multi-Jurisdictional Planning and Participation
- Existing Planning Mechanisms
- Community Profiles

3.1 Background

Emergency Management is the discipline of identifying, managing, and avoiding risks. It involves preparing for a disaster before it occurs, supporting those affected by disasters, and planning and rebuilding after a natural or human-caused hazard event. Emergency Management is a cyclical, dynamic process by which individuals, groups, and communities attempt to manage hazards in an effort to avoid or reduce the impact of disasters.

A critical piece of the Emergency Management Cycle is Hazard Mitigation Planning. Hazard Mitigation Planning is a process by which communities identify their risks and vulnerabilities and outline policies, capabilities, activities, and tools necessary to implement successful and sustainable mitigation strategies.

Why is mitigation planning important? Mitigation planning offers many benefits, including:

- Protection of lives and property;
- Reduction of economic losses;
- Quick and effective recovery following disasters;
- Reduction of future vulnerability through smart development and post-disaster recovery and reconstruction;
- Enhanced coordination within and across participating jurisdictions;
- Efficient receipt of pre-disaster and post-disaster grant funding; and
- Development of a firm commitment to improving community health, safety, and resilience.

Mitigation planning is meant to result in long-term and recurring local benefits by breaking the repetitive cycle of disaster loss. A core assumption of hazard mitigation is that pre-disaster investments significantly reduce the demand for post-disaster assistance by lessening the need for emergency response, repair, recovery, and reconstruction. Furthermore, mitigation practices enable local residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the community economy back on track sooner and with less interruption.

In practice, the benefits of mitigation planning go beyond reducing hazard vulnerability. For example, strategies such as the acquisition or regulation of land in known hazard areas can help achieve multiple

community goals, including preserving open space, improving water quality, maintaining environmental health, and enhancing recreational opportunities. Thus, it is vitally important that local mitigation planning processes are integrated with other concurrent local planning efforts. Moreover, any proposed mitigation strategies must take into account other existing community goals or initiatives that will help complement or hinder their future implementation. Weld County and its municipalities have embraced this approach, identifying multiple opportunities to link the Plan with pre-existing programs, policies, plans, and initiatives.

During the last two decades, the approach to the emergency management cycle has evolved considerably. A new emphasis has been placed on planning for disasters before they occur as a complement to effective response and recovery. As a result, hazard mitigation has gained increasing prominence as a critical part of emergency management. By implementing strategic hazard mitigation projects, local and regional risks can be proactively and systematically reduced over time.

This 2016 Plan is the result of continuing work by the citizens of Weld County to update a regional pre-disaster multi-hazard mitigation plan. Not only will this Plan continue to guide the county towards greater disaster resistance, but will also respect the character and needs of local jurisdictions and their residents.

PURPOSE

Weld County adopted the Northeast Colorado Regional Hazard Mitigation Plan in September, 2009. The 2009 Plan provided momentum for making homes, businesses, and communities as safe as possible against the impacts of floods, tornadoes, winter weather, and other natural hazards. It also assessed the effectiveness of prior and current programs and activities in the region and identified shortfalls; mitigation measures were further developed to help reduce the region's exposure to emerging natural hazards.

Weld County has remained dedicated in continuing the work started in the 2009 Northeast Colorado Regional Hazard Mitigation Plan and has elected to develop a county-scale hazard mitigation plan. The purpose of the 2016 Weld County Multi-Jurisdiction Hazard Mitigation Plan is:

- To protect life and property by reducing the potential for future damages and economic losses that result from natural hazards;
- To qualify for additional grant funding, in both the pre-disaster and post-disaster environment;
- To provide quick recovery and redevelopment following future disasters;
- To integrate other existing and associated local planning documents;
- To demonstrate a firm local commitment to hazard mitigation principles;
- To comply with state and federal legislative requirements tied to local hazard mitigation planning; and
- To increase local and regional resilience to hazards.

SCOPE

This 2016 Plan has been prepared to meet requirements set forth by the Federal Emergency Management Agency (FEMA) and the Colorado Division of Homeland Security and Emergency Management (DHSEM) in order for Weld County to be eligible for funding and technical assistance from state and federal hazard mitigation programs. It will continue to be updated and maintained to continually address those natural hazards determined to be of high and moderate risk as defined by the updated results of the local hazard,

risk, and vulnerability summary. Other natural hazards will continue to be evaluated during future updates of the Plan in order to determine if they warrant additional attention, including the development of specific mitigation measures intended to reduce their impact. This Plan will be updated and FEMA-approved within its five-year expiration date.

AUTHORITY

This Hazard Mitigation Plan has been adopted by Weld County and its participating jurisdictions in accordance with the authority granted to counties and municipalities by the State of Colorado. This Plan was developed in accordance with current state and federal rules and regulations governing local hazard mitigation plans. The Plan shall be monitored and updated on a routine basis to maintain compliance with the following legislation and guidance:

- Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C., Section 322, Mitigation Planning, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390) and by FEMA's Interim Final Rule published in the Federal Register on February 26, 2002, at 44 CFR Part 201

The following Federal Emergency Management Agency (FEMA) guides and reference documents were used to prepare this document:

- FEMA. 386-1: Getting Started. September 2002.
- FEMA. 386-2: Understanding Your Risks: Identifying Hazards and Estimating Losses. August 2001.
- FEMA. 386-3: Developing the Mitigation Plan. April 2003.
- FEMA. 386-4: Bringing the Plan to Life. August 2003.
- FEMA. 386-5: Using Benefit-Cost Review in Mitigation Planning. May 2007.
- FEMA. 386-6: Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning. May 2005.
- FEMA. 386-7: Integrating Manmade Hazards into Mitigation Planning. September 2003.
- FEMA. 386-8: Multi-Municipality Mitigation Planning. August 2006.
- FEMA. Coordinators Manual, National Flood Insurance Program Community Rating System. 2007.
- FEMA. 386-9: Using the Hazard Mitigation Plan to Prepare Successful Mitigation Projects. August 2008.
- FEMA. Local Mitigation Plan Review Guide. October 1, 2011
- FEMA. Local Multi-Hazard Mitigation Planning Handbook. March, 2013.

3.2 Hazard Mitigation Planning

Local hazard mitigation planning is the process of organizing community resources, identifying and assessing hazard risks, and determining how to best minimize or manage those risks. The process results in a hazard mitigation plan that identifies specific mitigation actions, each designed to achieve both short term planning objectives and a long-term community vision. To ensure the timely implementation of each mitigation action, responsibility is assigned to a specific individual, department, or agency along with a schedule for its implementation. Plan maintenance procedures are established to help implement, evaluate, and enhance the Plan as necessary. Developing clear plan maintenance procedures ensures that Weld County's Multi-Jurisdiction Hazard Mitigation Plan remains a current, dynamic, and effective planning tool over time.

3.3 Local Methodology and Update Process

This updated Plan contains a comprehensive narrative that describes the planning process. All municipalities were notified of the participation requirements related to the adoption of the plan and the formation of the Hazard Mitigation Planning Committee (HMPC). Numerous planning meetings were held to ensure that all information contained in the plan is correct, and that the input provided by participating agencies, organizations, and the public has been included. Throughout the planning process, the Weld County HMPC reviewed and analyzed each section of the plan. In preparing the updated Plan, documentation indicates that the planning team utilized a multi-jurisdictional planning process consistent with the one recommended by FEMA (Publication Series 386).

Development of the 2009 Northeast Colorado Regional Hazard Mitigation Plan was a collaborative effort on the part of the Northeast Colorado Emergency Management Association, a consortium of ten northeast Colorado counties, including Weld County. Originally developed in 2004, the 2009 version of the plan was the first update of the required 5 year plan update. In 2009, the planning process was led by two distinct planning teams: The Multi-County Planning Committee (MCPC) – a coordinating planning team made up of all 10 County Emergency Managers and select state and federal agency representatives, and 10 local government teams (County Planning Subcommittees) – one for each participating county. Every local government and adoption-eligible entity in each county was invited to participate.

The following entities participated in the 2009 planning process through their participation in the Weld County Planning Subcommittee.

Participating Jurisdictions in 2009		Participating Stakeholders in 2009
Weld County	Town of LaSalle	Centennial Critical Incident Stress Management
City of Dacono	Town of Mead	AIMS Community College
City of Evans	Town of Milliken	Union Colony Fire Rescue Authority (UCFRA) – Greeley
City of Fort Lupton	Town of New Raymer	Colorado Division of Emergency Management
City of Greeley	Town of Nunn	Loup Reservoir Company
Town of Ault	Town of Pierce	BBWI – Fort St. Vrain Generating Station
Town of Firestone	Town of Platteville	South Weld Victim Services
Town of Frederick	Town of Severance	
Town of Garden City	Town of Windsor	
Town of Gilcrest	Weld County RE-4, RE-6, and RE-8 School Districts	
Town of Grover	Platte Valley Schools	
Town of Hudson	Platte Valley Fire District	
Town of Kersey		

At the start of the 2009 Plan update process, the MCPC developed a plan for public involvement designed to provide opportunities for the public and stakeholders to comment on the plan at all stages of its development. Because of the large size and diversity of the Northern Colorado Emergency Management planning region, the MCPC also relied greatly on the County Planning Subcommittees to inform and gather input from the public.

The 2009 Northeast Colorado Regional Hazard Mitigation Plan and the current 2013 State of Colorado Natural Hazards Mitigation Plan were reviewed for incorporation into the 2016 Weld County Multi-

Jurisdictional Hazard Mitigation Plan. Additionally, the following documents were reviewed and incorporated into the 2016 plan update as appropriate:

- 2013 Colorado Natural Hazards Mitigation Plan
- 2009 Weld County Water District Water Conservation Plan
- 2013 Colorado Drought Mitigation and Response Plan
- 2014 State of Colorado Action Plan for Disaster Recovery
- City of Greeley 2060 Comprehensive Plan
- 2014 City of Evans Riverside Master Plan
- 2010 City of Evans Comprehensive Plan
- 2012 Town of Gilcrest Comprehensive Plan Update
- Town of Ault Comprehensive Plan
- City of Dacono Comprehensive Plan (2015 update in process)
- 2013 Firestone Master Plan
- Fort Lupton Comprehensive Plan
- 2007 Town of Hudson Comprehensive Plan
- 2005 Town of Erie Comprehensive Plan
- 2005 Keenesburg Comprehensive Plan
- 2006 Town of Windsor Comprehensive Plan
- 2012 Town of Eaton Comprehensive Plan
- 2007/2013 Fort Lupton Comprehensive Plan
- Town Frederick Comprehensive Plan (2015 update in process)
- 2007 Johnstown Comprehensive Plan
- Town of Kersey Comprehensive Plan
- 2009 Town of Mead Comprehensive Plan
- Town of Milliken Comprehensive Plan (2015 update in process)
- 2010 Town of Platteville Comprehensive Plan

The Weld County Planning Element of the 2009 Northeast Colorado Regional Hazard Mitigation Plan addressed sixteen (16) natural hazards. Each hazard was assessed by previous occurrences, vulnerability, and exposure to County and municipal assets, and potential loss estimates. In addition, the 2009 Plan defined those hazards that were considered to have the highest probability of occurrence. The 2016 update to the 2009 Plan was initiated in May 2015. Michael Baker International (located in Lakewood, Colorado) provided planning support and guidance to Weld County throughout the Plan update process. The planning process used for the 2016 Plan update was based on Section 322 of the Disaster Mitigation Act of 2000 and supporting guidance developed by FEMA. The planning process followed the steps outlined below:

- Conduct kickoff meeting with the Weld County Hazard Mitigation Planning Committee (HMPC)
- Conduct a 5-year Plan review

- Conduct a Hazard Risk Factor exercise
- Establish a Weld County Hazard Mitigation Planning Committee (HMPC) made up of local stakeholders and subject matter experts
- Review and update the local hazard, risk, and vulnerability summary
- Determine capability for the county and each municipality
- Update the mitigation strategy
- Update the Plan maintenance procedures
- Complete a draft plan for review by the Weld County HMPC
- Advertise opportunity/hold public meeting for comment on final draft
- Provide final draft to DHSEM for review
- Provide final draft to FEMA for review
- Present Plan to municipalities for adoption
- Present Plan to Weld County for adoption

Each of the planning steps described above resulted in key products and outcomes that collectively make up the Multi-Jurisdiction Hazard Mitigation Plan. These work elements are further discussed below for introductory purposes.

The County and Community Profiles, located in Chapters 4 and Appendix B, describe the general makeup of Weld County and its municipalities (respectively), including prevalent geographic, demographic, and economic characteristics. This baseline information provides a snapshot of the countywide planning area and thereby assists participating officials in recognizing those social, environmental, and economic factors that ultimately play a role in determining community vulnerability to natural hazards.

The hazard Risk Assessment (RA), found in Chapter 5, focuses on three elements for each identified hazard: Hazard Identification/Profile, Hazard Analysis and a Vulnerability/Loss Assessment. Together, these elements serve to identify, analyze, and assess Weld County's overall risk to natural and human-caused hazards. The RA builds on available historical data from previous occurrences, establishes hazard-by-hazard profiles, and culminates in a hazard risk priority or ranking based on conclusions about the frequency of occurrence, potential impact, spatial extent, warning time, and duration of each hazard. FEMA's Hazus loss estimation software was also used in evaluating known flood and earthquake risks according to their relative long-term cost, measured in expected damages. The RA is designed to assist communities in seeking the most appropriate mitigation actions to pursue and implement by focusing their efforts on those hazards of greatest concern and those structures or planning areas facing the greatest risk(s).

The Community Profiles and RA serve as the basis for establishing goals for this Plan, each contributing to the development, adoption, and implementation of a meaningful Mitigation Strategy update that is based on accurate background information and community goals.

The Mitigation Strategy, located in Chapter 6, consists of broad goal statements as well as specific mitigation actions for each jurisdiction participating in the planning process. The updated strategy includes detailed Mitigation Action Guides (MAGs) that link jurisdiction-specific mitigation actions to locally assigned implementation mechanisms. Together, these sections are designed to make the 2016

Plan more strategic and functional through the identification of both long-term goals and near-term actions that will guide day-to-day decision-making and project implementation.

In addition to the identification and prioritization of possible mitigation projects, emphasis has been placed on the use of program and policy alternatives to help make Weld County and participating municipalities less vulnerable to the damaging forces of nature while improving the economic, social, and environmental health of the community. The concept of multi-objective planning is emphasized throughout this Plan, identifying ways to link hazard mitigation policies and programs with complimentary community goals that may be related to housing, economic development, community revitalization, recreational opportunities, transportation improvements, environmental quality, land development, and public health and safety. This Multi-Jurisdictional Hazard Mitigation Plan should be seen as a representation of a coordinated effort to make Weld County and participating jurisdictions more livable, disaster resilient communities.

The Plan Implementation and Maintenance procedures, found in Chapter 7, describe the measures Weld County and participating jurisdictions will take to ensure the Plan's continuous long-term implementation. The procedures also include the manner in which the Plan will be regularly monitored, reported upon, evaluated, and updated to remain a current and meaningful planning document. Local capabilities are outlined in this section to highlight strengths and areas of improvement related to personnel, planning capacity, and ongoing risk-reduction efforts.

3.4 The Planning Team

A well-rounded community-based planning team contributed heavily to the development of this Plan. Weld County engaged local government officials, public stakeholders, and county residents in local meetings and planning workshops to discuss and complete tasks associated with preparing the Plan. The Weld County HMPC consisted of members of participating local governments and districts, as well as public stakeholders, special interest groups, and county staff. Members of the HMPC participated in the risk assessment, mitigation strategy development, plan review, public outreach, and plan maintenance strategy.

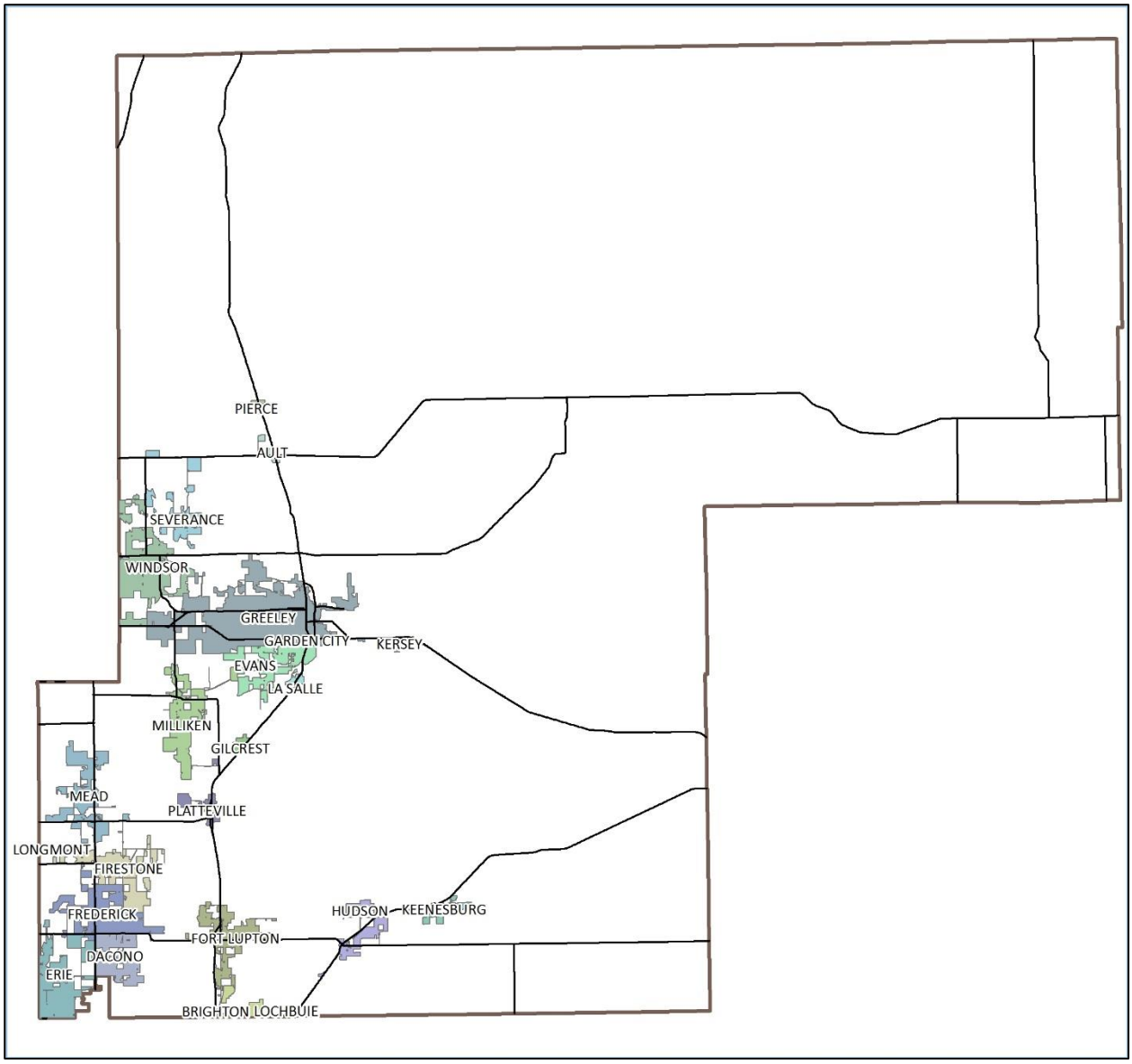


Figure 1. Weld County Jurisdictions Participating in the 2016 HMP Planning Process

The jurisdictions listed in the following table represent participating members of the Weld County HMPC. Representatives from each of the following communities were responsible for participating in the updating of this Plan.

Table 1. Adopting Communities – Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan

Jurisdiction	Signed Participation Letter	Planning Meeting #1 5/19/2015	Planning Meeting #1 5/21/2015	Community Survey #1	Community Survey #2	Planning Meeting #2 8/26/2015	Community Survey #3	Planning Meeting #3 10/7/2015	Planning Meeting #3 10/8/2015
Weld County		X	X	X	X	X	X	X	X
Town of Ault	X			X	X		X		X
City of Brighton	X		X	X	X	X	X		
City of Dacono	X		X	X	X		X		X
Town of Erie	X			X	X	X	X		X
City of Evans	X		X	X	X	X	X		X
Town of Firestone	X	X	X	X	X		X		X
City of Fort Lupton	X			X	X		X		X
Town of Frederick	X		X	X	X	X	X	X	
Town of Garden City	X			X	X		X	X	
Town of Gilcrest	X			X	X		X		X
City of Greeley	X	X		X	X		X	X	
Town of Hudson	X		X	X	X	X	X		X
Town of Keenesburg	X			X	X	X	X		X
Town of Kersey	X			X	X		X	X	
Town of LaSalle	X	X		X	X		X	X	
Town of Mead	X		X	X	X	X	X	X	
Town of Milliken	X	X		X	X	X	X		X
Town of Pierce	X			X	X		X	X	
Town of Platteville	X			X	X		X	X	
Town of Severance	X			X	X		X		
Town of Windsor	X	X		X	X	X	X		X

After the initial HMPC kick-off meeting the committee was assembled regularly for meetings and plan development throughout all phases of the planning process. The HMPC reviewed drafts of the 2009 Plan, identified new information that needed to be included in the 2016 Plan update and incorporated it as required by state and federal guidelines. The HMPC was also tasked with collecting all accurate data from plan participants and provided outreach to the public and business stakeholders to ensure that everyone's information was included in this Plan.

3.5 Planning Meetings and Documentation

The preparation of the Plan update required a series of meetings and workshops intended to facilitate discussion and initiate data collection efforts with local community officials. More importantly, the meetings and workshops prompted continuous input and feedback from local officials, public stakeholders, staff, and subject matter experts throughout the update process.

Below is a summary of the key meetings and workshops conducted throughout the development of the 2016 Weld County Multi-Jurisdiction Hazard Mitigation Plan. Sign-in sheets and meeting minutes are provided in Appendix A.

HMPC PLANNING KICK-OFF MEETINGS

The initial kick-off meetings for the Weld County Multi-Jurisdictional Hazard Mitigation Plan were held on May 19th & 21st, 2015. These meetings were organized specifically for the County's HMPC. The first meeting was held at the Weld County Office of Emergency Management. The second was held at the Weld County Southwest Services Building.

Official representatives from all jurisdictions participating in the Hazard Mitigation Plan and representatives from stakeholder groups were invited to the kickoff meetings. The intent of the meetings was to introduce the mitigation planning update project to the HMPC and to the community at large. The following agenda items were discussed at both of the kick-off meetings:

- Welcome and Introductions
- Hazard Mitigation Planning Overview

- Jurisdictional Participation Requirements
- Planning Process / Project Schedule
- Hazards to Profile
- 5-Year Plan Review Exercise
- Mitigation Action Exercise and Review of Current Mitigation Goals and Objectives

The kick-off meetings provided the project team with an opportunity to explain the DMA 2000 planning requirements, to explain jurisdictional participation expectations, and to present a project timeline to the planning committee. The meeting also initiated preliminary data collection efforts for the Risk Assessment as well as for Mitigation Strategy development.

The kickoff meeting began with introductions and a presentation on the mitigation planning process facilitated by the county's contractor for this Plan development project, Michael Baker International (MBI). The meeting agenda included a review of jurisdictional participation requirements as well as the planning process and schedule. Specific data collection needs were thoroughly explained, including the need for accurate GIS data as well as any unique local hazard risk data available for specific areas of concern.

During their presentation, the MBI Team led a brief review of the 2009 plan and conducted a 5-Year Plan Review exercise to reach consensus on which hazards would be profiled in the 2016 plan. Participating jurisdictions were encouraged to review the previous plan and provide input via an online Plan Review Survey.

At the end of the meeting, participants were given three action items to complete:

1. Participating jurisdictions to submit Participation Letter (if not already done).
2. Participating jurisdictions to review the existing Plan's mitigation strategy and prepare to provide any comments and changes at the next planning team meeting.
3. Participating jurisdictions to review the existing Plan's mitigation actions (projects) specific to that jurisdiction and prepare to provide status reports during the next planning team meeting.

HMPC PLANNING MEETING #2

The second planning team meeting was held on August 26th, 2015 from 3:00 – 5:00PM at the Weld County Emergency Operations Center in Greeley. Official representatives from all jurisdictions and districts participating in the Hazard Mitigation Plan and representatives from other organizations and stakeholder groups were invited to participate. The intent of the meeting was to review the results of the HMPC surveys, to increase HMPC familiarity with the Risk Assessment results and how to use the interactive webmap, to define the goals and objectives of the County Mitigation Strategy, and to collect status updates on mitigation actions included in the 2009 Plan from participating communities. The following agenda items were discussed at the second planning meeting:

- Welcome and Introductions
- Review of Jurisdictional Participation Requirements
- Review of 5-Year Plan Review & Risk Factor survey results
- Review of on-going public survey results
- Presentation of Risk Assessment Results & Webmap
- Define the updated Mitigation Strategy's Goals & Objectives

- Review status updates for 2009 Mitigation Actions
- Planning Process / Project Schedule
- Jurisdictional meetings/outreach tracking
- Bi-county jurisdiction clarification

The second planning meeting provided the project team with an opportunity to reiterate the participation requirements and to present the results of the Risk Assessment to members of the HMPC. The HMPC was encouraged to leverage the interactive GIS maps on the project website as they worked to identify priorities and mitigation actions for the 2016 Mitigation Strategy.

During their presentation, the MBI Team introduced the jurisdiction-specific Mitigation Action Guides (MAGs) that were developed as a planning tool for the multi-jurisdictional project. Each jurisdiction was assigned a number of MAGs, which are designed to help keep track of how mitigation projects are progressing.

At the end of the meeting, participants were given three action items to complete:

1. Participating jurisdictions to submit Participation Letter (if not already done).
2. Participating jurisdictions to review the 2009 Plan's mitigation actions/projects and provide progress updates.
3. Participating jurisdictions to begin updating old and drafting new Mitigation Action Guides for 2016 Plan.

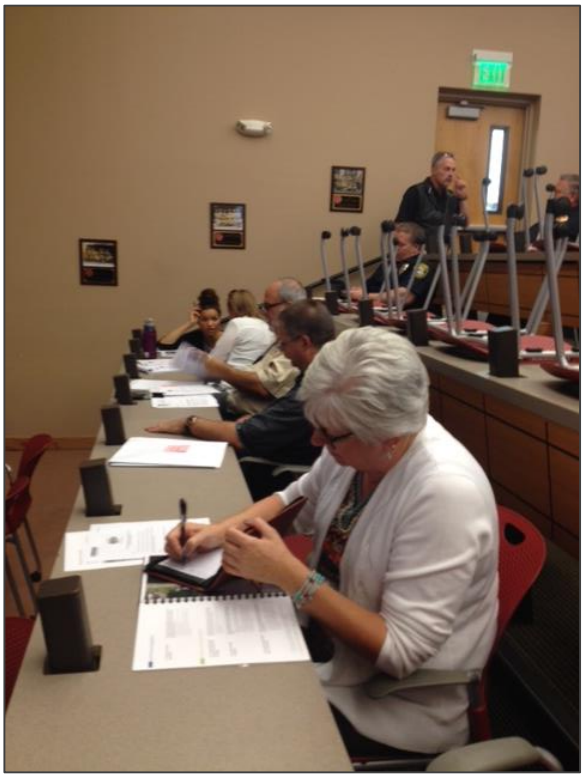
HMPC PLANNING MEETING #3

The third set of planning team meetings was held on the evenings of October 7th and 8th at the Weld County EOC and the Fort Lupton Fire Training Center, respectively. Official representatives from all jurisdictions and districts participating in the Hazard Mitigation Plan and representatives from other organizations and stakeholder groups were invited to participate. Organized as a working session, the intent of the meeting was to discuss and finalize plan maintenance and implementation strategies for both the County and its participating jurisdictions, to finalize local Mitigation Action Guides (MAGs), and to prioritize mitigation actions at the community level. The following agenda items were discussed at the third planning meeting:

- Welcome and Introductions
- Review and Confirmation of Formal Adoptees
- Planning Process/Project Schedule
- HMPC Survey #3 Results – Discussion of Plan Maintenance and Implementation
- Mitigation Action Guide (MAG) Working Session
    - 2004 and 2009 Action Reporting
    - 2016 Action Finalization
    - CRS Review and Discussion
    - Existing Community Plan Review
- Mitigation Action Prioritization Exercise

The third round of planning meetings gave participating communities the opportunity to work directly with the project team and local subject matter experts to refine their identified mitigation projects. The workshop setting proved incredibly helpful for vetting ideas, sharing resources, and establishing best

practices for project implementation and maintenance. Members of the HMPC revisited the interactive GIS maps on the project website as they worked to refine their MAGs and identify additional mitigation actions for the 2016 Mitigation Strategy.



During the third planning meeting members of the HMPC worked with staff from Weld County OEM and Michael Baker International to prioritize each of their identified mitigation actions. Using the STAPLEE method recommended by FEMA in the State and Local Mitigation Planning How-To Guide, each community weighed the pros and cons of their different mitigation actions based on social, technical, administrative, political, legal, economic, and environmental considerations. The objective was for each jurisdiction to systematically prioritize their mitigation projects in a way that led to an overall Mitigation Strategy that was realistic, cost effective, and attainable.

At the end of the meeting, participants were given four action items to complete:

1. Participating jurisdictions to submit Participation Letter (if not already done).
2. Participating jurisdictions to deliver final 2004 and 2009 MAG updates for incorporation into the 2016 Hazard Mitigation Plan
3. Participating jurisdictions to deliver final 2016 MAGs for incorporation into the 2016 Hazard Mitigation Plan
4. Review Draft 2016 Plan online, advertise draft review process to local residents and public, and submit comments on Draft Plan.

The Weld County Office of Emergency Management actively pursued participation from all jurisdictions within Weld County in the hazard mitigation planning process. Starting in July 2015, Weld OEM encouraged participation by sending out email reminders. They later followed up by phone call. OEM also offered to meet with jurisdictions, and did so with Hudson, Nunn, Severance, Mead, Fort Lupton, Frederick

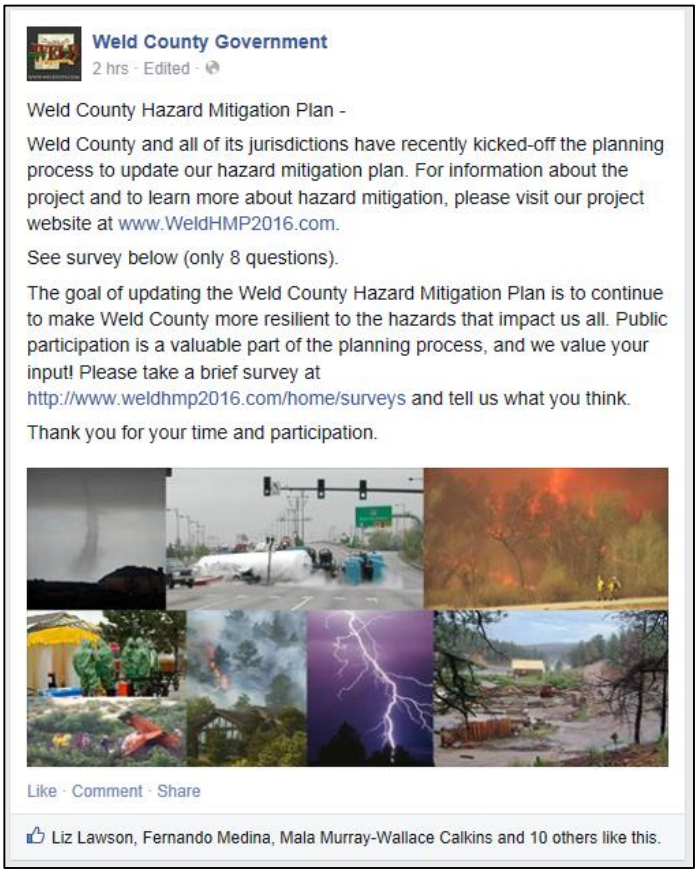
and Dacono. In addition, numerous phone conferences and email exchanges were held to assist jurisdictions in completing their MAG updates and new MAGs during this process, including Fort Lupton, Brighton, Firestone, Greeley, Severance, Gilcrest, Erie, Windsor, Garden City, Pierce, Platteville and Keenesburg. Developing ongoing relationships and collaboration on hazard mitigation planning remains a high priority for Weld County.

3.6 Public and Stakeholder Participation

An important component of the success of Weld County's mitigation planning process involved ongoing public, stakeholder, and jurisdiction participation. Individual citizen involvement provided the HMPC with a greater understanding of local concerns and ensures a higher degree of mitigation success by developing community "buy-in" from those directly affected by the planning decisions of public officials.

A broad range of public and private stakeholders, including agencies, local businesses, nonprofits, and other interested parties were invited to participate in the development of the 2016 Plan. Stakeholder involvement was encouraged through Weld County's invitations to agencies and individuals to actively participate in local planning meetings and to interact with the planning materials and surveys posted on the project website. Below are examples of a few of the planning announcements and public meeting invitations created and distributed by members of the HMPC.

Figure 2. Weld County Social Media Announcements



Multiple media platforms were used in order to reach and engage the maximum number of local and regional stakeholders. Communication pathways included printed newspapers and neighborhood

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Michael Baker INTERNATIONAL

newsletters, social media outlets including Twitter and Facebook, and County and local jurisdiction websites and email lists.

Additionally, a website was created to provide information to public stakeholders and to obtain feedback on the 2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan Update.[1] In addition to providing hazard mitigation information, announcements and calendar information, the draft Plan was posted on the website for public review and comment. Community members were encouraged to share their input, photos and experiences for use during the hazard mitigation planning process. The screen shot below provides a visual of the project website.

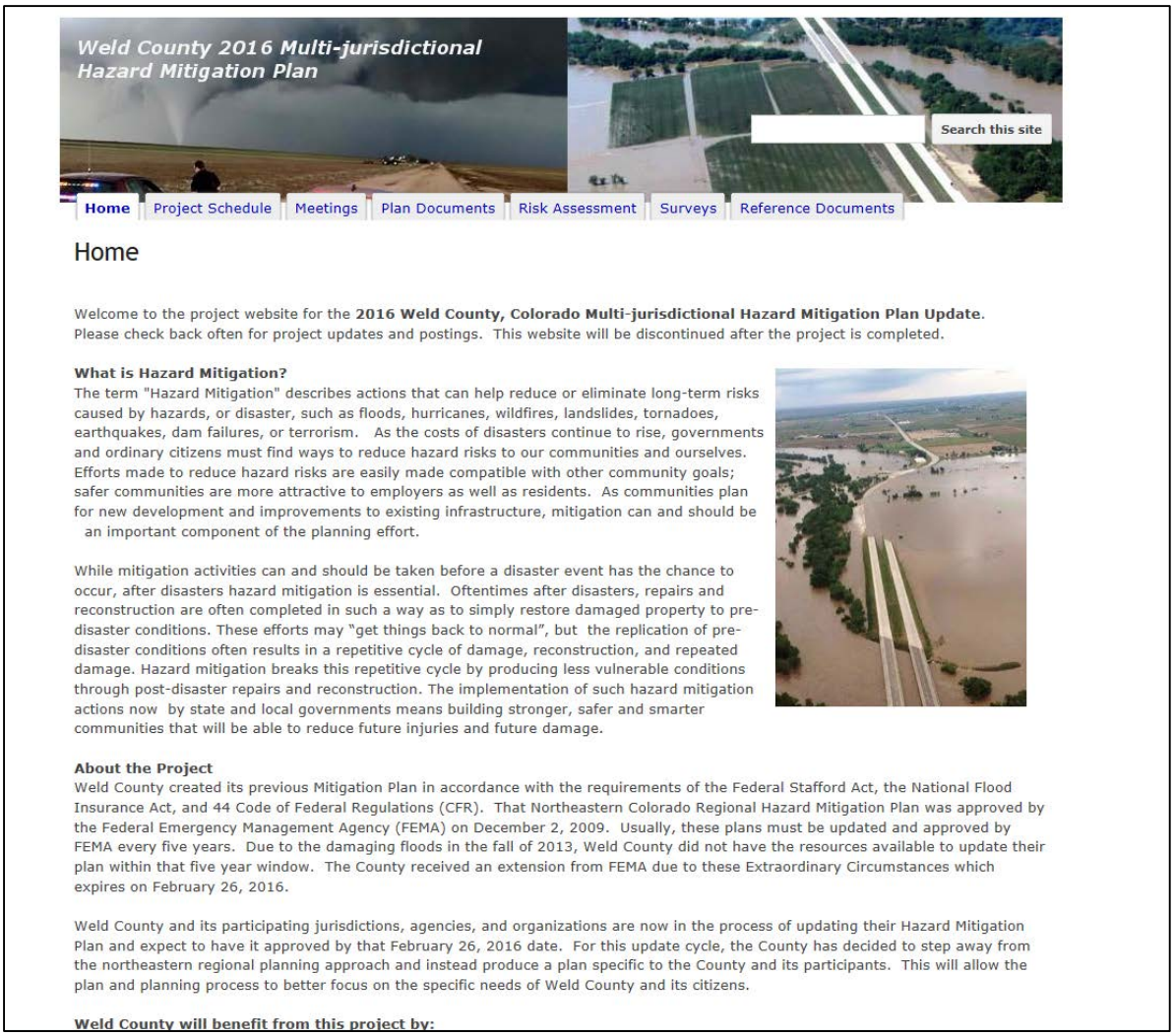


Figure 3. Project Website Homepage

The website included two public surveys designed to gather information about public hazard risk perceptions and visions for community resilience:

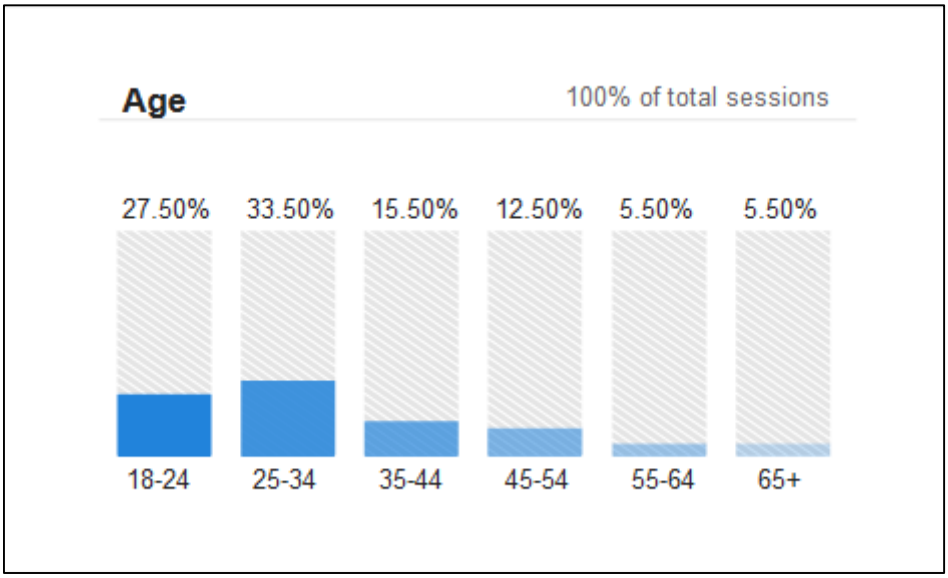
[1] The project website was discontinued upon completion of the Plan update.

1. Survey #1 – *Public Hazard Risk Perceptions*: The purpose of this survey was to engage citizens in order to better understand risk perceptions among members of the Weld County community and to identify the best ways to communicate with public stakeholders moving forward.
2. Survey #2 – *Visions for a Resilient Weld County*: The purpose of this survey was to gather preliminary information from community members and stakeholders about the current capacities and resiliency conditions of their community as well as a long-range vision for a resilient Weld County. The survey included an introductory definition of resilience (developed with the help of the HMPC) and gathered input about ways to improve community capacity and capabilities.

The surveys were utilized throughout the planning process to engage with and educate local residents. Information and comments from the surveys were shared with members of the HMPC and used to guide the planning process. Links to the surveys were posted on the website and updates were communicated through the Weld County Facebook page. Participating jurisdictions also posted links to the public surveys on their local websites and social media links to gather input from interested stakeholders. At the time of the third and final HMPC team meeting a total of 112 Weld County residents had submitted responses for the "Visions for a Resilient Weld County" survey. Ninety nine residents submitted responses for the "Public Risk Perceptions" survey. The HMPC and project team were excited about the response rate for both surveys, which greatly exceeded previous survey participation for similar planning efforts. The results of the Visions for a Resilient Weld County survey will be used for ongoing planning projects related to hazard risk reduction and community resiliency. This includes the County's proposed "Resiliency Study" which was scoped during the 2016 HMP planning process and has been included in this Plan as a 2016 Mitigation Action.

The image above shows a summary of project website traffic throughout the duration of the hazard mitigation planning effort. Close to 2,500 user sessions were logged who visited the project website. Involvement peaked in June and July of 2015 when members of the HMPC began to encourage resident and local stakeholder participation through the surveys and interactive risk assessment maps.

Below, the chart shows the age distribution of website users during the planning process. The majority of visitors were between the ages of 25 and 34. Younger visitors were also more common. Not surprisingly, visitors over the age of 55 were rare. It was noted for future planning processes, that additional effort will be taken on the part of the HMPC to engage older residents through more traditional public engagement methods, for example: open houses, town hall meetings, brown-bag lecture lunches at local gathering places, and radio / TV advertisements.

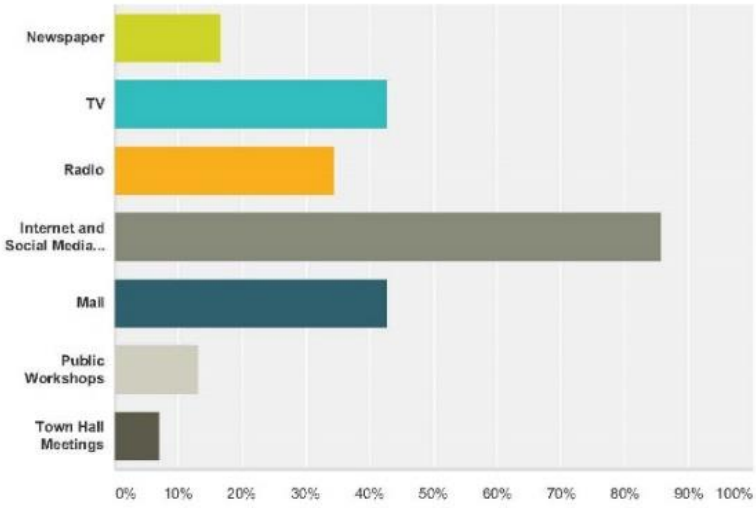


Tied to this lesson learned, a final outreach effort relating to this hazard mitigation planning process will occur in January of 2016. The HMPC will coordinate to identify an existing public event where an informative booth will be set up to review the Plan with community members and to discuss the hazards identified and the county and jurisdiction's mitigation strategy and actions for the next five years. This community outreach will be focused on the county's rural communities that may not have participated with the project website or social media messaging.

Weld Public Risk Perceptions

Q7 What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards (you may select more than one)?

Answered: 84 Skipped: 1



Answer Choices	Responses	
Newspaper	16.67%	14
TV	42.86%	36
Radio	34.52%	29
Internet and Social Media (Twitter, Facebook)	85.71%	72
Mail	42.86%	36
Public Workshops	13.10%	11
Town Hall Meetings	7.14%	6
Total Respondents: 84		

In addition to the project website, the Michael Baker International Team used the data from the results of the risk assessment to create a series of interactive online maps. Available to the public on the internet, the maps served as a tool for analyzing hazards and patterns of risk at various scales within the county. In addition to helping members of the HMPC visualize and assess their risks to various hazards, the online maps were also designed as an outreach tool and were used to communicate risk to the public and to ground-truth quantitative risk assessment results at local public meetings throughout the planning process. The figure below provides a screen shot of the online mapping tool. Available layers related to hazard risks and vulnerability are visible on the left hand side of the screen.

Finally, participating members of the Weld County HMPC were encouraged to initiate and sustain their own public outreach program throughout the planning process. These local representatives serve as a

vital link between the county and its businesses and residents and the conversations they held outside of the formal hazard mitigation planning meetings helped to ensure a successful planning process.

Throughout the planning process, members of the HMPC leveraged any opportunities that they had to inform the public about the hazard mitigation planning project. Not only did their efforts help to inform citizens about the planning process it contributed to the ultimate goal of creating a more disaster resilient Weld County. A few participating communities documented their public interactions in order to keep track of strategies that worked and to facilitate improved outreach efforts during the next plan update. This information is included in Appendix D.

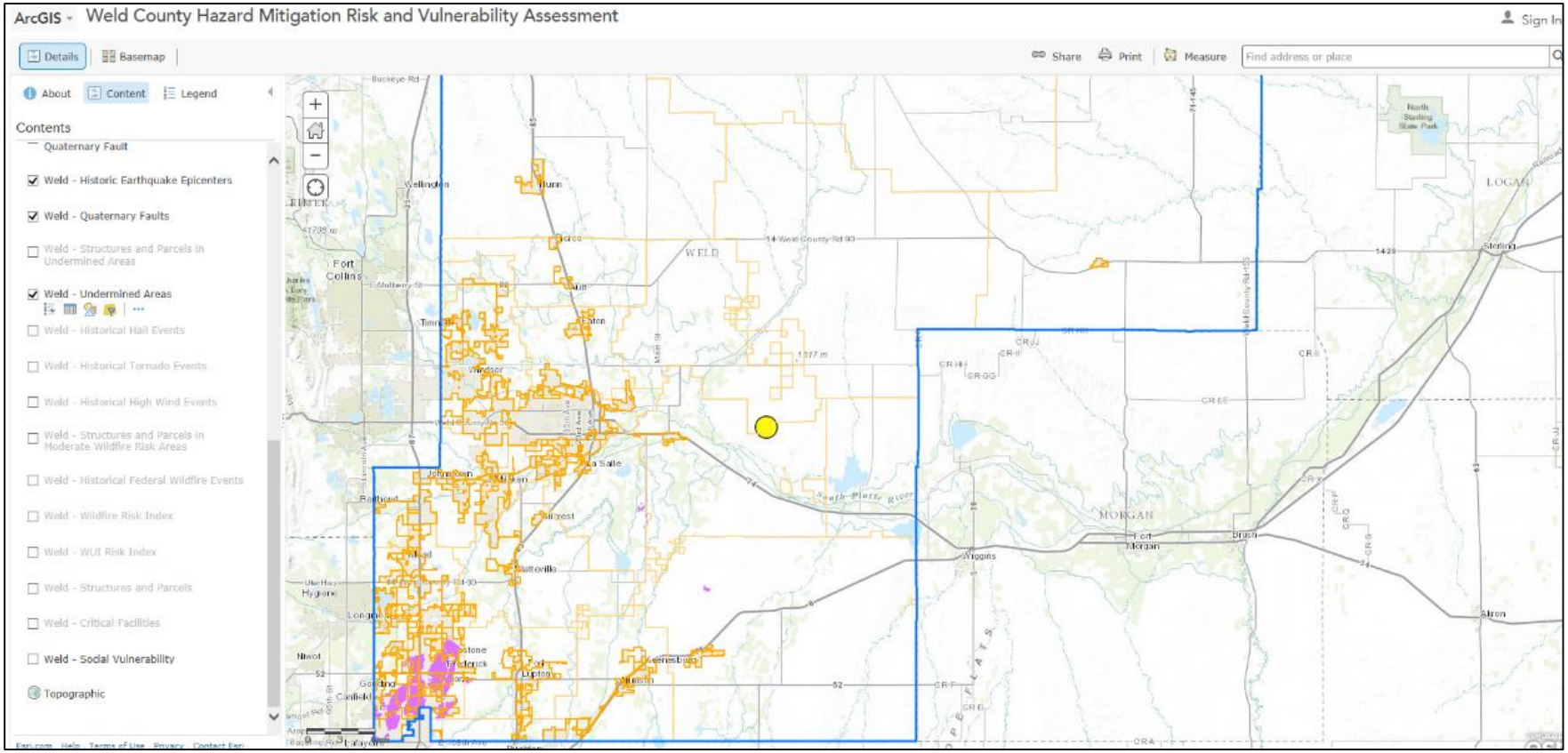


Figure 4. Weld County Hazard Mitigation Plan – Web-Based Risk Assessment Results

EMERGENCY MANAGEMENT

3.7 Multi-Jurisdictional Planning and Participation

The 2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan is a multi-jurisdictional plan. To satisfy multi-jurisdictional participation requirements, each of the local jurisdictions listed in the participation table below committed to the planning process. Each jurisdiction wishing to join the planning partnership acknowledged their understanding of the following expectations:

- Each jurisdiction/partner will support and participate in the meetings of the Steering Committee overseeing the development of the update. Support includes allowing this body to make decisions regarding plan development and scope on behalf of the partnership.
- Each jurisdiction/partner will provide support as needed for the public involvement strategy developed by the Steering Committee in the form of mailing lists, possible meeting space, and media outreach such as newsletters, newspapers or direct-mailed brochures.
- Each partner will participate in plan update development activities such as:
    - Steering Committee meetings
    - Public meetings or open houses
    - Workshops and planning partner training sessions
    - Public review and comment periods prior to adoption.
- Each partner will be expected to review the risk assessment and identify hazards and vulnerabilities specific to its jurisdiction. Contract resources will provide jurisdiction-specific mapping and technical consultation to aid in this task, but the determination of risk and vulnerability ranking will be up to each partner.
- Each partner will be expected to share information about mitigation activity/progress and capital improvement projects in their jurisdictions since the adoption of the 2009 plan.
- Each partner will identify at least one mitigation action for each of the hazards identified for their community. Local agencies/individuals responsible for implementing and tracking these mitigation actions will also be identified by participating jurisdictions and included in the plan.
- Each partner will be expected to review the mitigation recommendations chosen for the overall county and evaluate whether they will meet the needs of its jurisdiction. Projects within each jurisdiction consistent with the overall plan recommendations will need to be identified, prioritized, and reviewed to identify their benefits and costs.
- Each partner will be required to sponsor at least one public meeting to present the draft plan at least 2 weeks prior to adoption.
- Each partner will be required to formally adopt the plan.
- Each partner agrees to the plan implementation and maintenance protocol.

Attendance was tracked at all planning activities and attendance records are included in the Appendix of this plan. All participating communities attended and actively participated in all meetings. Participating jurisdictions acknowledged that their failure to meet these criteria may result in being dropped from the partnership by the County, and thus losing eligibility under the scope of this plan.

Table 2. 2009 and 2016 Multi-Jurisdictional Hazard Mitigation Plan Participation

JURISDICTION	PARTICIPATED IN 2009 NORTHEAST CO REGIONAL HMP	PARTICIPATED IN 2016 WELD COUNTY HMP	SIGNED PARTICIPATION LETTER	2016 ADOPTION DATE
Weld County	•	•		12/16/2015
Town of Ault	•	•	•	[INSERT DATE]
City of Brighton		•	•	02/16/2016
City of Dacono	•	•	•	[INSERT DATE]
Town of Erie		•	•	[INSERT DATE]
City of Evans	•	•	•	02/02/2016
Town of Firestone	•	•	•	[INSERT DATE]
City of Fort Lupton	•	•	•	[INSERT DATE]
Town of Frederick	•	•	•	01/27/2016
Town of Garden City	•	•	•	[INSERT DATE]
Town of Gilcrest	•	•	•	[INSERT DATE]
City of Greeley	•	•	•	01/05/2016
Town of Hudson	•	•	•	[INSERT DATE]
Town of Keenesburg	•	•	•	[INSERT DATE]
Town of Kersey	•	•	•	[INSERT DATE]
Town of LaSalle	•	•	•	[INSERT DATE]
Town of Mead	•	•	•	[INSERT DATE]
Town of Milliken	•	•	•	01/27/2016
Town of Pierce	•	•	•	[INSERT DATE]
Town of Platteville	•	•	•	[INSERT DATE]
Town of Severance	•	•	•	[INSERT DATE]
Town of Windsor	•	•	•	[INSERT DATE]

3.8 Existing Planning Mechanisms

There are numerous existing regulatory and planning mechanisms in place at the state and county levels of government which support hazard mitigation planning efforts. These tools include the State of Colorado Hazard Mitigation Plan, county subdivision regulations and road and bridge standards, the Weld County Comprehensive Plan, and local zoning regulations. These mechanisms were discussed at mitigation planning meetings and the Weld County HMPC reviewed all available technical information and had incorporated them into this Plan update. Moving forward, the local jurisdictions included in the 2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan will continue to integrate the goals and actions of the Plan into their evolving local planning mechanisms, including comprehensive plans, capital improvement plans, and resource and land use regulations.

The State of Colorado mitigates natural hazards by way of diverse statutes and programs. Funded by the state and federal government, several agencies and programs within the state implement mitigation actions through assistance to local governments. State statutes that are applicable to hazard mitigation are listed below:

- County Fire Planning Authority, Colorado Statute, Title 30, Article 11, Part 1:30-11-124
- Colorado Revised Statute, 24-65-101 & 102
- Colorado Revised Statutes, 25-65-105 & 24-65-104
- County Building Codes – Master Plan, Colorado Statute, Title 30, Article 28, Part 1:30-28-106
- Local Government Land Use Control Enabling Act, Colorado Revised Statute, 29-20-101, *et seq*
- Local Land Use Control and Regulation, Colorado Revised Statute, 29-20-104
- Colorado Wildfire Preparedness Plan and Fund, Colorado Revised Statute 24-30-310(2)(3)
- Fire Suppression Program Rules, Colorado Revised Statute, 24-33.5-1205(1) (a)
- State Fire Ban Authority, Colorado Revised Statute, 24-30-308
- Colorado Geological Survey (CGS), Colorado Statute, 34-1-1-1 & 103
- CGS Land Use Review Program (Subdivision Law), Colorado Revised Statute, 30-28-101, *et seq*
- Soils & Hazard Analyses of Residential Construction Act, Colorado Revised Statute, 6-6.5-101
- Drought Mitigation Planning, Colorado Revised Statute, 37-60-126.5
- Building Codes – Zoning – Planning, Colorado Revised Statute, 22-32-124(1)
- Colorado Floodplain Management Authority, Colorado Revised Statute, 24-65.1-403(1)
- Emergency Dam Repair Cash Fund, Colorado Revised Statute, 37-60-122.5
- Flood Response Fund, Colorado Revised Statute, 37-60-123.2
- Office of Smart Growth, Colorado Revised Statute, 24-32-3201 *et seq*
- State Engineer – High Hazard Dams Reports, Colorado Revised Statute, 37-87-123
- State Planning and Interest, Colorado Revised Statute, 24-65.1-203

Colorado Statute includes a number of measures that dictate the state's ability to influence land use decisions and subsequently impact local vulnerability to hazards. In most cases, these statutes allow county level and local governments to establish their own rules and regulations.

Weld County's risk and vulnerability reduction efforts are supported by additional planning efforts, including the following:

- The Weld County Comprehensive Plan (2015)
- Colorado Emergency Resource Mobilization Plan (2012)
- State of Colorado Emergency Operations Plan (2013)
- State of Colorado EOP Emergency Support Function Annexes (2013):
    - ESF# 1 Transportation
    - ESF # 2 Communications
    - ESF # 3 Public Works and Engineering
    - ESF # 4 Firefighting
    - ESF # 5 Emergency Management
    - ESF # 6 Mass Care, Housing, and Human Services
    - ESF # 7 Resource Support
    - ESF # 8 Public Health and Medical Services
    - ESF # 8 A Behavioral Health
    - ESF # 9 Search and Rescue
    - ESF # 10 Oil and Hazardous Materials Response
    - ESF # 11 Agriculture and Natural Resources
    - ESF # 12 Energy
    - ESF # 13 Public Safety and Security
    - ESF # 14 Long-Term Community Recovery and Mitigation
    - ESF # 15 External Affairs
- State of Colorado EOP Supporting Annexes (2013):
    - Evacuation
    - Geographic Information Systems (GIS)
    - International Coordination
    - Public Affairs
    - Tribal Relations
    - Volunteer and Donations Management
- State of Colorado EOP Incident Annexes (2013):
    - Drought Incident
    - Tornado Incident
    - Mass Casualty Incident
    - Earthquake Incident
    - Landslide and Debris Flow Incident
    - Flood Incident
    - Winter Incident
    - Terrorism, Law Enforcement, and Investigation Incident
    - Cyber Incident
    - Biological Incident
    - Chemical Stockpile Emergency Preparedness Program Incident
- Weld County Charter and the Weld County Code

Weld County is a participant in the National Flood Insurance Program (NFIP). Since it entered the program, the County has adopted the minimum NFIP requirements and imposed additional requirements into its Charter and County Code and Ordinances. These additional requirements, outlined in the Weld County Storm Drainage Criteria Manual, were adopted for consistency with the rules and procedures of the Urban Drainage and Flood Control District (UDFCD) Urban Storm Drainage Criteria Manual to provide a higher level of floodplain management than required by FEMA.

In the future, this plan will serve as a source document and will be incorporated into existing planning mechanisms as they are updated or developed. These planning mechanisms enhance the county's mitigation strategy and are therefore incorporated into several of the mitigation actions identified in this Plan. For example, floodplain ordinances in Weld County serve to guide development away from hazardous areas while local stormwater management plans reduce the effects of erosion due to increased runoff.

During the planning process, the planning team worked with local jurisdictions to identify ways in which identified mitigation actions/projects will be incorporated into their existing planning and regulatory mechanisms over time. The results of these conversations and planning activities are described in each Community Profile.

4 County Profile

Weld County is located in the Northern Front Range of central Colorado. The County spans an area from northern Metro Denver to the Wyoming state line. Slightly less than four thousand square miles in size, the county seat is located in the City of Greeley, and thirty-one incorporated municipalities lie within the County's borders. Weld County is the third largest county in the State in terms of land area and is larger than the size of Rhode Island, Delaware, and the District of Columbia combined.

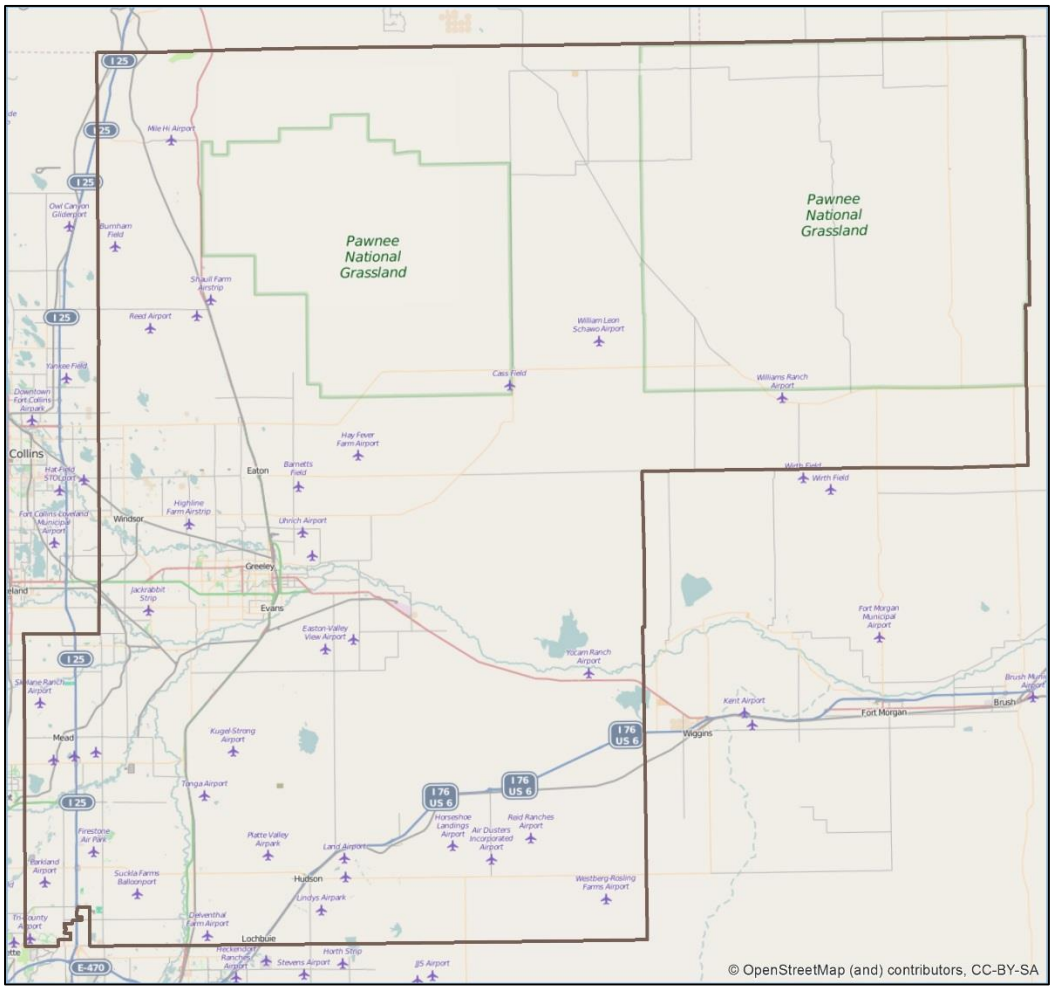


Figure 5. Map of Weld County

Relatively flat in terms of terrain and topography, the northeastern portions of Weld County does contain the Pawnee National Grassland and the Pawnee Buttes, two prominent rock formations that stand out against the plains. Two interstate highways run through the County: I-25 (US 87) runs through the southwestern and northwestern corner and I-76 from the south central edge northeastward to the Morgan County border. Other major transportation routes include US 85 and US 34, which intersect near Greeley, and State Highway 14, which runs through Ault. Many of Weld County's incorporated cities and towns are located along these highway corridors although the county consists of a number of gravel roads that serve to connect communities to amenities.

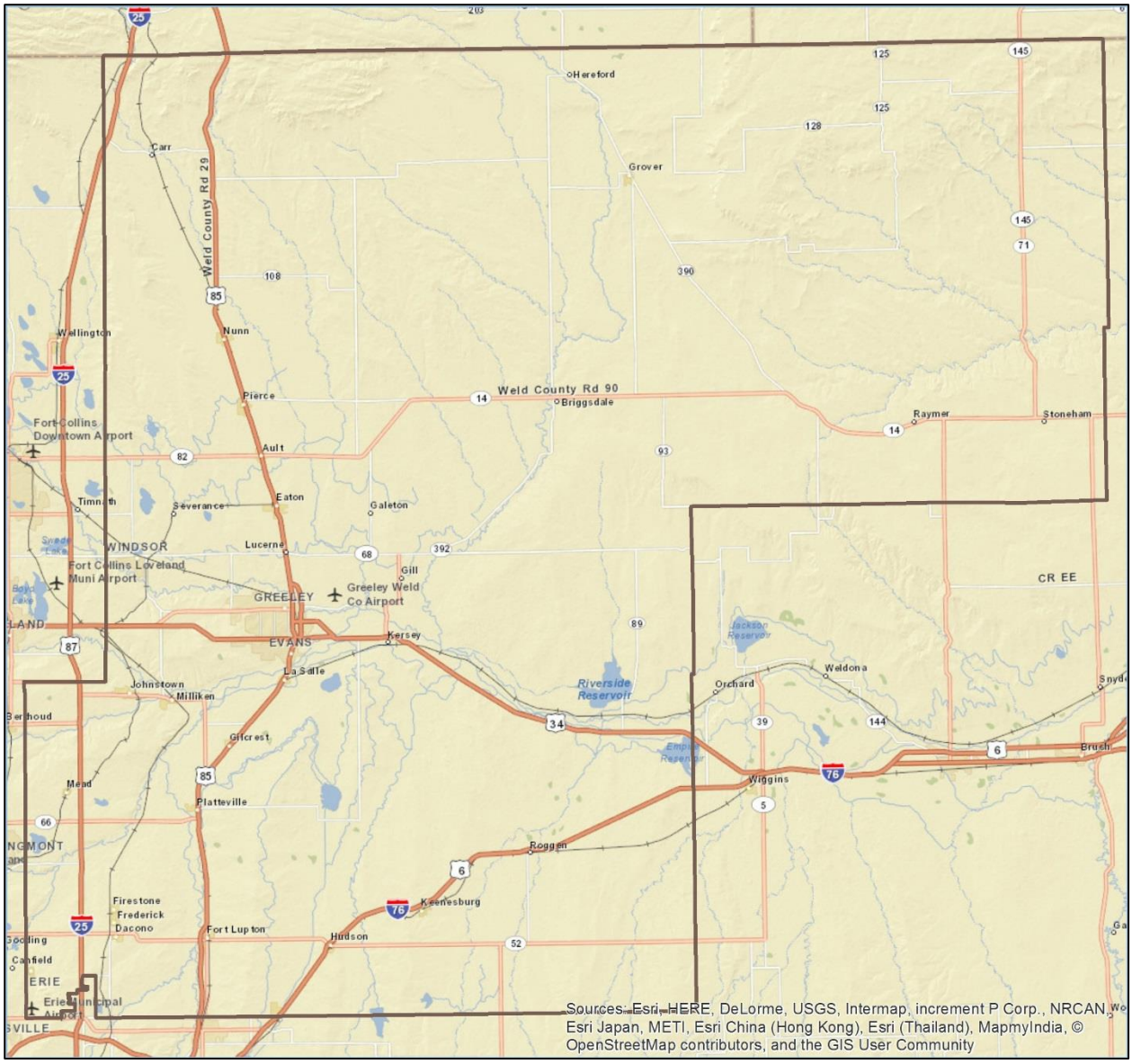


Figure 6. Weld County Transportation Routes

The Platte and Cache la Poudre Rivers – two significant waterways in the County – are two of the most important sources of water in the large, semi-arid region. The agricultural portions of western Weld County are fed by a system of irrigation canals and are a stark contrast to the dry landscape to the east. Similarly, a broader mixture of land uses and greater concentrations of the population are located in the western third of the county, while the eastern areas remain largely open, less populated, and more uniform in terms of land use.

Weld County is one of the top ten economically producing agricultural counties in the United States. Due to the dry climate, mild winters, and warm summers, the County leads the state in the production of grains, beef cattle, and sugar beets. Seventy five percent of Weld County's 2.5 million acres is devoted to agriculture. Weld County farmers are also the state's leading producers of potatoes, poultry, eggs, milk,

dry beans, and other dairy products. There are over 3,000 farms in Weld County and the County's agricultural products create over $1 billion of market value each year.

Weld County is actively working to preserve its agricultural roots. In fact, the County's existing land use code has a specific "Right to Farm" statement. The County's policies support a high-quality rural character which:

> *"[...] respects the agricultural heritage and traditional agricultural land uses of the County as agricultural lands are converted to other uses (excluding urban development). Rural character in the County includes those uses which provide rural lifestyles, rural-based economies and opportunities to both live and work in rural areas. The natural landscape and vegetation predominate over the built environment." – Weld County Comprehensive Plan*

The energy industry is another important driver of Weld County's economy. Due to its location above the Wattenberg Field, oil and gas extraction has been occurring for decades in Weld County. Currently, Weld County has more oil and gas wells than any other county in the state.

The sheer size of the County's land area presents challenges related to the availability of resources. For example, based on information recorded in the county's Comprehensive Plan, law enforcement activity in Weld County is primarily based on responses to complaints rather than on patrols. Moreover, the distances which must be traveled sometimes delay emergency responses including law enforcement, ambulance, and fire. Snow removal priorities mean that roads from subdivisions to arterials may not be cleared for several days after a major snowstorm. Ultimately, rural residents must be more self-sufficient than urban residents by necessity. Moreover, rural residents are exposed to different hazards (and have different vulnerabilities) than urban or suburban residents. It is critical to keep these nuances in mind while developing and implementing a local hazard mitigation program.

4.1 Demographics

Weld County is a relatively young county, with a median population age of 34. Between 2000 and 2013 the population of the county grew by 49%. The current population of over a quarter million residents is expected to double to almost half a million by the year 2030.

Weld County is the ninth most populated county in Colorado. However, rapid growth in the last few years has established the county as one of the 100-fastest growing counties in the nation, according to the US Census. Planners anticipate that much of the coming growth will occur in southwest Weld County, along I-25 and along the southern stretch of US 85.

Table 3. Population Forecasts for Weld County, 2000 - 2040

Area	2000	2010	2020	2030	2040
Colorado	4,338,801	5,049,717	5,924,692	6,519,379	7,752,887
Weld County	183,076	254,230	329,759	446,517	568,954

Source: State Demography Office, Colorado (2014)

The majority of employment and income in Weld County are generated from the following key economic sectors:

- Manufacturing
- Agriculture
- Energy Production
- Health and Wellness
- Business Service

In August 2013, the unemployment rate in Weld County was 7.1%, slightly higher than the State unemployment rate of 6.8% (U.S. Bureau of Labor Statistics). Weld County is adjacent to Adams County, Morgan County, Logan County, Boulder County, Larimer County, the City and County of Broomfield, Laramie County, WY, and Kimball County, NE. Major state highways cross the county from east to west (I-76, US Highway 34, and State Highway 14). Major north/south transportation corridors include I-25 and US Highway 85. Many Weld County residents commute across county boundaries for work. This creates important emergency management considerations both pre- and post-disaster. The top five commuting destinations by workers living in Weld County are as follows (DRCOG Weld County Community Profile):

1. Larimer County
2. Boulder County
3. Denver County
4. Adams County
5. Arapahoe County

The table below provides an economic and demographic snapshot of Weld County.

Table 4. 2014-2015 Economic and Demographic Snapshot

	Weld County
Population	269,785
Median Age	34
Urban Population (2010 Census)	201,097
Rural Population (2010 Census)	51,728
Percent Rural (2010 Census)	20%
Median Household Income	$54,578
Unemployment Rate	7.1%
Percent of Population > Age 25 with Bachelor's Degree or Higher	25.8%

	Weld County
Percent of Population with High School Diploma Only	83.7%

Source: *2014-2015 Economic & Demographic Profile, Weld County, CO*. Stats America, EMSI, BLS.

4.2 Social Vulnerability

Local vulnerability to disasters depends on more than simply the relationship between a place and its exposure to a hazard. Social and economic factors – like race, age, income, renter status, or institutionalized living – directly affect a community's ability to prepare for, respond to, and recover from hazards and disasters. The concept of social vulnerability helps explain why communities often experience a hazard differently, even when they experience the same amount of physical impacts.

Social vulnerability to disasters refers to "the characteristics and situation of a person or group that influence their capacity to anticipate, cope with, resist, or recover from the impact of a hazard" (Wisner et al. 2004)[2] and it is determined by a number of pre-existing social and economic characteristics. Very often, the impacts of hazards fall disproportionately on the most disadvantaged or marginalized people in a community, including the poor, children, the elderly, disabled, and racial/ethnic minorities. During emergencies, for example, self-evacuation can be nearly impossible for disabled or institutionalized individuals. Additionally, the willingness of an individual/family to invest their limited resources into residential mitigation actions is often limited if their home is a rental property or if they have never experienced a disaster in the past. Not only do conditions like these limit the ability of vulnerable groups to get out of harm's way, they also decrease the ability of communities to recover from and thrive in the aftermath of a disaster event. Reducing local social vulnerability is vital to community resilience.

The 2016 Plan integrates social vulnerability into its hazard risk analysis in order to more effectively identify hazard risk experienced by the most vulnerable residents and communities within the county. The Weld County social vulnerability assessment is designed to improve local decision making, hazard prioritization, and emergency management activities. By incorporating social vulnerability into the risk assessments of individual hazards, local communities are able to identify more vulnerable areas and tailor their mitigation actions to accommodate all members of their community, including the most sensitive groups.

The pre-existing social conditions that contribute to disaster losses can be identified by using social vulnerability indicators. Using methods and indicators identified in the Social Vulnerability Index (SoVI) developed by Cutter et al (2003),[3] a Weld County social vulnerability analysis was carried out at the census

[2] Wisner, B., Blaikie, P., Cannon, T., Davis, I. (2004). At Risk: Natural Hazards, People's Vulnerability and Disasters. London: Routledge.

[3] Cutter, S.L., Boruff, B.J., and Shirley, W.L. (2003). Social Vulnerability to Environmental Hazards. Social Science Quarterly, 84:242-261.

tract level. Local socioeconomic and demographic data were used to identify spatial patterns in social vulnerability across the county and have been applied to the hazards in the 2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan.

The table below outlines the five social vulnerability factors and their associated indicators that were used in the Weld County social vulnerability analysis. Indicators with plus signs (+) are positively related to social vulnerability levels. For example, communities with higher percentages of people 65 years or older have higher levels of social vulnerability to hazards. Indicators with minus signs (-) are negatively related to social vulnerability levels. Communities with higher per-capita income and higher home values have lower levels of social vulnerability to hazards.

Table 5. Social Vulnerability Indicators

Social Vulnerability Factors	Indicators
Age/Elderly	• Children (Age 18 and under) (+) • Elderly (Age 65 and over) (+) • Social Security Recipients, % Population (+) • Renter Occupied, % HH (+) • Median Age
Special Needs	• Group Quarters, % Population (+) • Mobile Homes, % OCHH (+) • 5 years old, % Population (+) • Age 18 and under (+)
Ethnicity	• Hispanic, % Population (+) • Native American, % Population (+) • Other Races, % Population (+) • Pacific Islander, % Population (+) • Linguistically Isolated, % Population (+)
Race, Class, Poverty	• African American Population, % Population(+) • Female Headed Households, % HH (+) • No Vehicles, % HH (+) • No High School Diploma, % Over 25 yrs old (+) • Poverty, % Population • Unemployment Rate (+)
Wealth	• Asian, % Population (-) • Household earnings greater than $200K, % HH (-) • Housing Density (+) • Per-Capita Income (-) • Population Density (+) • White, % Population

Source: U.S. Census Bureau, 2006-2010 American Community Survey and the 2010 Census

For the purpose of the Weld County Multi-Jurisdictional Hazard Mitigation Plan, each social vulnerability factor was weighted equally in the Social Vulnerability Index. The results of the social vulnerability

assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The following social vulnerability map shows relative levels of social vulnerability across the county. It is important to note that although many areas within the county have medium-low to low levels of social vulnerability, it does not mean that there are no socially vulnerable people living in those areas.

On its own, the social vulnerability map can inform communities about disparate social conditions across the county. When combined with physical hazard analyses, the map illustrates where human hardships may occur in a disaster situation. These hardships may result in citizens that are less likely to prepare, respond, withstand, or recover from a hazard event due to their elevated levels of social vulnerability. This information is valuable for both mitigation and disaster response activity.

During the risk assessment and mitigation strategy development phases of the 2016 planning process, participating jurisdictions reviewed the results of the social vulnerability analysis in conjunction with the multi-hazard risk assessment results. The social vulnerability information helped communities uncover unseen risks and better prioritize their local mitigation actions.

Social vulnerability analysis is particularly useful in the context of hazard mitigation planning because it can reveal disparities within a community that make a difference when it comes to the ability of residents to mitigate, prepare, evacuate, mobilize resources, and recover from disasters. Areas on the map that have medium to high social vulnerability represent areas where age, poverty, race/ethnicity, or special needs factors may make it more difficult for people to prepare, respond, and recover from hazard events. Social vulnerability information can also be used to help communities design effective and appropriate local risk communication and hazard mitigation outreach activities.

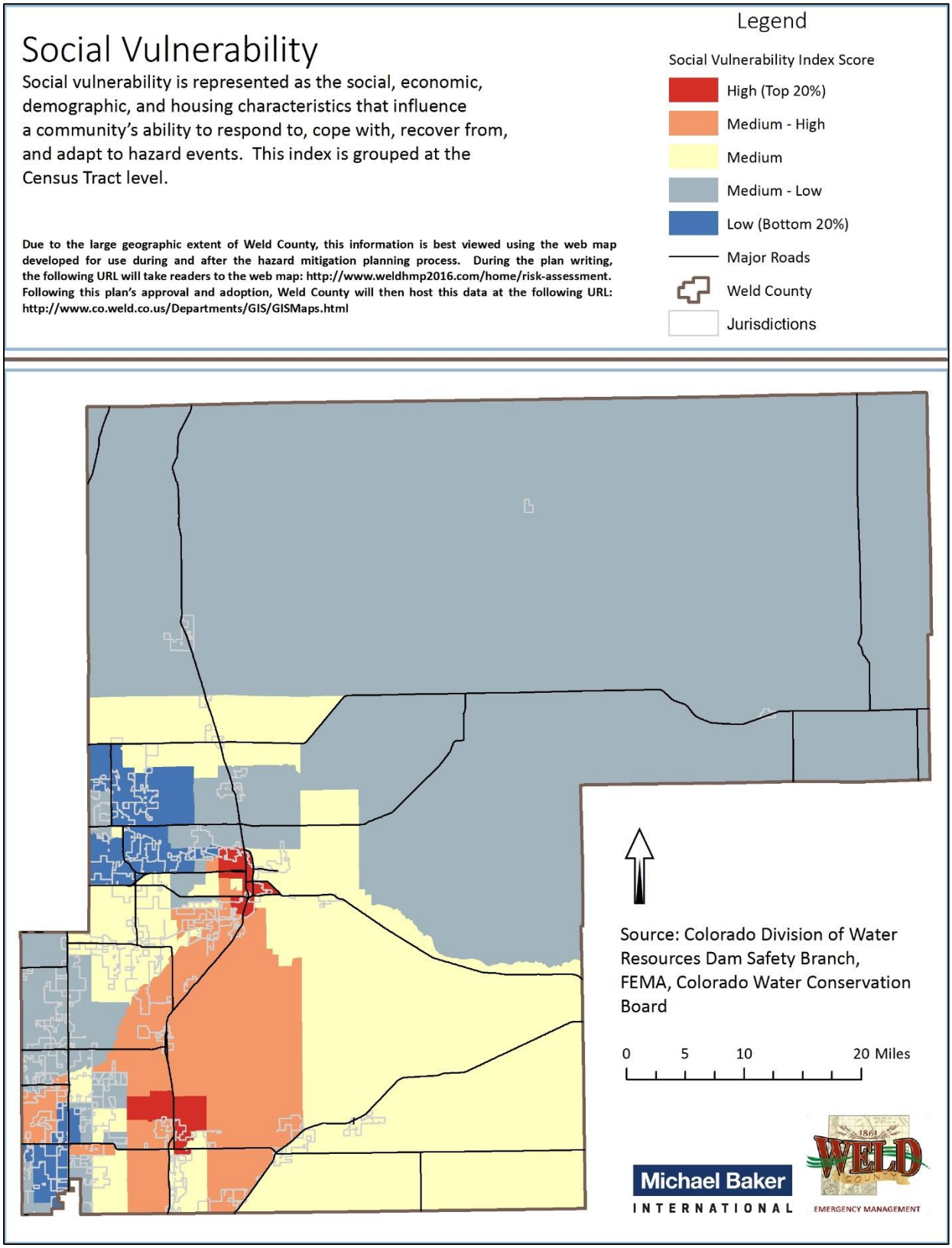


Figure 7. Weld County Social Vulnerability Assessment

4.3 Housing Stock

Below, the County and Regional Housing Snapshot highlights the variations and similarities between Weld County and the State. Weld County's low vacancy rate means that as population growth continues to surge, rents are likely to increase, putting pressure on the labor force and potentially leading to more commuters into the county.

Table 6. County and State Housing Snapshot

	Weld County	Colorado
Total Housing Units	99,317	2,254,905
Average Household Size	2.77	2.49
Group Quarter Population	5,868	116,961
Vacancy Rate	5.9%	8.4%

Source: Colorado Department of Local Affairs (DOLA), 2013 Estimates

"Housing Cost-Burdened Households" are defined as any household that spends more than 30% of its income on housing. Two in ten of all households in Weld County are defined as "Housing Cost-Burdened Households" earning <$50,000 a year, amounting to 23,066 households.[4] The number of households that are housing cost-burdened has impacts on a community in many ways. For the household, the lower the income level, the higher the pressure to forgo basic needs such as food, health care, services, as well as personal disaster preparedness and hazard mitigation activity.

[4] Source: Analyst calculation from 2013 ACS and 2012/2013 Consumer Expenditure Survey data; Piton Foundation

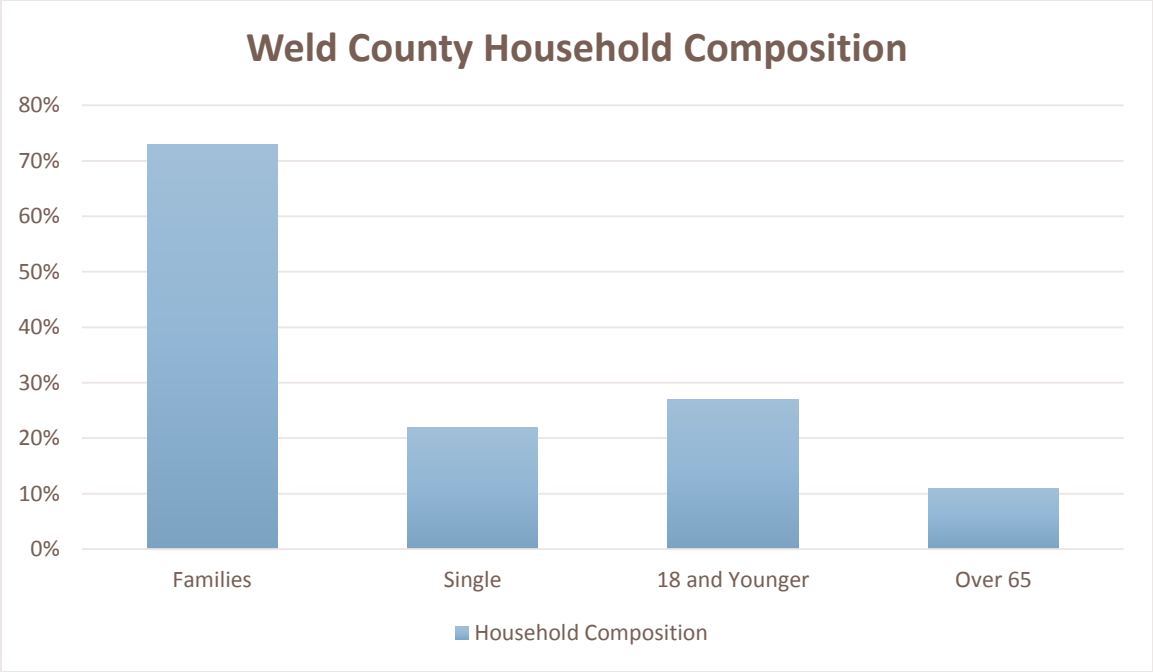


Figure 8. Weld County Household Composition[5]

COMMUNITY VALUES, HISTORIC AND SPECIAL CONSIDERATIONS

Historic resources include landmarks buildings, historic structures and sites, commercial and residential districts, historic rural resources, archaeological and cultural sites, and the historic environment in which they exist. Historic resources serve as visual reminders of a community's past, providing a link to its development. Preservation of these important resources makes it possible for them to continue to play an integral, vital role in the community. Currently, Weld County has forty properties listed on the National Register of Historic Places and nine Historic Districts which are primarily located in cities and towns.

Depending on the number of historic resources within a community, it can be unrealistic to assume that all of the necessary mitigation activities can be taken to protect these resources. Historic preservation and protection work must be done in a manner that retains the character-defining features of a historic property. Because this work can be costly, it is important to set priorities in terms of which resources and mitigation projects should become the point of focus. Weld County realizes that the preservation and maintenance of historic sites and structures contributes to the cultural heritage of the county and is in the long-term best interest of the community.

[5] Source: Colorado State Demography Office; Piton Foundation

4.4 Critical Facilities

For the purpose of the Weld County Multi-Jurisdictional Hazard Mitigation Plan, 'critical facilities' are defined as local assets vital to the health, safety, and well-being of residents and visitors during time of natural disaster. Critical facilities are essential to a community's long-term disaster resilience as they are important delivery pathways for diverse crisis management services and resources.

Members of the Weld County HMPC worked collaboratively to define a critical facility inventory for the 2016 Multi-Hazard Mitigation Plan. Critical facilities profiled in this plan include facilities of the following types:

- Administration Buildings
- Auditoriums
- Churches
- Community Recreation Centers
- Convention Centers
- Convalescent Hospital Nursing Homes
- Day Care Centers
- Distribution Warehouses
- Fire Stations
- Government Buildings
- Group Care Homes
- High Schools
- Jails
- Mega Warehouse Stores
- Elderly Assisted Living Facilities
- Schools
- Utility Buildings
- Warehouse Discount Store

The map shown in the Figure below presents these community-identified critical facilities included in the risk and vulnerability assessment of this plan.

Critical Facilities

Critical facilities as defined by the Weld County Office of Emergency Management. Point locations are sometimes approximate and not the actual building location.

Legend

- Critical Facilities
- Major Roads
- Weld County

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

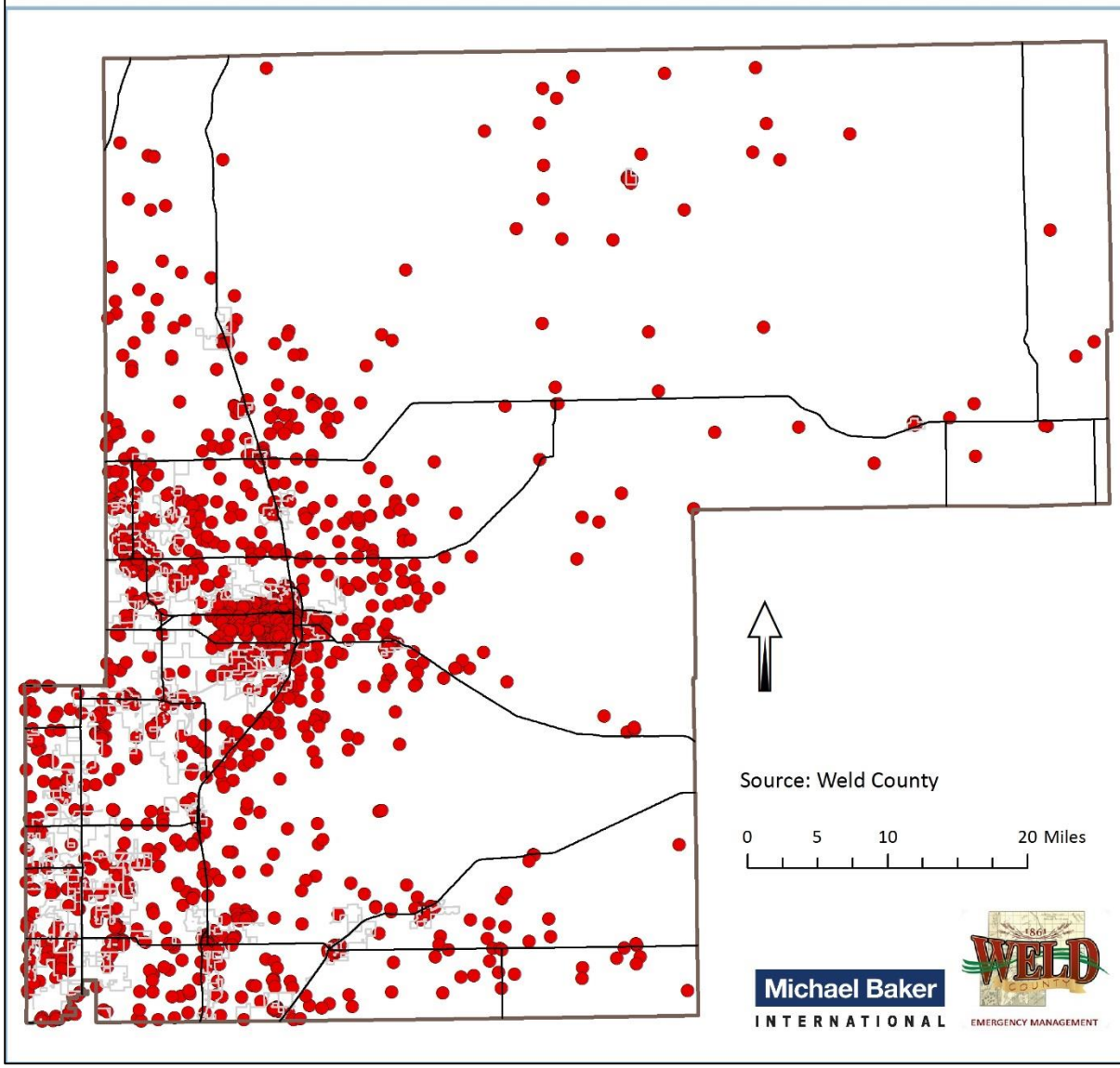


Figure 9. Weld County Critical Facilities

The following table provides a count of how many critical facilities, structures, and parcels are located in Weld County. The table also outlines estimated replacement costs based on aggregate appraised values, when available.

Table 7. Weld County Critical Facilities

	Count	Total Assessor Value
Structures/Parcels	121,749	$18,438,838,152
Critical Facilities	1,284	$978,086,411

The following table provides a count of how many critical facilities of each type are located in Weld County and outlines estimated replacement costs based on aggregate appraised values, when available. Monetary values have been broken out by land value and structure value because some hazards (such as tornadoes or hail) do not affect the value of the land, only the value of structures.

Table 8. Critical Facilities by Occupancy Type

Occupancy Type	Count	Land Value	Structure Value	Total Value (land value + structure value)
Administration Bldg	2	$572,844	$4,546,190	$5,119,034
Auditorium	4	$967,321	$19,584,907	$20,552,228
Church	154	$15,944,466	$84,445,802	$100,390,268
Community Recreation Center	5	$11,520,762	$26,961,943	$38,482,705
Convention Center	1	$302,742	$7,692,021	$7,994,763
Nursing Home/Hospital	2	$256,796	$3,482,660	$3,739,456
Day Care Center	23	$3,058,924	$8,371,381	$11,430,305
Distribution Warehouse	16	$6,979,115	$30,604,000	$37,583,115
Fire Station - Volunteer	18	$2,510,536	$11,127,747	$13,638,283
Fire Station Staffed	15	$3,129,684	$19,307,166	$22,436,850
Fire Tower	1	$154,333	$2,819,183	$2,973,516
Government Building	22	$7,310,052	$81,284,784	$88,594,836
Group Care Homes	6	$825,107	$3,261,630	$4,086,737
High School	5	$2,716,917	$51,440,249	$54,157,166
Jail - Correctional Facility	1	$2,211,737	$59,703,055	$61,914,792
Mega Warehouse Stores	2	$3,739,378	$18,655,657	$22,395,035
Elderly Assisted Living	10	$1,412,333	$14,426,530	$15,838,863
School - Arts & Crafts Bldg	1	$34,580	$102,762	$137,342
School - Classroom	21	$5,795,114	$27,955,152	$33,750,266
School - Elementary	45	$13,609,478	$189,085,879	$202,695,357
School - Gymnasium	9	$2,303,450	$11,733,698	$14,037,148
School - Manual Arts	3	$1,598,264	$12,314,874	$13,913,138
School - Science Building	1	$274,928	$11,581,760	$11,856,688
Utility Building	912	$39,085,102	$136,077,740	$175,162,842
Warehouse Discount Store	5	$3,551,113	$11,654,565	$15,205,678

Critical facilities deserve additional mitigation attention because of the higher potential for the loss of life, property, and/or environmental quality in the event that they suffer significant damage. The protection of critical facilities is essential because these specific facilities can have a significant impact on the scope of damage caused by a natural disaster. Additionally, the disruption of critical facilities during a natural disaster is likely to affect response and recovery activity.

4.5 Future Development

A key strategy for reducing future losses in a community is to avoid development in known hazard areas while enforcing the development of safe structures in other areas. The purpose of this strategy is to keep people, businesses, and buildings out of harm's way before a hazard event occurs. The 2016 Weld County Multi-Jurisdictional Multi-Hazard Mitigation Plan highlights areas where future development can be expected and areas where mitigation options can be considered in future land use decisions to ensure safe, smart growth in the county.

The State Demography Office, a division of the Colorado Department of Local Affairs (DOLA), monitors population growth trends across the state and between counties. The two tables below provide a picture of future population growth rates and numbers within the state, within the Denver primary metro statistical area (PMSA), and within Weld County.

Table 9. Population Forecasts by Region and County, 2000 - 2040

	Average Annual Percent Change (5 year increments)							
	00-05	05-10	10-15	15-20	20-25	25-30	30-35	35-40
Colorado	1.4%	1.6%	1.7%	1.9%	1.7%	1.4%	1.3%	1.1%
Denver PMSA	1.4%	1.7%	1.8%	1.7%	1.4%	1.2%	1.0%	0.8%
Weld County	4.1%	2.6%	2.2%	3.0%	3.2%	2.9%	2.6%	2.3%

Source: Colorado Department of Local Affairs (DOLA)

Table 10. State Demographers Office Population Projections by Region and County (2010 – 2040)

	Population Projections (5 year increments)						
	July, 2010	July, 2015	July, 2020	July, 2025	July, 2030	July, 2034	July, 2040
Colorado	5,049,717	5,439,290	5,924,692	6,429,532	6,915,379	7,352,327	7,752,887
Denver PMSA	2,502,291	2,736,460	2,971,101	3,183,692	3,383,952	3,554,764	3,704,391
Weld County	254,230	283,767	329,759	386,651	446,517	507,221	568,954

Source: Colorado Department of Local Affairs (DOLA)

Weld County is the epicenter of urban growth and changing land use in Colorado. The population of the county is expected to reach over 380,000 by 2025 and almost 570,000 by 2040. This growth is significantly faster than the relative growth of the state of Colorado and the Denver PMSA. The first of the following

two maps shows population growth forecasts for the state of Colorado. Weld County is expected to grow at a faster rate than the majority of Colorado counties between now and 2040. The second map shows projected population growth across the state between 2010 and 2040. Again, Weld County is expected to sustain large amounts of growth in the next 25 years.

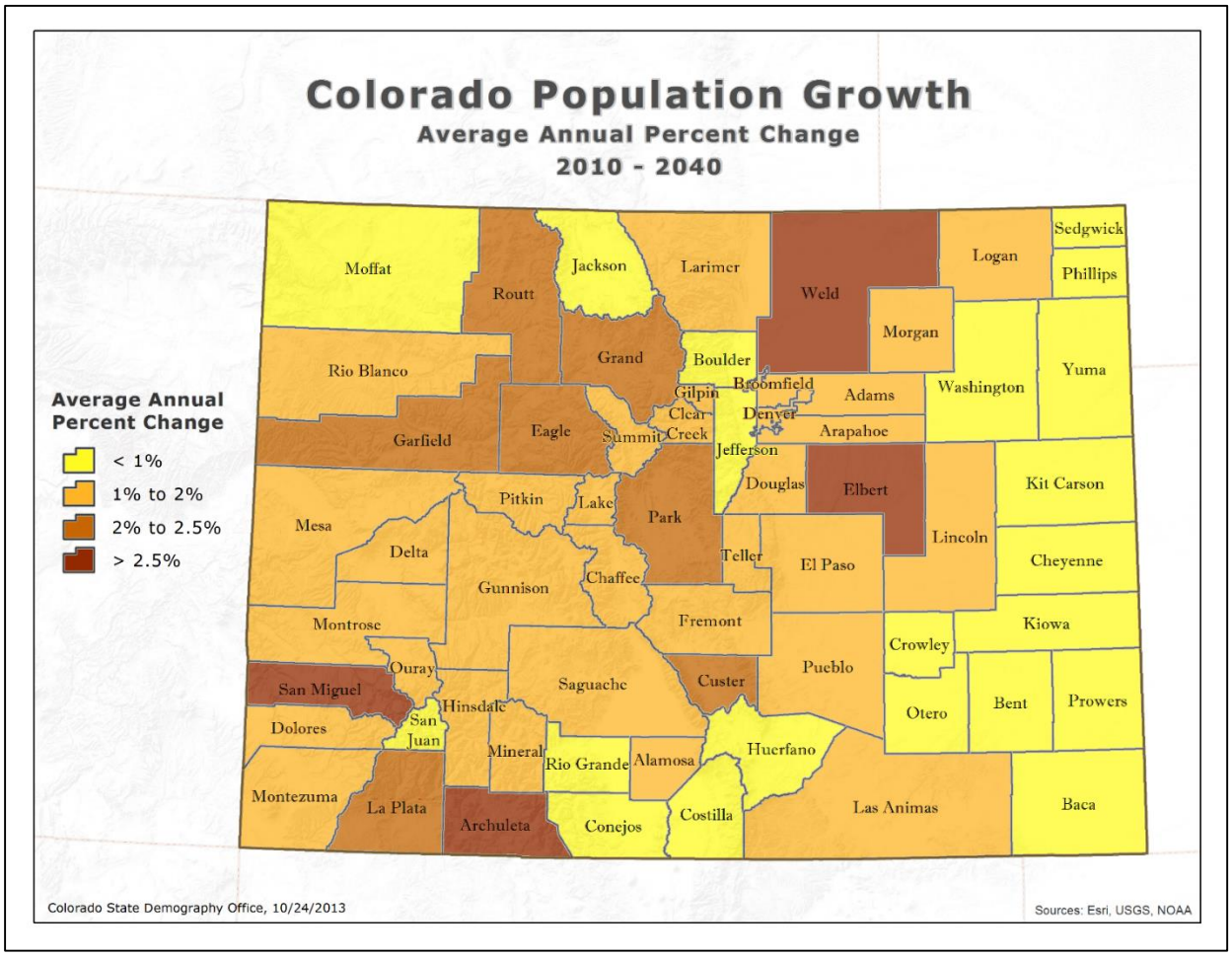


Figure 10. Average Annual Percent Change in Population, Statewide

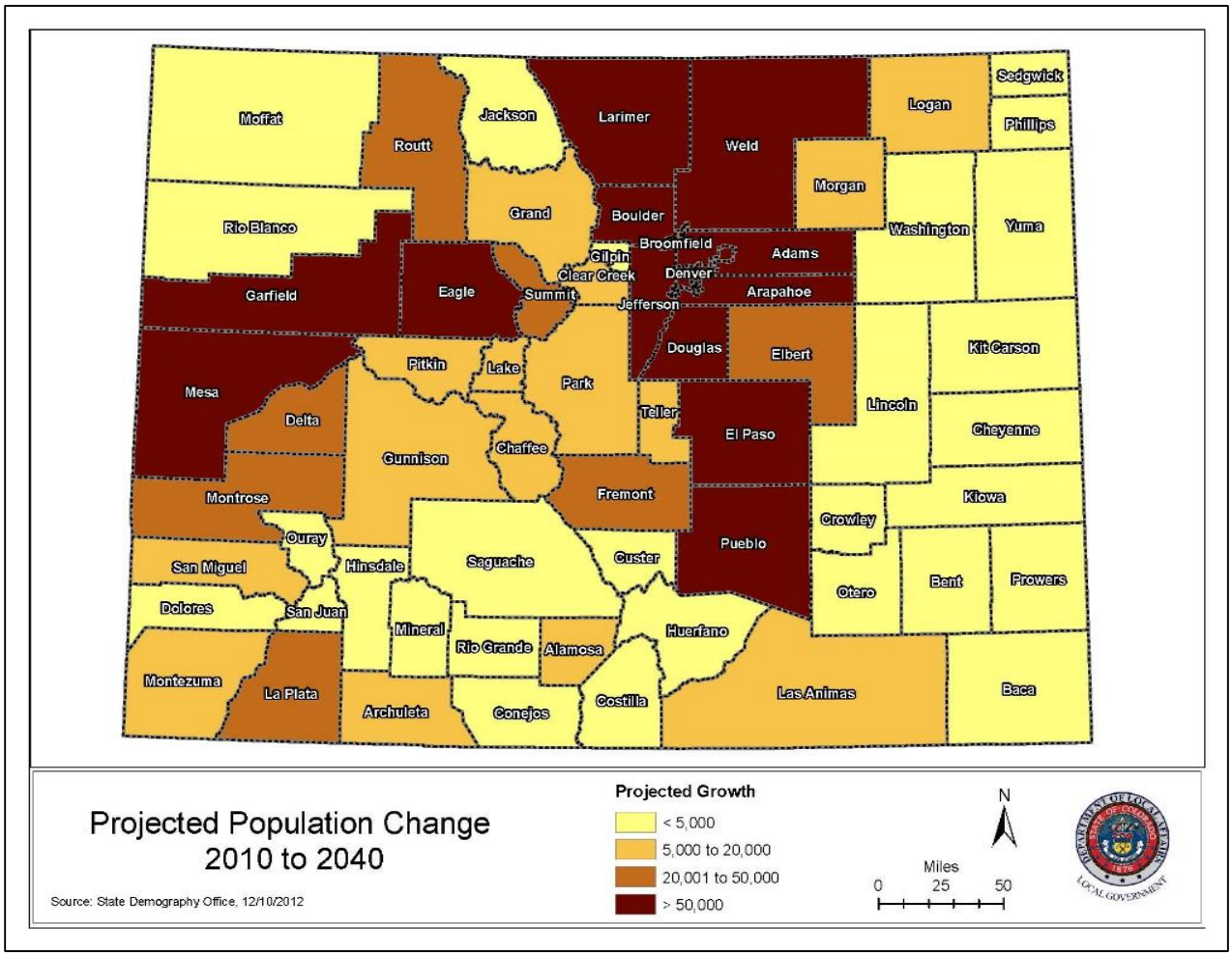


Figure 11. Projected Statewide Population Growth

Weld County has grown significantly in the past decade and is one of the fastest growing counties in the State. The amount of growth that Weld County has seen over the past decade has been dictated by the availability of undeveloped land. Based on observed population growth trends, housing demand within Weld County is expected to remain steady over the next decade.

The following map shows currently identified subdivisions in Weld County. The shaded areas indicate lands that have been divided into pieces for the purpose of future development. Because they are slated for future growth, these subdivision areas should be evaluated and managed carefully as hazard risks evolve in the county over time.

Subdivisions

Currently identified subdivisions located across Weld County and its jurisdictions and special districts.

Legend

- Subdivisions
- Major Roads
- Weld County

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

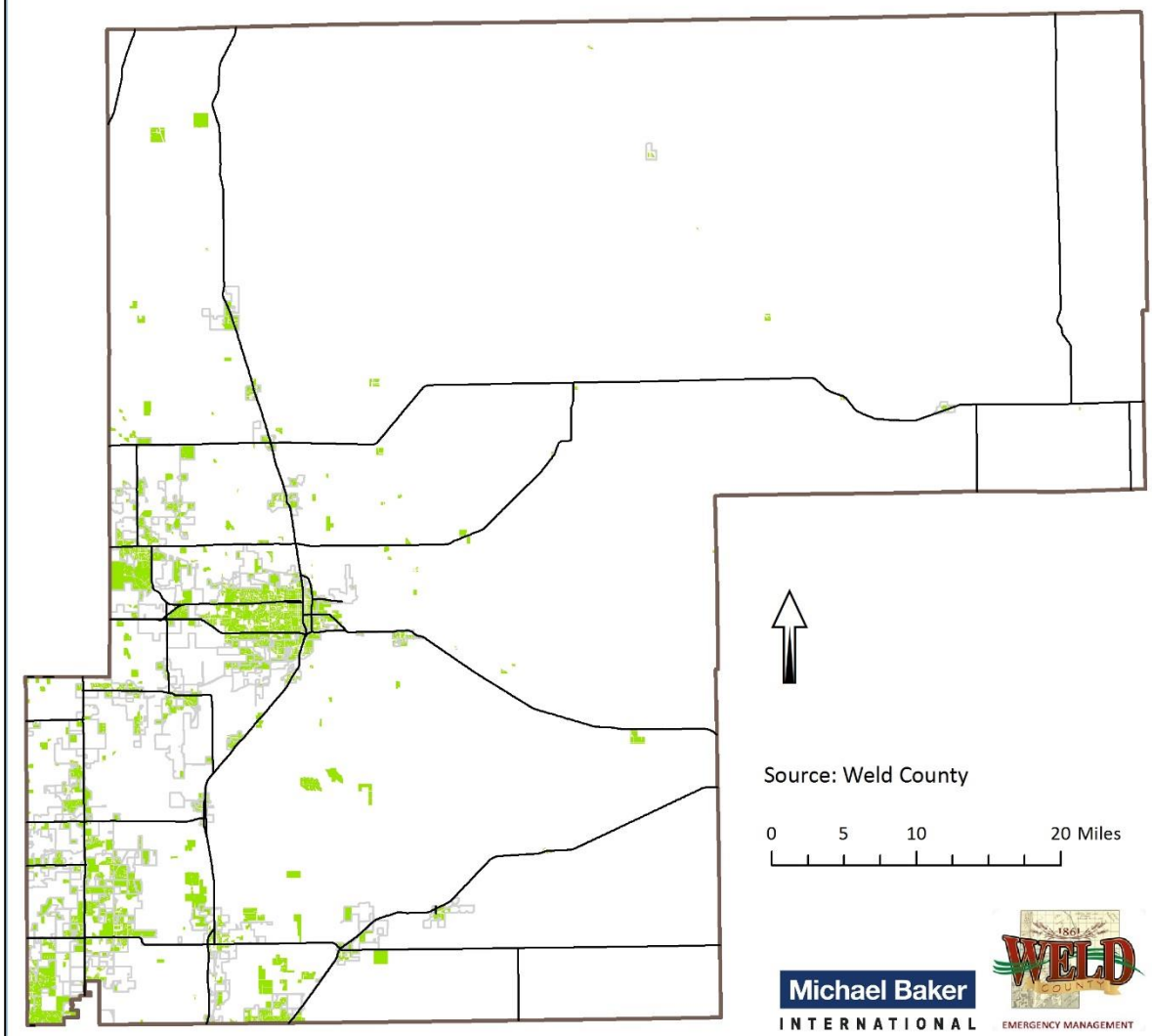


Figure 12. Weld County Subdivisions

Since the adoption of the 2009 Northeast Colorado Regional Hazard Mitigation Plan, new residential and commercial development has continued to occur across the county. The following table depicts the number of new residential building permits issued annually in Weld County between 1990 and 2014. Most of the permit-issuing jurisdictions are municipalities; the remainder are county offices, townships or unincorporated towns.

Table 11. Annual New, Privately-Owned Residential Building Permits Issued in Weld County

Year	Permits/Buildings	Units
2014	2,053	2,708
2013	1,650	1,935
2012	1,192	1,241
2011	807	889
2010	802	863
2009	726	761
2008	867	980
2007	1,572	1,847
2006	2,609	2,922
2005	4,127	4,279
2004	3,915	4,414
2003	3,691	3,963
2002	3,891	4,411
2001	3,991	4,301
2000	4,001	4,369
1999	3,413	3,557
1998	2,839	3,069
1997	1,832	2,117
1996	1,710	1,856
1995	1,326	1,470
1994	1,103	1,164
1993	862	965
1992	511	521

Year	Permits/Buildings	Units
1991	335	357
1990	256	271

Source: U.S. Census Bureau, Building Permits Survey

In the midst of this growth, Weld County is working hard to preserve its agricultural roots. An example of this is the Right to Farm Statement that is included in the county code:

"Weld County is one of the most productive agricultural counties in the United States, typically ranking in the top ten counties in the country in total market value of agricultural products sold. The rural areas of Weld County may be open and spacious, but they are intensively used for agriculture. Persons moving into a rural area must recognize and accept there are drawbacks, including conflicts with long-standing agricultural practices and a lower level of services than in town. Along with the drawbacks come the incentives which attract urban dwellers to relocate to rural areas: open views, spaciousness, wildlife, lack of city noise and congestion, and the rural atmosphere and way of life. Without neighboring farms, those features which attract urban dwellers to rural Weld County would quickly be gone forever." – Excerpt from the Weld County Right to Farm Statement

An additional 2.5 million people are expected to move to Colorado by 2040 and the majority of them are expected to settle along the Front Range. Planners anticipate that much of the coming growth will occur in southwest Weld County, along I-25 and along the southern stretch of US 85. As Weld County's small towns grow into cities, some local leaders anticipate that access to county services will need to be improved. Water availability, infrastructure, and the quality of life that attracts people to northern Colorado will be more difficult to maintain at the same time they become more important (and scarce).

5 Risk Assessment

This section of the Weld County Multi-Jurisdictional Hazard Mitigation Plan (hereinafter referred to as the Plan) describes the local Hazard Identification and Risk Assessment summary performed and evaluated by the County and all participating municipalities. This section consists of the following subsections:

- INTRODUCTION AND UPDATE SUMMARY
- DROUGHT
- EARTHQUAKE
- EXTREME TEMPERATURES
- FLOOD (Including Dam & Levee Failure)
- HAZMAT
- LAND SUBSIDENCE
- PUBLIC HEALTH HAZARDS
- PRAIRIE FIRE
- SEVERE STORMS (Including Hail, Lightning, & Winter Storms)
- STRAIGHT LINE WINDS & TORNADOES

5.1 Introduction and Update Summary

A key step in preventing future disaster losses in Weld County is developing a comprehensive understanding of the hazards that pose risks to local communities. The following terms facilitate comparisons between communities and can be found throughout the Plan.

Table 12. Key Risk Assessment Terminology

Hazard:	Event or physical conditions that have the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, other types of harm or loss
Risk:	Product of a hazard's likelihood of occurrence and its consequences to society; the estimates impact that a hazard would have on people, services, facilities, and structures in a community
Vulnerability:	Degree of susceptibility to physical injury, harm, damage, or economic loss; depends on an asset's construction, contents, and economic value of its functions

Source: Federal Emergency Management Agency, 2001

The Local Hazard Identification and Risk Assessment (HIRA) summary is a method for evaluating risk as defined by probability and frequency of occurrence of a hazard event, exposure of people and property to the hazard, and consequences of that exposure. Different methodologies exist for assessing the risk of hazard events, ranging from qualitative to quantitative approaches.

Weld County and its communities are vulnerable to a wide range of natural and human-caused hazards that threaten life and property. The hazards identified by the HMPC for inclusion in the Plan are those determined to be of actual potential threat to Weld County and its municipalities and are consistent with

the hazards identified by the State of Colorado and the Federal Emergency Management Agency for this part of the State and this region of the country. The hazards profiled for the 2016 Plan include:

- DROUGHT
- EARTHQUAKE
- EXTREME TEMPERATURES
- FLOOD (including dam and levee failure)
- HAZMAT
- LAND SUBSIDENCE
- PRAIRIE FIRE
- PUBLIC HEALTH HAZARDS
- SEVERE STORMS (including hail, lightning, and winter storms)

Some of these hazards can be interrelated (for example, severe storms can cause flooding, drought can lead to wildfire), and thus discussion of these hazards may overlap where necessary throughout the Risk Assessment. Of the sixteen (16) hazards profiled in the State of Colorado's 2013 Hazard Mitigation Plan, ten (10) are addressed in the 2016 Weld County Plan. The following table summarizes this information.

Table 13. State/Local Plan Hazards Matrix

2013 STATE OF COLORADO NATURAL HAZARD MITIGATION PLAN	INCLUDED IN 2016 WELD COUNTY HAZARD MITIGATION PLAN	RATIONALE FOR EXCLUSION
AVALANCHE		No significant vulnerability identified
DROUGHT	•	
EARTHQUAKE	•	
EROSION AND DEPOSITION	•	
EXPANSIVE SOIL		No significant vulnerability identified
EXTREME TEMPERATURES	•	
FLOOD	•	
HAIL	•	Combined with Severe Storm
LANDSLIDE, MUD/DEBRIS FLOW, ROCKFALL		No significant vulnerability identified
LIGHTNING	•	Combined with Severe Storm

2013 STATE OF COLORADO NATURAL HAZARD MITIGATION PLAN	INCLUDED IN 2016 WELD COUNTY HAZARD MITIGATION PLAN	RATIONALE FOR EXCLUSION
PEST INFESTATION		No significant vulnerability identified
SEVERE WIND	•	
SUBSIDENCE	•	
TORNADO	•	
WILDFIRE	•	
WINTER STORM	•	Combined with Severe Storm

The following table documents the review by the HMPC as it relates to the hazards that were re-evaluated and/or identified, analyzed, and addressed through the update of the 2009 Northeast Colorado Regional Hazard Mitigation Plan. Hazards were either *deferred*, *deleted*, *changed*, or *new* hazards were identified.

Table 14. Evaluation of Hazards for Inclusion in the 2016 Weld County Risk Assessment

2009 HAZARD	STATUS	NOTES	2016 HAZARD
AVALANCHE	Deleted	--	--
DROUGHT	Deferred	--	DROUGHT
EARTHQUAKE	Deferred	--	EARTHQUAKE
EROSION AND DEPOSITION	Changed	Merged into another chapter	LAND SUBSIDENCE
EXPANSIVE SOIL	Deleted	--	--
EXTREME TEMPERATURES	Deferred	--	EXTREME TEMPERATURES
FLOOD	Deferred	--	FLOOD (Including Dam and Levee Failure)
HAIL	Changed	Merged into another chapter	SEVERE STORM
LANDSLIDE, MUD/DEBRIS FLOW, ROCKFALL	Deleted	--	--
LIGHTNING	Changed	Merged into another chapter	SEVERE STORM

2009 HAZARD	STATUS	NOTES	2016 HAZARD
PEST INFESTATION	Deleted	--	--
SEVERE WIND	Changed	Merged into another chapter	STRAIGHT LINE WIND & TORNADOES
SUBSIDENCE	Deferred	--	LAND SUBSIDENCE
TORNADO	Changed	Merged into another chapter	STRAIGHT LINE WIND & TORNADOES
WILDFIRE	Deferred	--	PRAIRIE FIRE
WINTER STORM	Changed	Merged into another chapter	SEVERE STORM
BIOLOGICAL HAZARDS	Changed	--	PUBLIC HEALTH HAZARDS
HAZMAT	Was not included in 2009 Plan	Added to 2016 Plan	HAZMAT

To further focus on the list of identified hazards for the Plan, the following table presents a list of all federal disaster and emergency declarations that have occurred in Weld County since 1953, according to the Federal Emergency Management Agency. This list presents the foundation for identifying what hazards pose the greatest risk to the County and to its local jurisdictions.

Table 15. Presidential Disaster and Emergency Declarations in Weld County

DECLARATION #	DATE	EVENT DETAILS
FEMA-4145-DR	09/14/2013	Severe Storms, Flooding, Landslides, and Mudslides
FEMA-3365-EM	09/12/2013	Severe Storms, Flooding, Landslides, and Mudslides
FEMA-1762-DR	05/26/2008	Severe Storms and Tornadoes
FEMA-3224-EM	09/05/2005	Hurricane Katrina Evacuation
FEMA-EM-3185	04/09/2003	Snowstorm
FEMA-1421-DR	06/19/2002	Wildfires
FEMA-1374-DR	05/17/2001	Severe Winter Storms
FEMA-1276-DR	05/17/1999	CO Flooding 4/30/1999

DECLARATION #	DATE	EVENT DETAILS
FEMA-1186-DR	08/01/1997	Severe Storms, Heavy Rain, and Flash Floods, Flooding, Mudslides
FEMA-517-DR	08/02/1976	Severe Storms and Flash Flooding
FEMA-385-DR	05/23/1973	Heavy Rain, Snowmelt, Flooding
FEMA-379-DR	05/08/1973	Dam Failure
FEMA-261-DR	05/19/1969	Severe Storms, Flooding
FEMA-200-DR	06/19/1965	Tornadoes, Severe Storms, Flooding

Source: FEMA Disaster Declarations Summary – Open Government Dataset

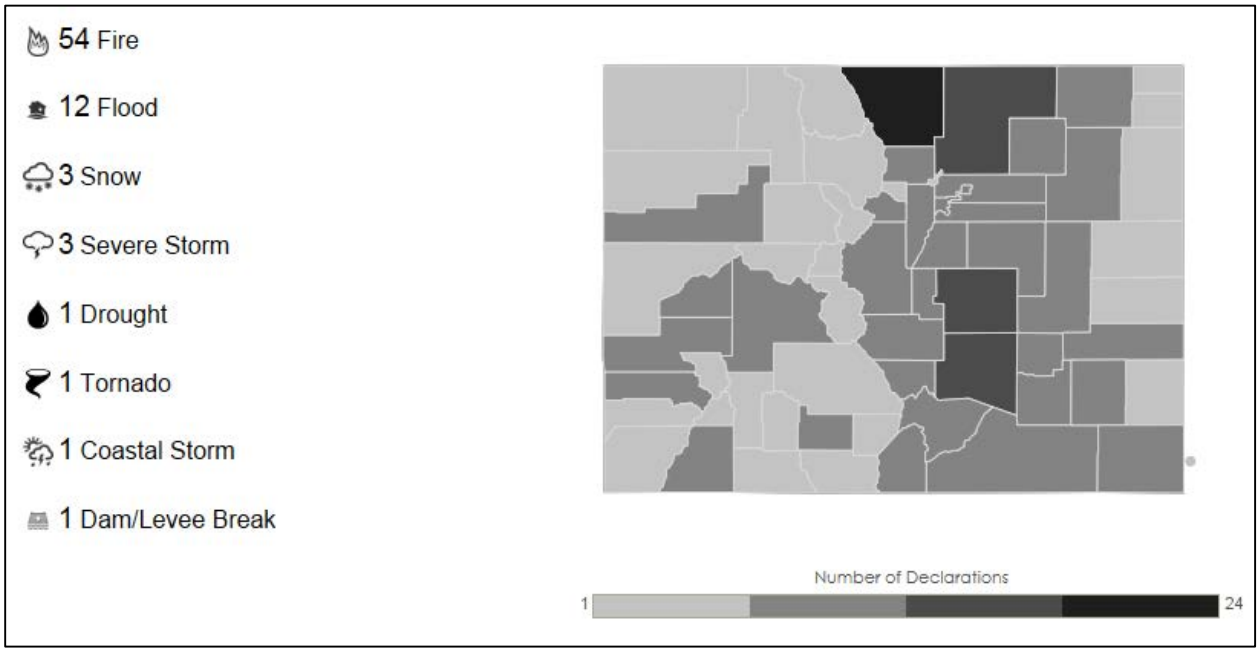


Figure 13. Summary of Disaster Declaration Events, Colorado (Source: FEMA Region VIII)

Figure 14. Summary of Disaster Declaration Events, Weld County (Source: FEMA Region VIII)

Hazards were ranked in order to provide structure and prioritize the mitigation goals and actions discussed in the Plan. Ranking was both quantitative and qualitative. First, the quantitative analysis considered all the historical and geospatial hazard-specific data available. Then, a qualitative method, the Risk Factor (RF) approach, was used to provide additional insights on the specific risks associated with each hazard. This process also served as a valuable cross-check and validation of the quantitative analysis performed.

The RF approach combines historical experiences, local knowledge, and consensus opinions to produce numerical values that allow identified hazards to be ranked against one another. During the planning process, the Weld County HMPC compared the results of the hazard profile against their local knowledge to generate a set of ranking criteria. These criteria were used to evaluate hazards and identify those posing the highest risk.

RF values are obtained by assigning varying degrees of risk to five categories for each hazard: *probability, impact, spatial extent, warning time*, and *duration*. Each degree of risk is assigned a value ranging from 1 to 4 and a weighing factor for each category was agreed upon by the HMPC (documented in the following Table). Based upon any unique concerns for the planning area, the HMPC may also adjust the RF weighting scheme. To calculate the RF value for a given hazard, the assigned risk value for each category is multiplied by the weighting factor. The sum of all five categories equals the final RF value, as demonstrated in the following example equation:

RF Value = [(Probability x .30) + (Impact x .30) +

(Spatial Extent x .20) + (Warning Time x .10) + (Duration x .10)]

Table 16. Risk Factor Criteria

RISK ASSESSMENT CATEGORY	LEVEL	DEGREE OF RISK LEVEL	INDEX	WEIGHT
PROBABILITY What is the likelihood of a hazard event occurring in a given year?	**UNLIKELY**	LESS THAN 1% ANNUAL PROBABILITY	**1**	**30%**
	POSSIBLE	BETWEEN 1 & 10% ANNUAL PROBABILITY	**2**	
	LIKELY	BETWEEN 10 &100% ANNUAL PROBABILITY	**3**	
	HIGHLY LIKELY	100% ANNUAL PROBABILTY	**4**	
IMPACT *In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs?*	**MINOR**	VERY FEW INJURIES, IF ANY. ONLY MINOR PROPERTY DAMAGE & MINIMAL DISRUPTION OF QUALITY OF LIFE. TEMPORARY SHUTDOWN OF CRITICAL FACILITIES.	**1**	**30%**
	LIMITED	MINOR INJURIES ONLY. MORE THAN 10% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR MORE THAN ONE DAY.	**2**	
	CRITICAL	MULTIPLE DEATHS/INJURIES POSSIBLE. MORE THAN 25% OF PROPERTY IN AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR MORE THAN ONE WEEK.	**3**	
	CATASTROPHIC	HIGH NUMBER OF DEATHS/INJURIES POSSIBLE. MORE THAN 50% OF PROPERTY IN	**4**	

RISK ASSESSMENT CATEGORY	LEVEL	DEGREE OF RISK LEVEL	INDEX	WEIGHT
		AFFECTED AREA DAMAGED OR DESTROYED. COMPLETE SHUTDOWN OF CRITICAL FACILITIES FOR 30 DAYS OR MORE.		
SPATIAL EXTENT *How large of an area could be impacted by a hazard event? Are impacts localized or regional?*	**NEGLIGIBLE**	LESS THAN 1% OF AREA AFFECTED	**1**	**20%**
	SMALL	BETWEEN 1 & 10% OF AREA AFFECTED	**2**	
	MODERATE	BETWEEN 10 & 50% OF AREA AFFECTED	**3**	
	LARGE	BETWEEN 50 & 100% OF AREA AFFECTED	**4**	
WARNING TIME *Is there usually some lead time associated with the hazard event? Have warning measures been implemented?*	**MORE THAN 24 HRS**	SELF DEFINED	**1**	**10%**
	12 TO 24 HRS	SELF DEFINED	**2**	
	6 TO 12 HRS	SELF DEFINED	**3**	
	LESS THAN 6 HRS	SELF DEFINED	**4**	
DURATION *How long does the hazard event usually last?*	**LESS THAN 6 HRS**	SELF DEFINED	**1**	**10%**
	LESS THAN 24 HRS	SELF DEFINED	**2**	
	LESS THAN 1 WEEK	SELF DEFINED	**3**	
	MORE THAN 1 WEEK	SELF DEFINED	**4**	

According to the default weighting scheme applied, the highest possible RF value is 4.0. The methodology illustrated above lists categories that are used to calculate the variables for the RF value.

HAZARD RANKING RESULTS

The following table summarizes the results of the Risk Factor ranking exercise performed by members of the Weld County HMPC. The results represent the relative rank of different hazards within the county from the perspective of local stakeholders and subject matter experts from formally adopting communities.

Table 17. Risk Factor Results for Weld County and Participation Jurisdictions

#	NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
1	Severe Storm	1.100	0.750	0.717	0.317	0.250	3.133
2	Straight-Line Winds / Tornadoes	0.975	0.800	0.750	0.392	0.167	3.083
3	HAZMAT	0.825	0.600	0.450	0.383	0.225	2.483
4	Flood	0.875	0.675	0.600	0.242	0.300	2.692
5	Prairie Fire / Wildfire	0.900	0.550	0.467	0.383	0.208	2.508
6	Extreme Temperatures	0.975	0.475	0.667	0.142	0.300	2.558
7	Drought	0.925	0.450	0.683	0.108	0.292	2.458
8	Public Health Hazards	0.625	0.625	0.550	0.192	0.283	2.275
9	Earthquake	0.400	0.500	0.383	0.283	0.125	1.692
10	Land Subsidence	0.600	0.400	0.300	0.267	0.200	1.767

Based on the Weld County RF analysis, the natural hazards with the highest risk factor scores are "Severe Storm" and "Straight-Line Winds/Tornadoes." Both hazards have a RF value over 3. This is primarily due to the high probability of the hazards occurring and the wide spatial extent of their potential damages and impacts. "HAZMAT," "Flood", "Prairie Fire/Wildfire," and "Extreme Temperatures" also ranked within the "High Risk" RF category. "Drought" and "Public Health Hazards" round out the list of moderate to high ratings, with scores between 2.2 and 2.4. The Risk Factor exercise conducted by the HMPC determined that "Earthquake" and "Land Subsidence" are relatively low-risk hazards for communities and emergency managers in Weld County.

The conclusions drawn from the qualitative assessment carried out by the Weld County HMPC were organized into three categories (shown in the following table) and provided a summary of hazard risk for Weld County based on High, Moderate or Low risk designations. This process helped frame ongoing planning discussions around local and regional hazard risks and assisted with the prioritization of mitigation actions.

Table 18. Hazard Risk Conclusions for Weld County

HIGH RISK (2.5 or higher)	**Severe Storm; Straight-Line Winds/Tornadoes; HAZMAT; Flood; Prairie Fire / Wildfire; Extreme Temperatures**
MODERATE RISK (2.0 – 2.4)	**Drought; Public Health Hazards**
LOW RISK (1.9 or lower)	**Earthquake; Land Subsidence**

The following sections provide hazard profiles and risk assessments for each of the ten hazards identified by the HMPC for the 2016 Plan update. The hazards are presented in alphabetical order rather than by their levels of risk.

5.2 Hazard Profiles

Over time, accepted risk assessment methodologies evolve, develop, and grow. Data availability also tends to change as funding shifts and technological improvements emerge. For this reason, it is important to incorporate best available data and analysis strategies when formulating a comprehensive mitigation plan. The table on the following page summarizes the vulnerability and loss estimation methodologies used in the 2009 Northeast Colorado Regional Hazard Mitigation Plan and presents the updated methodologies used for the 2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan. This table highlights the progress of Weld County's hazard mitigation planning efforts over time and provides a record of data use to inform future mitigation planning projects in the County.

Table 19. Summary of Vulnerability Analysis and Loss Estimation Methodologies

	2009 Northeast Colorado Regional Hazard Mitigation Plan – Weld County Planning Element	2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan
Atmospheric Hazards		
Extreme Temperatures	*Vulnerability Analysis (Heat):* No jurisdiction-specific analysis; history of highest recorded temps in county (Source: NCDC). *Loss Estimation (Heat):* Narrative, no jurisdiction or county-specific analysis *Vulnerability Analysis (Cold):* No mapping/jurisdiction-specific analysis; history of lowest recorded temps in county as well as number of severe cold incidents (Source: NCDC; CDPHE tracking of # of hospitalizations fur to extreme cold by county) *Loss Estimation (Cold):* Narrative, no jurisdiction or county-specific analysis	*Vulnerability Analysis (Heat): Vulnerability Analysis (Cold):* Assessment of historical extreme cold events based on data supplied by the Western Regional Climate Center (max temps about 90 and average number of days) and NOAA Storm Event Database. *Loss Estimation (Heat):* Narrative. *Vulnerability Analysis (Cold):* Assessment of historical extreme cold events based on data supplied by the Western Regional Climate Center (max temps about 90 and average number of days) and NOAA Storm Event Database. *Loss Estimation (Cold):* Narrative.
Severe Storm: (including Hail, Lightning, & Winter Storm)	<u>Hail</u> *Vulnerability Analysis (Hail):* No jurisdiction specific analysis; historical data from NCDC *Loss Estimation (Hail):* Assessment of historical hail losses based on data supplied by SHELDUS <u>Lightning</u> *Vulnerability Analysis (Lightning):* Assessment of historical injuries and fatalities based on data supplied by NWS CO Lightning Resource Center *Loss Estimation (Lightning):* Narrative based on data supplied by NWS, NOAA NCDC	<u>Hail</u> *Vulnerability Analysis:* GIS mapping using Storm Prediction Center historical hail events; Narrative of historical events from NCDC. *Loss Estimation:* Narrative; Loss estimates based on historical events reported by NCDC; Loss estimates representing 10 percent, 30 percent and 50 percent of the assessed value of exposed building stock/critical facilities for those jurisdictions and districts ranking this hazard as high. <u>Lightning</u> *Vulnerability Analysis:* GIS mapping using National Weather Service Historical lightning flash density maps; National Climatic Data Center - Historical lightning events by county and jurisdiction. *Loss Estimation:* Narrative; Loss estimates based on historical events reported by NCDC; National Weather Service - Historical lightning casualties by county.

	2009 Northeast Colorado Regional Hazard Mitigation Plan – Weld County Planning Element	2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan
	Winter Storm *Vulnerability Analysis (winter storm):* Assessment of historical events based on data supplied Weld OEM, COEM *Loss Estimation (winter storm):* Assessment of historical losses from snow storms based on data supplied by SHELDUS	Winter Storm *Vulnerability Analysis:* Narrative of historical events from NCDC, Weld OEM, COEM *Loss Estimation:* Narrative; Loss estimates based on historical events reported by NCDC
Straight-Line Winds & Tornadoes	Straight-Line Winds & Tornadoes *Vulnerability Analysis:* No jurisdiction-specific vulnerability analysis; Map of tornado paths in planning region (1950 – 1996) from CO OEM; list of tornado occurrences by County (1950 -2008) from the "2009 County Profile Information Guides"; NCDC data *Loss Estimation:* No jurisdiction-specific loss-estimation. Review of losses from previous tornado events in the planning area.	*Vulnerability Analysis:* Assessment of historical high wind and tornado events based on data supplied by the NCDC: Storm Paths and F-scale mapping from NCDC; Social vulnerability/housing stock analysis for vulnerable community identification. *Loss Estimation:* Narrative; Loss estimates based on historical events reported by NCDC
Drought	*Vulnerability Analysis:* No jurisdiction-specific analysis of drought vulnerability; narrative cited information from the 2007 CO Drought Mitigation and Response Plan as well as the 2004 Drought and Water Supply Assessment; *Loss Estimation:* No jurisdiction-specific analysis; Used USDA crop insurance estimates to frame Regional losses	*Vulnerability Analysis:* Assessment of historical drought events based on data supplied by CO Drought Mitigation and Response Plan (2010), NCDC, and the Colorado Climate Center. *Loss Estimation:* Narrative, references drought impact analysis contained in Annex B of the Colorado Drought Mitigation Response Plan.

	2009 Northeast Colorado Regional Hazard Mitigation Plan – Weld County Planning Element	2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan
Flood	*Vulnerability Analysis (flood):* HAZUZ-MH MR3 analysis. The 100-year floodplain was generated for major rivers and creeks in the county (those with a 10 square mile minimum drainage area). A USGS 30 meter resolution digital elevation model (DEM) was used as the terrain base in the model. *Loss Estimation (flood):* A HAZUS Flood Model was used to estimate flood depths. Potential losses to the county were based on Census Block based buildings and population data. To estimate the economic loss for each city, the flooded Census Blocks were extracted, and the damage costs were totaled using GIS. This was done for each city and unincorporated area to illustrate how the risk varies across the planning area, with the results summarized in a table. *Vulnerability Analysis (dam/levee failure):* Assessment based on analysis of National Inventory of Dams provided with HAZUS MR3 *Loss Estimation (dam/levee failure):* Assessment based on analysis of National Inventory of Dams provided with HAZUS MR3	*Vulnerability Analysis*: Hazus Level 2 analysis of a 1% annual chance flood event scenario using: FEMA defined 100-yr floodplains supplemented by Hazus 100-yr floodplains, best available LiDAR and DEMs terrain coverages; Critical facilities also assessed separately; Narrative of historical flood events from NCDC and the current State Hazard Mitigation Plan *Loss Estimation: Loss Estimation:* Hazus Level 2 analysis of a 1% annual chance flood event scenario using: FEMA defined 100-yr floodplains supplemented by Hazus 100-yr floodplains, best available LiDAR and DEMs terrain coverages; Critical facilities also assessed separately.
Geologic Hazards		
Earthquake	*Vulnerability Analysis:* Narrative; review of previous events; vulnerability estimated from CGS Earthquake Evaluation Report, 2008, using 5 Hazus scenarios *Loss Estimation:* Narrative; vulnerability estimated from CGS Earthquake Evaluation Report, 2008, using 5 Hazus scenarios	*Vulnerability Analysis:* Hazus Level 2 analysis of a Golden Fault scenario using: CGS fault, soil, and landslide inputs and FEMA Region VIII updated site-specific building inventory derived from local, state, and federal data sources. Critical facilities also assessed separately; Narrative of historical earthquake events from CGS and the current State Hazard Mitigation Plan Loss Estimation: Hazus Level 2 analysis of a Golden Fault scenario using: CGS fault, soil, and landslide inputs and FEMA Region VIII updated site-specific building inventory derived from local, state, and federal data sources; Critical facilities also assessed separately.

	2009 Northeast Colorado Regional Hazard Mitigation Plan – Weld County Planning Element	2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan
Land Subsidence	*Vulnerability Analysis:* CGS map of subsidence areas about inactive coal mines (State scale); Previous occurrences from the 2008 State Mitigation Plan *Loss Estimation*: Narrative	*Vulnerability Analysis:* GIS mapping and analysis using building stock/critical facility data and CGS undermined areas; Narrative of historical land subsidence events from CGS and the current State Hazard Mitigation Plan. *Loss Estimation:* Loss estimates representing 10 percent, 50 percent and 100 percent of the assessed value of exposed building stock/critical facilities; Counts and estimated losses focused on those areas classified at potential risk.
Other Hazards		
Hazmat	*Hazard not profiled in 2009 NE CO Regional Plan*	Incident report Database-PHMSA - Office of Hazardous Materials Safety-Historical Hazmat incidents
Noxious Weeds	*Vulnerability Analysis:* Narrative. Plan references distribution maps of noxious weeks from the CO Department of Agriculture website; Infestation acreage from Colorado DOA *Loss Estimation:* Narrative.	The Hazard Mitigation Planning Committee elected to remove this hazard from the 2016 Weld County updated Hazard Mitigation Plan.
Prairie Fire	*Vulnerability Analysis:* GIS analysis of wildland urban interface using data from the Colorado Wildfire Risk Assessment (2002); Narrative review of previous events. A GIS overlay was used to identify certain facilities in the moderate to high fire risk areas. *Loss Estimation:* none	*Vulnerability Analysis:* GIS mapping and analysis using building stock/critical facility data and COWRAP wildfire and wildland urban interface risk analysis; Reference analysis included in County CWPPs; Narrative of historical prairie fire events. *Loss Estimation:* Loss estimates representing 10 percent, 50 percent and 100 percent of the assessed value of exposed building stock/critical facilities; Counts and estimated losses focused on those areas classified as most vulnerable across the county based on COWRAP analysis.
Public Health Hazards	*Vulnerability Analysis:* Narrative based on records of historical occurrences (Colorado CDPHE); no jurisdiction-scale analysis *Loss Estimation:* None; no jurisdiction-scale analysis	*Vulnerability Analysis:* Social vulnerability analysis, estimated # of episodes of illness, healthcare utilization, and death associated with moderate and severe pandemic influenza scenarios in Colorado (Source: CO-specific Census data in the CDC's FluAid program)

	2009 Northeast Colorado Regional Hazard Mitigation Plan – Weld County Planning Element	2016 Weld County Multi-Jurisdictional Hazard Mitigation Plan
		Loss Estimation: Assessment of loss using CDC's FluWorkLoss 1.0 tool. The tool estimates the potential number of days lost from work due to a pandemic based on Census 2010 data.

The following table shows a summary of each participating jurisdictions' vulnerability to the hazards identified in the Plan. The results are a product of each jurisdiction's review of the multi-hazard risk assessment and their individual RF value obtained by assigning varying degrees of risk to the five categories for each hazard: *probability, impact, spatial extent, warning time*, and *duration*.

Table 20. Hazard Vulnerability Summary by Jurisdiction

	Drought	Earthquake	Extreme Temperatures	Flood	Hazmat	Land Subsidence	Public Health Hazards	Prairie Fire	Severe Storm	Straight-Line Winds & Tornadoes
Weld County	Moderate Risk	Moderate Risk	High Risk	High Risk	High Risk	Low Risk	High Risk	High Risk	High Risk	High Risk
Town of Ault	Low Risk	Low Risk	Moderate Risk	Low Risk	High Risk	Low Risk	Low Risk	Low Risk	High Risk	High Risk
City of Brighton	Moderate Risk	Low Risk	High Risk	Moderate Risk	High Risk	Low Risk	High Risk	High Risk	High Risk	High Risk
Town of Dacono	High Risk	Low Risk	High Risk	High Risk	Moderate Risk	Moderate Risk	High Risk	Low Risk	High Risk	High Risk
Town of Erie	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk
City of Evans	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk
Town of Firestone	Low Risk	Low Risk	Moderate Risk	High Risk	Moderate Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk
City of Fort Lupton	High Risk	Moderate Risk	Low Risk	Moderate Risk	Moderate Risk	Low Risk	High Risk	Low Risk	Low Risk	Moderate Risk
Town of Frederick	High Risk	Low Risk	Low Risk	High Risk	Low Risk	Low Risk	Low Risk	High Risk	High Risk	High Risk
Town of Garden City	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk
Town of Gilcrest	High Risk	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk	Low Risk	Moderate Risk	Low Risk	Moderate Risk	Low Risk
City of Greeley	High Risk	Low Risk	High Risk	Moderate Risk	High Risk	Low Risk	High Risk	Moderate Risk	High Risk	Moderate Risk
Town of Hudson	Low Risk	Low Risk	Moderate Risk	Low Risk	High Risk	Low Risk	Moderate Risk	Moderate Risk	High Risk	High Risk
Town of Keenesburg	Moderate Risk	High Risk	Low Risk	Moderate Risk	Low Risk	Low Risk	Low Risk	Low Risk	High Risk	High Risk

	Drought	Earthquake	Extreme Temperatures	Flood	Hazmat	Land Subsidence	Public Health Hazards	Prairie Fire	Severe Storm	Straight-Line Winds & Tornadoes
Town of Kersey	Low Risk	Low Risk	Low Risk	Moderate Risk	Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk
Town of LaSalle	High Risk	Moderate Risk	High Risk	Moderate Risk	High Risk	Low Risk	High Risk	Low Risk	High Risk	High Risk
Town of Mead	Low Risk	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk	Low Risk	Low Risk	Low Risk	High Risk	High Risk
Town of Milliken	Moderate Risk	Low Risk	Moderate Risk	High Risk	Moderate Risk	Moderate Risk	Low Risk	High Risk	High Risk	High Risk
Town of Pierce	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk
Town of Platteville	Low Risk	Low Risk	Moderate Risk	Low Risk	Moderate Risk	Low Risk	Moderate Risk	Moderate Risk	High Risk	High Risk
Town of Severance	High Risk	Low Risk	High Risk	Low Risk	Low Risk	Low Risk	Low Risk	Moderate Risk	High Risk	High Risk
Town of Windsor	Moderate Risk	Low Risk	High Risk	Low Risk	Low Risk	Low Risk	Low Risk	Moderate Risk	High Risk	Moderate Risk

5.2.1 Drought

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Drought	0.925	0.450	0.683	0.108	0.292	2.458
MODERATE RISK HAZARD (2.0 - 2.4)						

5.2.1.1 Hazard Identification

Drought is a normal part of virtually all climates, including areas with high and low average rainfall. It is caused by a deficiency of precipitation and can be aggravated by other factors such as high temperatures, high winds, and low relative humidity.

Droughts can be grouped as meteorological, hydrologic, agricultural, and socioeconomic. Representative definitions commonly used to describe the various types of drought are summarized below.

- **Meteorological** drought is defined solely on the degrees of dryness. It is expressed as a departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
- **Hydrologic** drought is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- **Agricultural** drought is defined principally in terms of soil moisture deficiencies relative to water demands of plant life, usually crops.
- **Socioeconomic** drought associates the supply and demand of economic goods or services with elements of meteorological, hydrologic, and agricultural drought. Socioeconomic drought occurs when the demand for water exceeds the supply as a result of a weather related supply shortfall. The incidence of this type of drought can increase because of a change in the amount of rainfall, a change in societal demands for water (or vulnerability to water shortages), or both.

The Palmer Drought Severity Index (PDSI) was developed by Wayne Palmer in the 1960s and uses temperature and rainfall information in a formula to determine dryness. Over time it has become the semi-official drought index for risk assessment and hazard analysis. The Palmer Index is most effective in determining long term drought—a matter of several months—and is not used for short-term forecasts (a matter of weeks). It uses a 0 as normal conditions, and drought is shown in terms of negative numbers; for example, -2 is moderate drought, -3 is severe drought, and -4 is extreme drought. The following table provides an overview of the Palmer Index compared to other classifications.

Table 21. Drought Severity Classification

DROUGHT SEVERITY	RETURN PERIOD (YRS)	DESCRIPTION OF POSSIBLE IMPACTS	DROUGHT MONITORING INDICES		
			Standardized Precipitation Index (SPI)	NDMC* Drought Category	Palmer Drought Index
Minor Drought	3 to 4	Going into drought; short-term dryness slowing growth of crops or pastures; fire risk above average. Coming out of drought; some lingering water deficits; pastures or crops not fully recovered.	-0.5 to -0.7	D0	-1.0 to -1.9
Moderate Drought	5 to 9	Some damage to crops or pastures; fire risk high; streams, reservoirs, or wells low, some water shortages developing or imminent, voluntary water use restrictions requested.	-0.8 to -1.2	D1	-2.0 to -2.9
Severe Drought	10 to 17	Crop or pasture losses likely; fire risk very high; water shortages common; water restrictions imposed	-1.3 to -1.5	D2	-3.0 to -3.9
Extreme Drought	18 to 43	Major crop and pasture losses; extreme fire danger; widespread water shortages or restrictions	-1.6 to -1.9	D3	-4.0 to -4.9
Exceptional Drought	44 +	Exceptional and widespread crop and pasture losses; exceptional fire risk; shortages of water in reservoirs, streams, and wells creating water emergencies	Less than -2	D4	-5.0 or less

*Source: National Drought Mitigation Center

5.2.1.2 Previous Occurrences

With its semi-arid climate, drought is a natural part of the Colorado environment. Because of natural variations in regional climate and precipitation, it is rare for the entire state to be deficient in moisture at the same time. Single season droughts that cover portions of the state, however, are fairly common.

Drought impacts can cover large areas and may come in many forms. The most significant drought impacts in Colorado are related to water-intensive activities including agriculture, municipal use, wildfire protections, recreation, wildlife preservation, commerce, and tourism. Drought conditions can lead to the compaction of soil, increasing erosion potential and decreasing water quality. The impacts associated with drought magnify as the duration of the event increases, as supplemental supplies in reservoirs are depleted and water levels in groundwater aquifers decline.

The State of Colorado has experienced severe, widespread drought several times since the late 1800s. The 2013 State of Colorado Drought Mitigation and Response Plan included a comprehensive description of the major droughts that have occurred in Colorado, including the Dust Bowl of 1930s, the 1950s drought of the Great Plains, and the Colorado drought of 2002. The table below summarizes the duration of historical dry and wet periods in Colorado.

Table 22. Historical Dry and Wet Periods in Colorado

Date	Dry	Wet	Duration (years)
1893-1905	X		12
1905-1931		X	26
1931-1941	X		10
1941-1951		x	10
1951-1957	X		6
1957-1959		X	2
1963-1965	X		2
1965-1975		X	10
1975-1978	X		3
1978-1999		X	20
2000-2006	X		6
2007-2010		X	3
2010-2013	X		3

Source: 2013 Colorado Drought Mitigation and Response Plan

The previous table highlights seven multi-year droughts in Colorado since 1893. The most dramatic drought event occurred in the late 1930s and 1950s when a number of states in the region were affected by a several-year drought.

The Colorado drought of 2002 was the single most intensive year of drought in Colorado's history.[6] Statewide snowpack was at or near all-time lows, and the year is considered the driest single year recorded in Colorado history. What made the 2002 drought event so unusual was that all of the State was dry at the same time. Regional soil moisture was depleted and reservoirs dropped to extremely low levels. The dramatic drought conditions prompted widespread water restrictions that were heavily enforced and regulated. These restrictions included limits to watering lawns, washing cars, or the use of water for any other non-essential uses. Some municipalities offered incentives for property owners to remove their lawns and adopt xeriscaped landscape designs. Ultimately, it was the wet period of the late 1990s and the increased reservoir storage during that time that helped Colorado to survive the drought of 2002.

More recently, severe drought conditions have impacted the State of Colorado. Based on the U.S. Drought Monitor, approximately 50% of Colorado was already experiencing drought conditions by the start of 2012. Minimal accumulations of snow worsened conditions further, as below average snowfall and above average temperatures occurred in February and March. In April and May of 2012, warm temperatures

[6] Pielke and Doesken, 2003. The Drought of 2002 in Colorado.

caused early runoff as the thin snowpack melted rapidly. The entire State of Colorado was under drought conditions by the end of May 2012 and stream flows measured only slightly better compared to the extreme drought years of 1934, 1954, 1977 and 2002.

Local agricultural production was heavily impacted by the 2011-2013 drought. Because soil moisture was low and temperatures high on the plains during the spring planting season, many crops struggled to take root and failed to survive the summer. Agricultural drought impacts were exacerbated by limited water availability for summer irrigation diversions due to less snowpack and runoff. In the eastern plains of Colorado, June temperatures were consistently over 100°F. As hay production decreased to 10% - 50% of average supply, prices increased dramatically. For example, corn prices increased 43% over two years as neighboring corn-producing regions in other states also struggled with drought. By early June 2013, many areas of the Eastern Plains normally covered by crops or cattle were barren. Many ranchers sold their herds as grasses had gone dormant and hay was expensive and in short supply.

Additional economic impacts seen during the 2011-2013 drought period included disruptions to the tourism industry. Colorado experienced decreased rafting numbers due to low stream flows and wildfire conditions that made some river reaches inaccessible. Colorado's ski industry, another important economic driver for the state, experienced an 11.9% decrease in visits for the 2011-2012 season as compared to the five-year average. Many ski resorts closed early in 2012 because of high temperatures and minimal March snowfall.

In addition to having a devastating economic impact on Colorado agriculture and tourism, the 2011-2013 drought period contributed to elevated wildfire risk across the state. Two of the State's most destructive wildfires occurred during the 2012 drought period: the High Park Fire and the Waldo Canyon Fire. Dry conditions on the Eastern Plains contributed to an extended grass fire season that threatened homes and property.

During drought conditions Secretarial Disaster Declarations are used to make low interest loans and other emergency assistance available to those who have been affected (largely farmers and ranchers). Under the process laid out by the Farm Services Agency (FSA), a USDA Disaster Declaration can be made if any portion of a County has experienced eight consecutive weeks of severe drought according to the U.S. Drought Monitor.[7] The following Table lists the disaster declarations that have affected Weld County since 2003.

[7] The 2013 Colorado Drought Mitigation Response Plan

Table 23. USDA Secretarial Disasters Affecting Weld County 2005 - Present

Year	Type	Disaster # and Affected Counties
2013	Drought	USDA Designates 30 counties in Colorado as primary natural disaster areas due to damages and losses caused by the recent drought
2012	Hail, High Winds and Flash Flooding	USDA Designates 7 counties in Colorado as primary natural disaster areas due to damages and losses caused by hail, high winds and flash flooding that occurred June 7, 2012
2012	High Winds	USDA Designates 62 counties in Colorado as primary natural disaster areas due to damages and losses caused by high winds
2008	Hail	USDA Designates 25 counties in Colorado as primary natural disaster areas due to damages and losses caused by Hail
2008	Drought	USDA Designates 41 counties in Colorado as primary natural disaster areas due to damages and losses caused by Drought
2006	Heat, High Winds and ongoing Drought	USDA Designates 29 counties in Colorado as primary natural disaster areas due to damages and losses caused by heat, high winds and ongoing drought
2006	Drought, Fire, High Winds and Heat	USDA Designates 35 counties were designated as primary natural disaster areas, due to losses caused by drought, fire, high winds and heat
2006	Drought, Crop Disease and Insect Infestation	USDA Designates 7 counties in Colorado as primary natural disaster areas due to damages and losses caused by ongoing drought, crop disease and insect infestation

Source: USDA – Colorado Farm Services Agency

Numerous drought declarations occurred between 2006 and 2013. One of the most significant disaster periods occurred in early July 2012, in which 62 of the State's 64 counties were included in a Secretarial disaster designation due to the 2011-2013 drought. Farmers in designated counties were able to apply for Farm Service Agency emergency loans for the next eight months.

Because drought is usually considered a regional hazard, all jurisdictions are assumed to have the same risk level within Weld County. Drought risk is based on a combination of the frequency, severity, and spatial extent (the physical nature of drought) and the degree to which a population or activity is vulnerable to the effects of drought. The degree of Weld County's vulnerability to drought depends on the environmental and social characteristics of the region and is measured by its ability to anticipate, cope with, resist, and recover from drought. The 2013 State of Colorado Drought Mitigation and Response Plan includes information about total drought impacts for all Colorado counties from 1935 (the earliest reported drought impact) to May 8, 2013 for the following impact categories:

Agriculture: Drought impacts associated with agriculture, farming, aquaculture, horticulture, forestry or ranching. Examples of drought-induced agricultural impacts include: damage to crop quality; income loss

for farmers due to reduced crop yields; reduced productivity of cropland; insect infestation; plant disease; increased irrigation costs; cost of new or supplemental water resource development (wells, dams, pipelines) for agriculture; reduced productivity of rangeland; forced reduction of foundation stock; closure/limitation of public lands to grazing; high cost or unavailability of water for livestock, Christmas tree farms, forestry, raising domesticated horses, bees, fish, shellfish, or horticulture.

Business and Industry: Drought impacts affecting non-agriculture and non-tourism businesses, such as lawn care businesses, sales of recreational vehicles or other recreational gear, and plant nurseries. Examples of drought-induced business impacts could include: reduction or loss of employees, change in sales or volume of business, variation in number of calls for service, early closure or late opening for the season, bankruptcy, permanent store closure, economic impacts.

Energy: Drought impacts associated with power production, electricity rates, energy revenue, and purchase of alternate sources of energy. Examples include hydropower and non-hydropower production when affected by drought, electricity rates, revenue shortfalls and/or windfall profits, purchase of electricity when hydropower generation is down.

Fire: Drought impacts contributing to forest, range, rural, or urban fires, fire danger, and burning restrictions. Examples of fire impacts include: Enactment/easing of burning restrictions, fireworks ban, increased fire risk, occurrence of fire (number of acres burned, number of wildfires compared to average, people displaced, etc.), increase in firefighting personnel, state of emergency during periods of high fire danger, closure of roads land due to fire occurrence or risk.

Plants and Wildlife: Drought impacts associated with unmanaged plants and wildlife, fisheries, forests, and other fauna. Examples of drought-induced impacts on plants and wildlife include: loss of biodiversity of plants or wildlife; loss of trees from rural or urban landscapes, shelterbelts, or wooded conservation areas; reduction and degradation of fish and wildlife habitat; lack of feed and drinking water; greater mortality due to increased contact with agricultural producers, as animals seek food from farms and producers are less tolerant of the intrusion; disease; increased vulnerability to predation (from species concentrated near water); migration and concentration (loss of wildlife in some areas and too many wildlife in other areas); increased stress to endangered species; salinity levels affecting wildlife, wildlife encroaching into urban areas, loss of wetlands.

Relief, Response, and Restrictions: Drought effects associated with disaster declarations, aid programs, requests for disaster declaration or aid, water restrictions, fire restrictions. Impacts include: Disaster declarations, aid programs, USDA Secretarial disaster declarations, Small Business Association disaster declarations, government relief and response programs, state-level declarations, county-level declarations, a declared "state of emergency," requests for declarations or aid, non-profit organization-based relief, water restrictions, fire restrictions, declaration of drought watches or warnings.

Society and Public Health: Drought effects associated with public and human health. Examples of drought-induced social impacts include: health-related problems related to reduced water quantity and/or quality, such as increased concentration of contaminants; loss of human life (e.g., from heat stress); increased respiratory ailments; increased disease caused by wildlife concentrations; population migration (rural to urban areas, migrants into the United States); loss of aesthetic values; change in daily activities (non-recreational, like putting a bucket in the shower to catch water), elevated stress levels, meetings to discuss drought, communities creating drought plans, lawmakers altering penalties for

violation of water restrictions, demand for higher water rates, cultural/historical discoveries from low water levels, cancellation of fundraising events, cancellation/alteration of festivals or holiday traditions, stockpiling water, public service announcements and drought information websites, protests.

Tourism and Recreation: Drought effects associated with recreational activities and tourism. Examples of drought-induced tourism and recreation impacts include: water access or navigation problems for recreation; bans on recreational activities; reduced license, permit, or ticket sales (e.g. hunting, fishing, ski lifts, etc.); losses related to curtailed activities (e.g. bird watching, hunting and fishing, boating, etc.); reduced park visitation; delayed opening for ski resorts; increase in artificial snow generation; cancellation or postponement of sporting events.

Water Supply and Quality: Drought effects associated with water supply and water quality. Examples of drought-induced water supply and quality impacts include: Dry wells, water restrictions, changes in water rates, easing of water restrictions, increase in requests for new well permits, changes in water use due to water restrictions, greater water demand, decrease in water allocation or allotments, installation or alteration of water pumps or water intakes, changes to allowable water contaminants, water line damage or repairs due to drought stress, drinking water turbidity, change in water color or odor, declaration of drought watches or warnings, mitigation activities.

Based on data collected by the National Drought Mitigation Center (NDMC), the state-wide impact assessment, Weld County has recorded major impacts from drought since 1935.[8] The table below summarizes the drought impacts reported in Weld County alone since 2005.

Table 24. Drought Impacts Reported in Weld County (2005 – 2015)

Impact Category	Count	Percentage of Total Impacts
Agriculture	139	32.4%
Relief, Response, and Restrictions	80	18.6%
Water Supply and Quality	56	13.1%
Society and Public Health	52	12.1%
Fire	32	7.5%
Plants and Wildlife	31	7.2%
Business and Industry	23	5.4%
Tourism and Recreation	11	2.5%
Energy	5	1.2%

[8] 2013 Colorado Drought Mitigation Response Plan (p. 24)

Impact Category	Count	Percentage of Total Impacts
Total Impacts:	429	100%

Source: NDMC Drought Impact Reporter

Over the last decade, impacts related to agriculture made up 32.4% of the total drought impacts reported in Weld County. Eighteen point six percent of drought impacts reported in the county were related to Relief, Response, and Restrictions. Impacts related to Water Supply and Quality, Society and Public Health, and Plants and Wildlife, each fall at around 7.2% - 13.1% of the total reported drought impacts in the county. Fire related impacts make up 7.5% of drought impacts reported in Weld County. Tourism and Recreation, and Business and Industry impacts account for a total of 2.5%-5.4% of all reported drought impacts. Energy related impacts made up the lowest percentage of reported impacts in the last decade at 1.2%

The National Oceanic and Atmospheric Administration Paleoclimatology Program studies drought by analyzing records from tree rings, lake and dune sediments, archaeological remains, historical documents, and other environmental indicators to obtain a broader picture of the frequency of droughts in the United States. According to their research, "paleoclimatic data suggest that droughts as severe as the 1950's drought have occurred in central North America several times a century over the past 300-400 years, and thus we should expect (and plan for) similar droughts in the future. The paleoclimatic record also indicates that droughts of a much greater duration than any in the 20th century have occurred in parts of North America as recently as 500 years ago." Based on this research, the 1950's drought situation could be expected approximately once every 50 years or a 20% chance every ten years. An extreme drought, worse than the 1930's "Dust Bowl," has an approximate probability of occurring once every 500 years or a 2% chance of occurring each decade.[9] A 500-year drought with a magnitude similar to that of the 1930's that destroys the agricultural economy and leads to wildfires is an example of a high magnitude event.

5.2.1.3 Inventory Exposed

Drought typically does not have a direct impact on critical facilities or structures. Drought conditions evolve slowly over time and communities typically have ample time to prepare for the effects. Should a drought affect the water available for public water systems or individual wells, the availability of clean drinking water could be compromised. This situation would require emergency actions and could possibly overwhelm the local government and financial resources.

Impacts from drought can include the following:

- Economic losses to agricultural producers (crops and livestock)
- Physical and mental health issues
- Water supply interruption for business and industry
- Water quality problems
- Reduced soil and vegetation moisture
- Vegetation mortality, insect infestations

[9] National Oceanic and Atmospheric Administration, 2003

- Impacts to fish and wildlife populations
- Increase in wildland fires and associated losses

5.2.1.4 Potential Losses

Possible losses/impacts to critical facilities include the loss of critical function due to low water supplies. Severe droughts can negatively affect drinking water supplies. Should a public water system be affected, the losses could total into the millions of dollars if outside water is shipped in. Private springs/wells could also dry up. Possible losses to infrastructure include the loss of potable water.

Although drought events rarely pose immediate risks to public health, they can impact local public health in numerous ways. Examples of drought-induced public health impacts include: increased respiratory ailments due to increased particulate matter in the air; sickness due to decreased availability of clean water; increased disease caused by wildlife concentrations; population migrations (rural to urban areas); loss of human life (e.g. from heat stress, suicides); and impacts on behavioral health (due to unemployment in the agricultural sector, stress on the tourism and other businesses related to the natural environment and/or water).

The impacts of drought on local vegetation and wildlife can include death from dehydration and spread of invasive species or disease because of stressed conditions. In general, environmental impacts from drought are more likely at the interface of the human and natural world. The loss of crops or livestock due to drought can have far-reaching economic effects on communities, wind and water erosion can alter the visual landscape, and dust can damage property. Water-based recreational resources are also heavily affected by drought conditions. Indirect impacts from drought arise from wildfire, which may have additional effects on the landscape and sensitive resources such as historic or archeological sites.

Due to the nature of drought, all jurisdictions within Weld County are expected to experience similar physical impacts from drought conditions. However, local communities with large agricultural, livestock, and tourism-based economies are expected to bear the brunt of drought effects in the county.

5.2.1.5 Probability of Future Occurrences

Due to the nature of drought, it is an extremely difficult hazard to predict. However, identifying various indicators of drought, and tracking these indicators, provides us with a crucial means of monitoring drought. Additionally, understanding the historical frequency, duration, and spatial extent of drought assists in determining the likelihood and potential severity of future droughts. The characteristics of past droughts provide benchmarks for projecting similar conditions into the future. The probability of Weld County and its municipalities experiencing a drought event can be difficult to quantify; However, based on historical record of 5 drought-related USDA Secretarial Disasters affecting Weld County between 2005 and 2015, it can reasonably be assumed that this type of event has occurred once every 2 years from 2005 through 2015.

Historic frequency suggests that there is a 50% chance of this type of event occurring each year. The Colorado Climate Report, published in 2015 by the Colorado Water Conservation Board (CWCB), include climate models that project Colorado will warm by 2.5°F by 2025 and 4°F by 2050, relative to the 1950-99 baseline. If these projections are accurate, changes in the quantity and quality of water are likely to occur due to warning, even in the absence of precipitation changes.

5.2.1.6 Land Use and Development

Society's vulnerability to drought is affected largely by population growth, urbanization, demographic characteristics, technology, water use trends, government policy, social behavior, and environmental awareness. These factors are continually changing, and society's vulnerability to drought may rise or fall in response to these changes. For example, increasing and shifting populations puts increasing pressure on water and other natural resources—more people need more water.

Future development greatly impacts drought hazards by stressing both surface and ground water resources. Agricultural and industrial water users consume large amounts of water. Expansion of water-intensive enterprises is limited in a time when water resources are strained. In rapidly growing communities, new water and sewer systems or significant well and septic sites could use up more of the water available, particularly during periods of drought. Public water systems are monitored, but individual wells and septic systems are not as strictly regulated. Therefore, future development could have a profound impact on the vulnerability of Weld County communities to drought.

Related to both current land use and future development trends, the use of turf grass affects the available water supplies. Maintaining lush, green lawns in the semi-arid climate of the Front Range requires large amounts of water. Urban lawn watering is the single largest water demand on most municipal supplies. Outdoor water use accounts for about 55 percent of the residential water use in the Front Range urban area, most of which is used on turf. [10] Residential and commercial landscaping can greatly impact future drought events and future water use regulations may be able to mitigate this trend.

As Weld County continues to grow, it will consider practical guidelines for determining the impacts of drought such as measuring the economic value of water in alternative uses and objective methods for quantifying non-market impacts of drought on those uses. Additionally, Weld County will continue to follow guidance found within the State of Colorado's Multi-Hazard Mitigation Plan as well as the Colorado Drought Mitigation and Response Plan.

[10] http://www.ext.colostate.edu/pubs/consumer/09952.html

5.2.2 Earthquake

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Earthquake	0.400	0.500	0.383	0.283	0.125	1.692
LOW RISK (1.9 or lower)						

5.2.2.1 Hazard Identification

An earthquake is the motion or trembling of the ground produced by sudden displacement of rock usually within the upper 10 – 20 miles of the Earth's crust. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to hundreds of thousands of people, and disrupt the social and economic functioning of the affected area. Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking which is dependent upon amplitude and duration of the earthquake (FEMA, 1997).

Earthquake Mechanics

Regardless of the source of the earthquake, the associated energy travels in waves radiating outward from the point of release. When these waves travel along the surface, the ground shakes and rolls, fractures form, and water waves may be generated. Earthquakes generally last a matter of seconds but the waves may travel for long distances and cause damage well after the initial shaking at the point of origin has subsided.

Breaks in the crust associated with seismic activity are known as "faults" and are classified as either active or inactive. Faults may be expressed on the surface by sharp cliffs or scarps or may be buried below surface deposits.

"Foreshocks," minor releases of pressure or slippage, may occur months or minutes before the actual onset of the earthquake. "Aftershocks," which range from minor to major, may occur for months after the main earthquake. In some cases, strong aftershocks may cause significant additional damage, especially if the initial earthquake impacted emergency management and response functions or weakened structures.

Factors Contributing to Damage

The damage associated with each earthquake is subject to four primary variables:

- The nature of the seismic activity
- The composition of the underlying geology and soils
- The level and quality of development of the area struck by the earthquake
- The time of day

Seismic Activity: The properties of earthquakes vary greatly from event to event. Some seismic activity is localized (a small point of energy release), while other activity is widespread (e.g., a major fault shifting or slipping all at once). Earthquakes can be very brief (only a few seconds) or last for a minute or more.

The depth of release and type of seismic waves generated also play roles in the nature and location of damage; shallow quakes will hit the area close to the epicenter harder, but tend to be felt across a smaller region than deep earthquakes.

Geology and Soils: The surface geology and soils of an area influence the propagation (conduction) of seismic waves and how strongly the energy is felt. Generally, stable areas (e.g., solid bedrock) experience less destructive shaking than unstable areas (e.g., fill soils). The siting of a community or even individual buildings plays a strong role in the nature and extent of damage from an event**.**

Development: An earthquake in a densely populated area which results in many deaths and considerable damage may have the same magnitude as a shock in a remote area that has no direct impacts. Large magnitude earthquakes that occur beneath the oceans may not even be felt by humans.

Time of Day: The time of day of an event controls the distribution of the population of an affected area. On work days, the majority of the community will transition between work or school, home, and the commute between the two. The relative seismic vulnerability of each location can strongly influence the loss of life and injury resulting from an event.

Types of Damage

Often, the most dramatic evidence of an earthquake results from the vertical and/or horizontal displacement of the ground along a fault line. This displacement can sever transportation, energy, utility, and communications infrastructure potentially impacting numerous systems and persons. These ground displacements can also result in severe and complete damages to structures situated on top of the ground fault. However, most damage from earthquake events is the result of shaking. Shaking also produces a number of phenomena that can generate additional damage

- Additional ground displacement
- Landslides and avalanches
- Liquefaction and subsidence
- Seismic Seiches

Shaking: During minor earthquake events, objects often fall from shelves and dishes rattle. In major events, large structures may be torn apart by the forces of the seismic waves. Structural damage is generally limited to older structures that are poorly maintained, poorly constructed, or improperly (or not) designed for seismic events. Un-reinforced masonry buildings and wood frame homes not anchored to their foundations are typical victims of earthquake damage.

Loose or poorly secured objects also pose a significant hazard when they are loosened or dropped by shaking. These “non-structural falling hazard” objects include bookcases, heavy wall hangings, and building facades. Home water heaters pose a special risk due to their tendency to start fires when they topple over and rupture gas lines. Crumbling chimneys may also be responsible for injuries and property damage.

Dam and bridge failures are significant risks during stronger earthquake events, and due to the consequences of such failures, may result in considerable property damage and loss of life. In areas of severe seismic shaking hazard, shaking Intensity levels of VII or higher (see Table 25) can be experienced even on solid bedrock. In these areas, older buildings especially are at significant risk.

Ground Displacement: Ground displacement can also occur due to shaking, resulting in similar damages as mentioned previously.

Landslides and Avalanches: Even small earthquake events can cause landslides. Rock falls are common as unstable material on steep slopes is shaken loose, but significant landslides or even debris flows can be generated if conditions are ripe. Roads may be blocked by landslide activity, hampering response and recovery operations. Avalanches are possible when the snowpack is sufficient.

Liquefaction and Subsidence: Soils may liquefy and/or subside when impacted by the seismic waves. Fill and previously saturated soils are especially at risk. The failure of the soils has the potential to cause widespread structural damage. The oscillation and failure of the soils may result in increased water flow and/or failure of wells as the subsurface flows are disrupted and sometimes permanently altered. Increased flows may be dramatic, resulting in geyser-like water spouts and/or flash floods. Similarly, septic systems may be damaged creating both inconvenience and health concerns.

Seiches: Seismic waves may rock an enclosed body of water (e.g., lake or reservoir), creating an oscillating wave referred to as a "seiche." Although not a common cause of damage in past Colorado earthquakes, there is a potential for large, forceful waves similar to a tsunami ("tidal waves") to be generated on the large reservoirs within and neighboring Weld County. Such a wave would be a hazard to shoreline development and pose a significant risk on dam-created reservoirs. A seiche could either overtop or damage a dam leading to downstream flash flooding.

Environmental impacts of earthquakes can be numerous, widespread, and devastating, particularly if indirect impacts are considered. Some examples of impacts are listed below:

- Induced flooding and landslides
- Poor water quality
- Damage to vegetation
- Breakage in sewage or toxic material containments

HAZARD PROFILE

The impact an earthquake event has on an area is typically measured in terms of earthquake intensity. Intensity is most commonly measured using the Modified Mercalli Intensity (MMI) Scale based on direct and indirect measurements of seismic effects.

Another way to express an earthquake's severity is to compare its acceleration to the normal acceleration due to gravity. Peak ground acceleration (PGA) measures the strength of ground movements in this manner. PGA represents the rate in change of motion of the earth's surface during an earthquake as a percent of the established rate of acceleration due to gravity. PGA can be partly determined by what soils and bedrock characteristics exist in the region. Unlike the Richter scale, PGA is not a measure of the total energy released by an earthquake, but rather of how hard the earth shakes at a given geographic area (the intensity). PGA is measured by using instruments including accelerographs and correlates well with the Mercalli scale.

When the peak ground acceleration nears 0.04 – 0.092g, an earthquake can be felt by people walking outside. As PGA nears 0.19 – 0.34g the intensity is considered to be very strong. At this level, plaster can break off and fall away from structures and cracks in walls often occur. PGA magnitudes of 1.24g are

considered to be very disastrous. This magnitude of ground acceleration represents an earthquake of roughly 6.9 to 8.1 on the Richter Scale. A detailed description of the Modified Mercalli Intensity Scale is shown in the following table.

Table 25. Modified Mercalli Intensity Scale

SCALE	INTENSITY	DESCRIPTION OF EFFECTS	PGA (g)	RICHTER SCALE MAGNITUDE
I	Instrumental	Detected only on seismographs	< 0.0017	< 4.2
II	Feeble	Some people feel it	0.0018 – 0.014	
III	Slight	Felt by people resting; like a truck rumbling by		
IV	Moderate	Felt by people walking	0.015 – 0.039	
V	Slightly Strong	Sleepers awake; church bells ring	0.040 – 0.092	< 4.8
VI	Strong	Trees sway; suspended objects swing; objects fall off shelves	0.093 – 0.18	< 5.4
VII	Very Strong	Mild alarm, walls crack, plaster falls	0.19 – 0.34	< 6.1
VIII	Destructive	Moving cars uncontrollable, masonry fractures, poorly constructed buildings damaged	0.34 – 0.65	< 6.9
IX	Ruinous	Some houses collapse, ground cracks, pipes break open	0.65 – 1.24	
X	Disastrous	Ground cracks profusely, many buildings destroyed, liquefaction and landslides widespread	> 1.24	< 7.3
XI	Very Disastrous	Most buildings and bridges collapse, roads, railways, pipes and cables destroyed, general triggering of other hazards	> 1.24	< 8.1
XII	Catastrophic	Total destruction, trees fall, ground rises and falls in waves	> 1.24	> 8.1

Studies indicate that there are about 100 potentially active fault lines in Colorado. Over 500 earthquake tremors of magnitude 2.5 or higher have been recorded across the state since 1870. It is likely that more earthquakes of similar magnitude occurred during that time, but were not recorded due to low population densities and limited coverage of sensors across most of the state. For comparison, over 20,500 similarly sized events have been recorded in the State of California since 1870.

Relative to other western states, Colorado's earthquake risk is higher than Kansas or Oklahoma, lower than Utah, and much lower than Nevada and California (Colorado OEM, 2003). Despite Colorado's lower earthquake risk, based on geologic observations and characteristics of faults located in the region, seismologists predict that Colorado will indeed experience a magnitude 6.5 earthquake at some point in the future.

Earthquakes are extremely difficult to predict and their occurrence rate is determined in one of two ways. If geologists can find evidence of distinct, datable earthquakes in the past, the number of these ruptures is used to define an occurrence rate. If evidence of ruptures is not available, geologists estimate fault slip rates from accumulated scarp heights and estimated date for the oldest movement on the scarp. Because a certain magnitude earthquake is likely to produce a displacement (slip) of a certain size, we can estimate the rate of occurrence of earthquakes of that magnitude.

Recurrence rates are different for different assumed magnitudes thought to be "characteristic" of that fault type. Generally, a smaller magnitude quake will produce a faster recurrence rate, and for moderate levels of ground motion, a higher hazard risk. Future earthquakes are assumed to be likely to occur where earthquakes have produced faults in the geologically recent past. Quaternary faults are faults that have slipped in the last 1.8 million years and it is widely accepted that they are the most likely source of future large earthquakes. For this reason, quaternary faults are used to make fault sources for future earthquake models.

5.2.2.2 Previous Occurrences

Earthquakes are relatively infrequent in Colorado and records of historical earthquakes in and around Weld County are limited. The following Table provides a list of Colorado's larger earthquakes recorded since 1870.

Table 26. Notable Earthquake Events in Colorado (1870 – 2015)

Date	Location	Magnitude	Intensity
1870	Pueblo/Ft. Reynolds		VI
1871	Lily Park, Moffat County		VI
1880	Aspen		VI
1882	North central Colorado	6.6*	VII
1891	Axial Basin (Maybell)		VI

Date	Location	Magnitude	Intensity
1901	Buena Vista		VI
1913	Ridgeway Area		VI
1944	Montrose/Basalt		VI
1955	Lake City		VI
1960	Montrose/Ridgeway	5.5	V
1966	NE of Denver	5.0	V
1966	CO-NM border, near Dulce, NM	5.5	VII
1967	NE Denver	5.3	VII
1967	NE Denver	5.2	VI
2011	Southwest of Trinidad	5.3	VIII

*Estimated, based on historical felt reports
Source: Colorado Geological Survey

The most economically damaging earthquake in Colorado's history occurred on August 9th, 1967 in the Denver metro area. The 5.3 magnitude earthquake caused more than a million dollars of damage in Denver and the northern suburbs. The August 1967 earthquake was followed by an earthquake of magnitude 5.2 three months later in November 1967. Although these two earthquake events cannot be classified as "major earthquakes" they are significant because of their location along the Front Range Urban Corridor, an area where nearly 75 percent of Colorado residents and many critical facilities are located. Historically, earthquake risk in Colorado has been rated lower than most subject experts consider justified. It is critically important that local emergency managers in and around Weld County become fully aware of the size and consequences of an earthquake that could occur.

5.2.2.3 Inventory Exposed

The most appropriate risk assessment methodology for seismic hazards involves scenario modeling using FEMA's Hazus loss estimation software. Hazus is a very useful planning tool because it provides an acceptable means of forecasting earthquake damage, loss of function of infrastructure, and casualties, among many other factors. There are three levels of Hazus analysis, from Level 1, which uses the default FEMA-derived datasets and damage functions, to Level 3, which uses independently compiled and accurately verified structure and infrastructure inventories and damage functions.

Utilizing Hazus 2.2, FEMA's loss estimation and hazard modeling software, a detailed earthquake analyses was conducted for infrastructure within Weld County. The risk assessment leveraged locally managed inventory, hazard, and terrain data, where available. Hazus is a regional earthquake loss estimation model

developed by FEMA and the National Institute of Building Science. The primary purpose of Hazus is to provide a methodology and software application to develop earthquake loss at a regional scale.

The Hazus earthquake scenario modeled a 6.5 event along the Golden Fault, located approximately 20 miles southwest of Weld County. This scenario was used because it represents the "worst case scenario": a large earthquake event along the closest quaternary fault to the county. Statewide soil type and landslide layers were incorporated into the model in order to further refine the results of the analysis. Ground motion was modeled for the event at each structure point in order to provide building loss estimates as well as at the census tract level to estimate debris generation and shelter requirements.

Structure point data was leveraged from a previous FEMA losses avoided study that was done in region. Additional pre-processing was necessary to prepare these points for the countywide analysis in Hazus and in some cases field assumptions were made based on the standards set forth in FEMA's regional guidance as well as the Hazus manuals. It should be noted that point location was not further refined, and FEMA manually adjusted those points only within their particular areas of interest/analysis. Finally, areas without an assessed or improved value were removed from the resulting loss estimates as it was assumed that there was no structure present in these land parcels.

According to the Hazus inventory, there are an estimated 83,377 buildings in Weld County with a total building replacement value (excluding contents) of $14,457,622,721. Approximately 68% of the buildings (and 54% of the building value) are associated with residential housing.

5.2.2.4 Potential Losses

In Colorado, earthquakes are considered low probability, high-consequence events. Although earthquakes may occur infrequently they can have devastating impacts. Ground shaking can lead to the collapse of buildings and bridges; disrupt gas, life lines, electric, and phone service. Deaths, injuries, and extensive property damage are possible vulnerabilities from this hazard. Some secondary hazards caused by earthquakes may include fire, hazardous material release, landslides, flash flooding, avalanches, tsunamis, and dam failure. Moderate and even very large earthquakes are inevitable, although very infrequent, in areas of normally low seismic activity. Consequently, buildings in these regions are seldom designed to deal with an earthquake threat; therefore, they are extremely vulnerable.

Most property damage and earthquake-related injuries and deaths are caused by the failure and collapse of structures due to ground shaking. The level of damage depends upon the amplitude and duration of the shaking, which are directly related to the earthquake size, distance from the fault, site, and regional geology. Other damaging earthquake effects include landslides, the down-slope movement of soil and rock (mountain regions and along hillsides), and liquefaction, in which ground soil loses shear strength and the ability to support foundation loads. In the case of liquefaction, anything relying on the substrata for support can shift, tilt, rupture, or collapse.

For the risk assessment conducted as part of the 2016 Plan, a 6.5-magnitude earthquake scenario with an epicenter on the Golden Fault was simulated in Hazus. Again, this scenario's event parameters and locations were chosen based on pre-existing scenarios outlined by the Colorado Geological Survey. The Front Range is defined by a 500- to 1,000-m-high, east-facing escarpment called the Golden Fault that is both a tectonic and erosional feature. The Golden Fault is a quaternary fault that bounds the eastern side of the Front Range near the town of Golden, adjacent to the Denver Metropolitan Area. The Golden Fault

was selected as an epicenter because it is the closest proximity quaternary fault to Weld County. The map below depicts Weld County and the location and magnitude of historical earthquake events in the region.

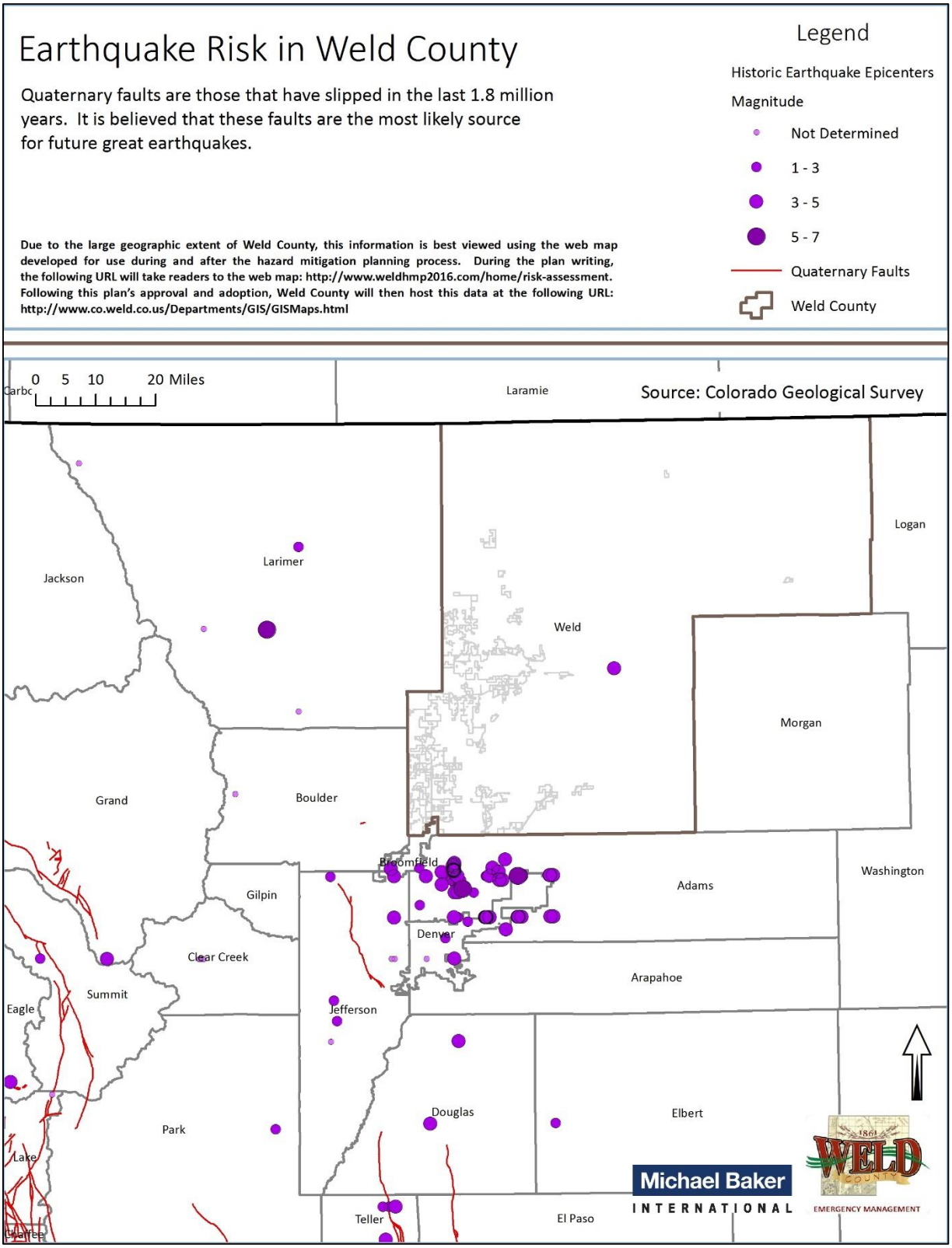


Figure 15. Map of Historical Earthquake Epicenters (1962 – 2015) and HAZUS Fault Scenarios

In the following map, Peak Ground Acceleration (PGA) for the Golden Fault scenario is represented as %g. The Golden Fault model shows relatively low PGA in the eastern part of Weld County as the energy released from the Golden Fault radiates away from the epicenter. The majority of the high PGA values are found in southwestern part of the County.

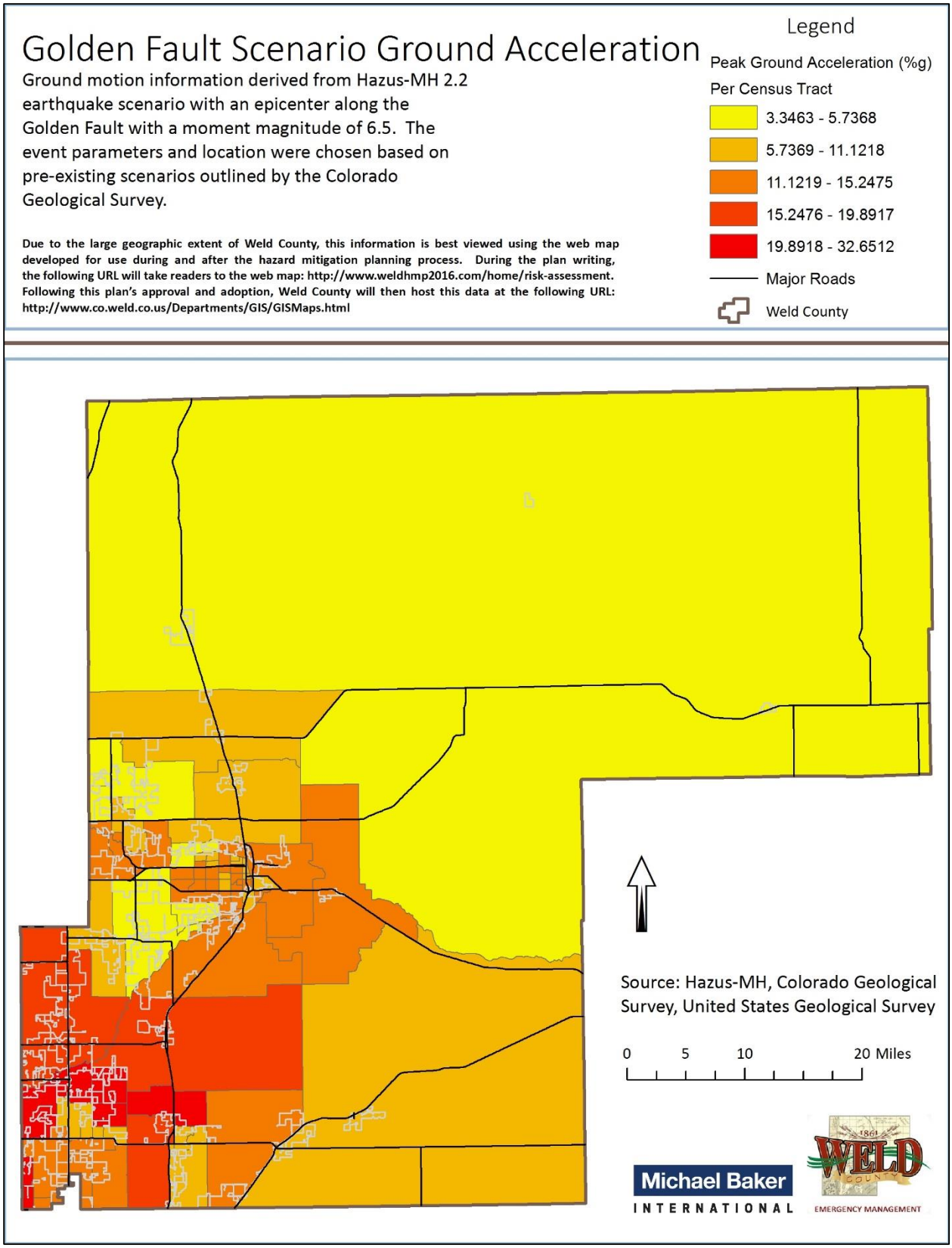


Figure 16. Map of PGA from Golden Fault Earthquake

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Loss estimates from the Hazus scenario is included in the following Tables and maps. Data summarized for the scenario includes the following:

- Expected building damage (number of structures) by occupancy
- Expected building damage (number of structures) by building type
- Expected damage to essential facilities (number of structures)
- Induced earthquake damages (debris generation)
- Social Impacts (including shelter requirements and casualties)
- Expected building loss estimates ($)

Economic Losses and Building Damage

The following Figure provides a map of total economic losses in Weld County projected by the Golden Fault earthquake scenario. Total economic losses include losses from building/infrastructure damage, relocation, and business interruption. For the Golden Fault earthquake scenario, the total losses were estimated to be $ 365,508,236. By far, the largest estimated losses were sustained by the residential buildings which made up seventy-one percent (71%) of the total economic losses. Spatially, a majority of the worst loss areas were located in the western, urban portion of the county. Generally, these are areas which are more densely/highly populated and more closely located to the Golden epicenter. But, the fact that large damage differences are seen across the western portion of the county show that other factors are influencing the Hazus loss estimations, most likely dealing with the underlying building stock data.

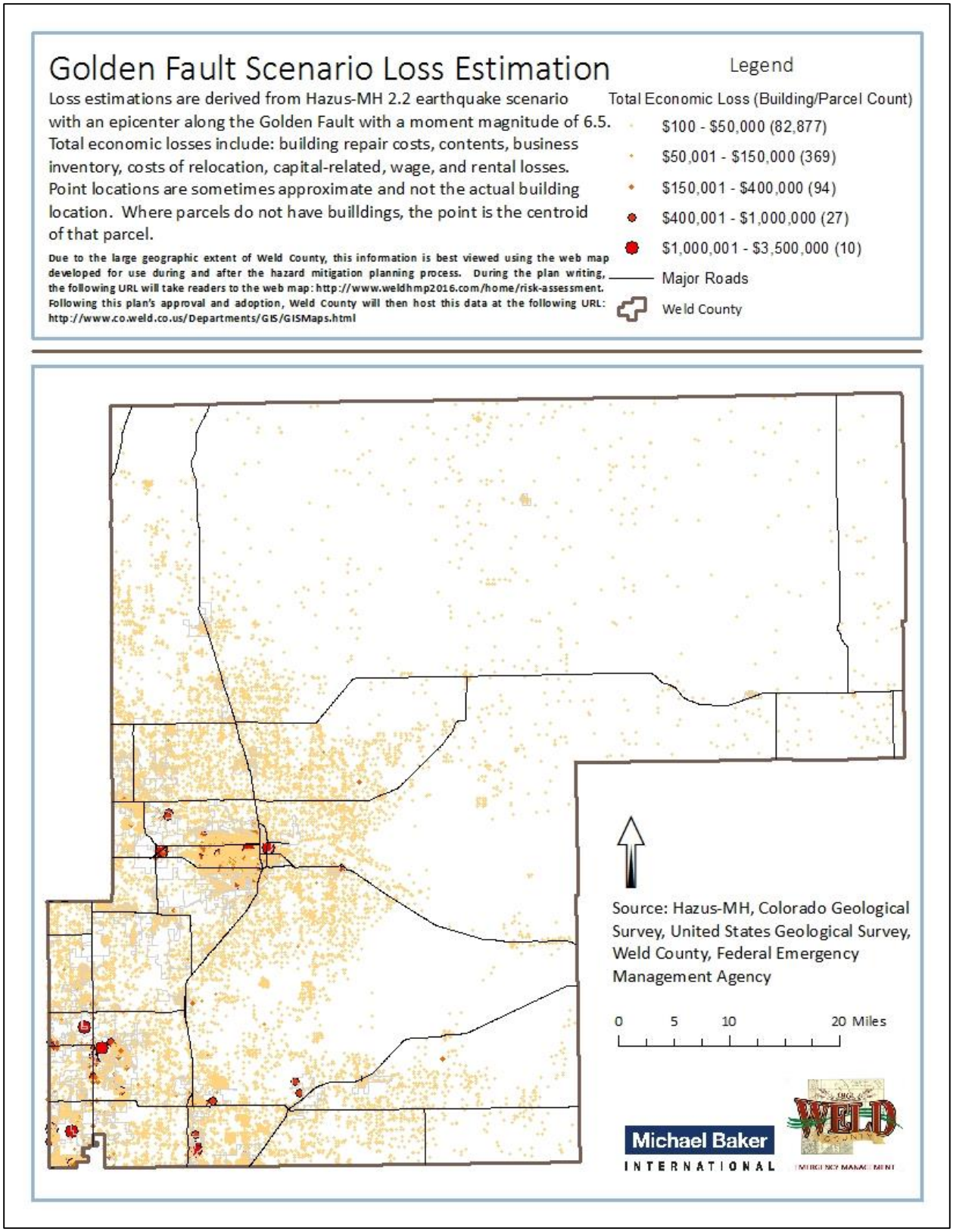


Figure 17. Map of Total Economic Losses from Golden Fault Scenario

Hazus measures direct building economic losses. The direct building losses are the estimated costs to repair or replace the damage caused to a building and its contents. The following Table details the Hazus loss estimates for the Golden Fault event.

Table 27. Economic Losses – Golden Fault Scenario (Losses in Millions of Dollars)

Category	Single Family	Other Residential	Commercial	Industrial	Other	Total
Direct Structural Losses	$190.27	$25.85	$70.35	$15.58	$58.55	$360.60

The expected damages in Weld County are defined by the following parameters:

- "Slight" damage includes diagonal hairline fractures on most shear wall surfaces and hairline cracks on most infill walls.
- "Moderate" damage includes cracks on most walls and failure of some shear walls.
- "Extensive" damage means that most shear wall surfaces in the structure have reached or exceeded their capacity exhibited by large, through-the-wall diagonal cracks.
- "Complete" damage means that the structure has collapsed or is in danger of collapse.

Hazus estimates that about 74,460 buildings in the County will have no damage, 9,199 buildings will be at least slightly damaged, 1,541 buildings will be at least moderately damaged, 149 buildings will be at least extensively damaged, and 12 buildings in the County will be completely damaged if a 6.5 earthquake were to occur on the Golden Fault.

Damages to Critical Facilities/Infrastructure

The Hazus earthquake model also provides estimates relating to the expected damages to and functionality of the County's critical facilities and critical infrastructure, as defined by Hazus. The tables on the following pages detail these estimates.

For the Golden Fault scenario, the following Table provides post-event damage and functionality estimates for specific types of essential facilities within Weld County. In addition to estimating the number of facilities what will suffer either moderate or complete damage to over 50% of the structure, the table shows the number of facilities that will be operating at or over 50% functionality almost immediately after the earthquake event.

Table 28. Golden Fault Scenario – Expected Damage to Critical Facilities

Classification	Total	# of Facilities		
		At Least Moderate Damage >50%	Complete Damage >50%	With Functionality >50% on day 1
Assisted Living/Nursing Home/ Group Care Home	18	0	0	18
Auditorium	4	0	0	3
Community Recreation Center	5	0	0	4
Church	153	10	0	140
Day Care Center	23	2	0	16
Fire Stations	34	1	0	34
Government Building	24	1	0	22
Jail – Correction Facility	1	0	0	1
Schools	85	4	0	83
Utility Building	871	12	0	870
Warehouse	7	0	0	7

Debris Generation

Hazus models estimate the amount of debris that will be generated by an earthquake. The Golden Fault scenario estimates that a total of 359 thousand tons of debris will be generated from that 6.5 magnitude event. Of the total amount, brick and wood make up 31% of the total, with the remainder of the debris being reinforced concrete and steel. When the debris tonnage is converted to an estimated number of truckloads, it will require 14,360 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.

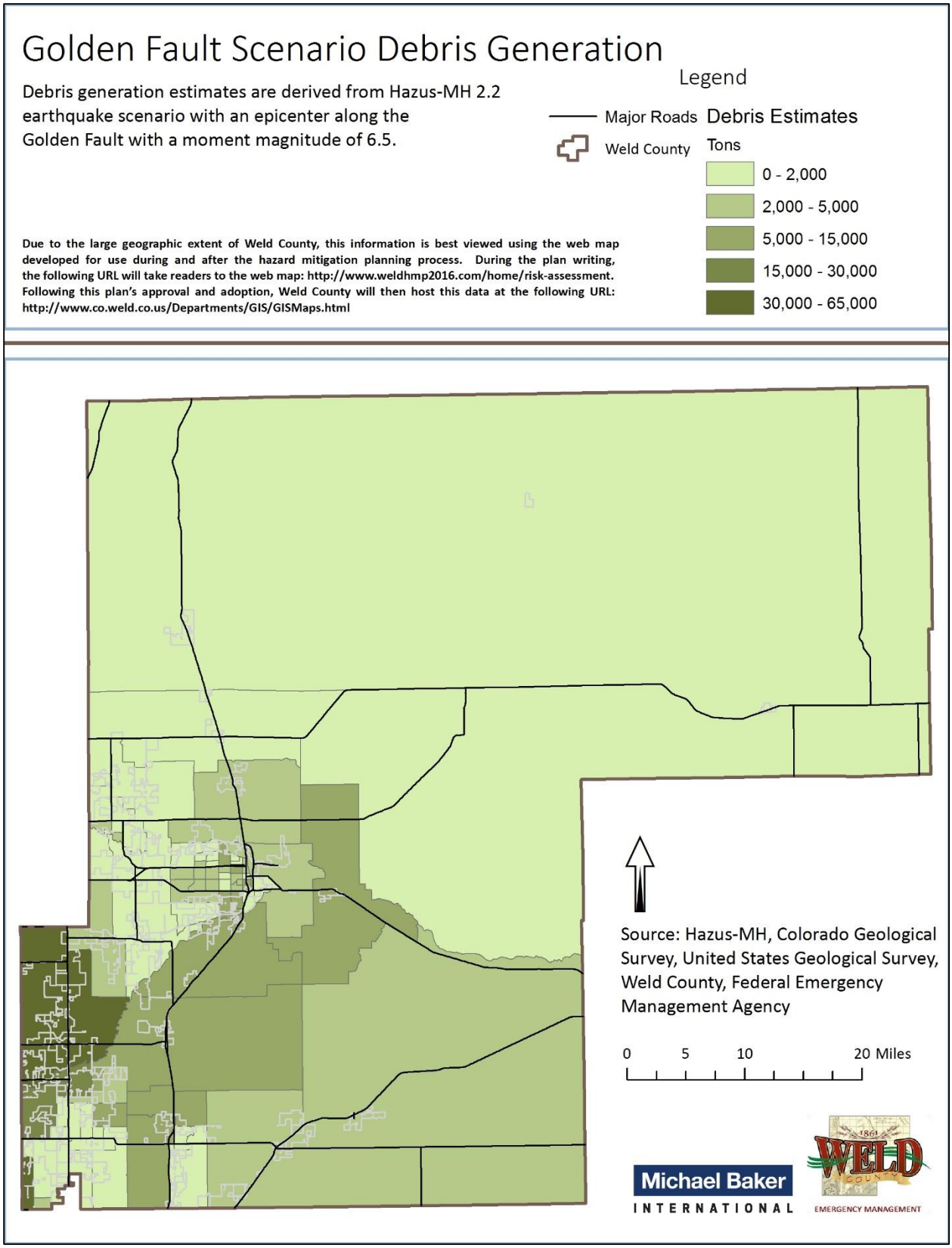


Figure 18. Map of Debris Generated from Golden Fault Scenario

Shelter Requirements

In addition to providing loss estimation and debris models, HAZUS estimates the number of households that are expected to be displaced from their homes due to an earthquake and the number of displaced people that will require accommodations in temporary public shelters. The Golden Fault model estimates that 693 households will be displaced in Weld County due to an earthquake and 457 people will seek temporary shelter in public shelters. The following map show displaced households at the Census Tract level for the Golden Fault earthquake scenario. Debris generation and displaced households appear to be positively correlated.

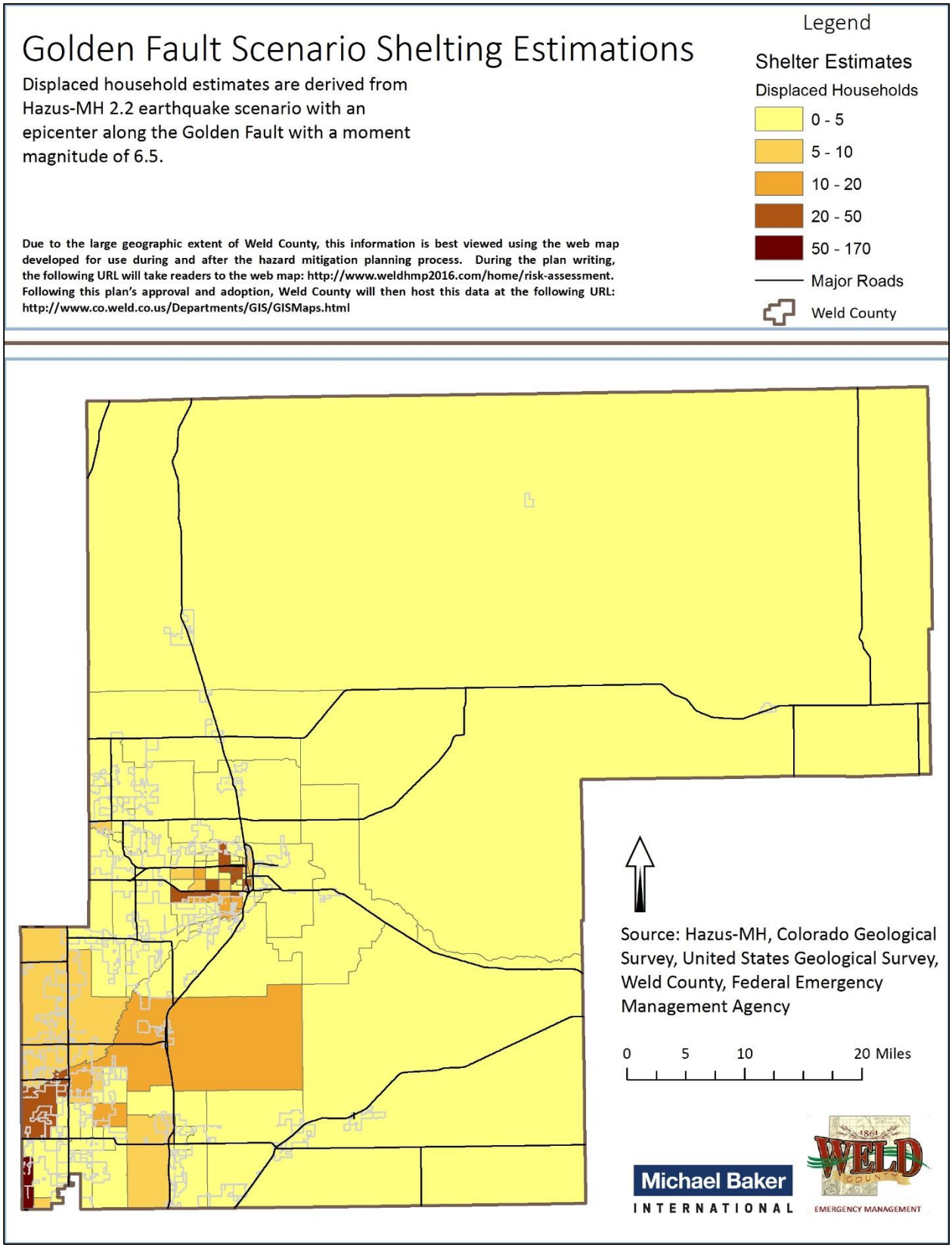


Figure 19. Map of Displaced Households – Golden Fault Scenario

5.2.2.5 Probability of Future Occurrences

Even though the seismic hazard risk in Weld County is low to moderate, it is likely that earthquakes will occur in the county in the future. It is reasonable to expect future earthquakes as large as magnitude 6.5, the largest event on record in Colorado. Calculations based on the historical earthquake records and geological evidence of recent fault activity suggest that an earthquake of magnitude 6 or greater may be expected somewhere in Colorado every several centuries.

Earthquakes strike with little to no warning and they are capable of having multiple impacts on an area. After-effects from an earthquake can include impacted roadways, downed power and communication lines, fires, and damages to structures (especially poorly built, or those already in disrepair). Earthquakes are not a seasonal hazard, and thus can be experienced year round. This fact presents its own set of planning and preparedness concerns.

Ultimately, the probability of an earthquake occurring in Weld County is low. Additionally, if an earthquake were to occur in the near future it is likely to be of a low magnitude, with expected damages to property and people to be minimal. History has shown, however, that Weld County and Colorado are at risk to a larger magnitude seismic event. Should that type of event occur, major damages and losses should be expected. This fact makes these low probability, high impact hazards a challenge to deal with when planning a mitigation strategy to combat all hazards faced by a community.

Standard building codes have the opportunity to provide Weld County with reasonable guidance for development throughout unincorporated and incorporated areas. Contractors and builders should be aware of applicable codes and regulations designed to reduce losses sustained by new and existing construction due to seismic hazards.

For example, the light weight of wood frame buildings results in less force from inertia. Less force means less damage. Wood's natural flexibility also is an advantage when seismic forces are brought to bear and the nailed joints in wood frame buildings dissipate energy and motion. Wood's inherent earthquake resistance must be accompanied by design and construction techniques that take advantage of those characteristics.

Structural wood panels nailed to wall framing add rigid bracing, help resist lateral loads and help tie framing members together. Bolted connections at the sill plate/foundation joint help keep the structure in one spot. Securely connected wall, floor, and roof framing also help tie a structure together and make it a single, solid structural unit. Proper connections will do more to hold a house together during an earthquake than any other single seismic design element.

As development grows in the County and its municipalities, it will be important for citizens to consult with local building codes as modern building codes generally require seismic design elements for new construction.

5.2.2.6 Land Use and Development

With the unpredictable nature of earthquake epicenter locations, it is not feasible to identify specific areas where development may exacerbate the risk to an earthquake. It should be assumed that all development increases the risk to the County from the threat of earthquakes. As population and development continue to expand in Weld County, continued enforcement of the unified construction code has great potential to mitigate increasing vulnerability and development pressure.

Earthquakes are relatively uncommon in Weld County and the probability is low that they will occur regularly in the future. However, if an event was to occur within the county, there is potential for significant structural damage to occur near the epicenter. Due to the nature of earthquake hazards, areas in Weld County with high population densities and large numbers of structures and critical facilities are expected to experience greater damage and loss from an earthquake event. This includes jurisdictions located primarily in the central western and southwestern portion of the county, such as:

- Greeley
- Windsor
- Johnstown
- Evans
- Fort Lupton

Communities located in the eastern part of the County, may experience differential impacts from an earthquake event if transportation or utility infrastructure is damaged and prevents communities from responding or evacuating.

5.2.3 Extreme Temperatures

NATURAL HAZARDS	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Extreme Temperatures	0.975	0.475	0.667	0.142	0.300	2.558
HIGH RISK (2.5 or higher)						

5.2.3.1 Hazard Identification

Cold temperatures are considered hazardous when they drop well below what is considered normal for an area during the winter months. Combined with increases in wind speed, such temperatures can be life threatening to those who are exposed for extended periods of time.

Extreme heat can be described as temperatures that hover 10°F or more above the average high temperature for a region at least for several weeks. A heat wave is a period of excessive heat, which can lead to illness and other stress to vulnerable people and those who experience prolonged exposure to the heat. High humidity, which rarely accompanies heat waves in Weld County, can make the effects of heat even more harmful. While heat-related illness and death can occur from exposure to intense heat in just one afternoon, heat stress on the body has a cumulative effect. Consequently, the persistence of a heat wave increases the threat to public health.

HAZARD PROFILE: Extreme Cold

The majority of Weld County is located in the flat, grass-covered eastern plains – the high plains of the Great Plains. Summer temperatures on the eastern plains average in the mid-70s °F for July and August. However, daily minimum and maximum temperatures can vary as much as 40-50 °F. Winters on the eastern plains are typically dry, cold, and windy. Although snowfall is usually light, winter blizzards do affect Weld County residents. Average January nighttime low temperatures range from around 10 to 30 °F, with daily highs averaging from the mid-30s to 50°F. Sudden and frequent changes in temperature occur quite often in Colorado. Prolonged periods of extremely cold or hot weather are unusual; however, temperatures above 100 °F have occurred as well temperatures below 0 °F.

Extended periods of extreme cold, although infrequent, can occur throughout the winter months in Weld County. When cold temperatures and wind combine, dangerous wind chills can develop. Wind chill is how cold it “feels” and is based on the rate of heat loss on exposed skin from wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature, and eventually, internal body temperature. This makes the environment feel much colder than the actual temperature.

As depicted in the figure below, the National Weather Service’s Wind Chill Chart shows the difference between actual air temperature and perceived temperature, as well as the amount of time until frostbite occurs.

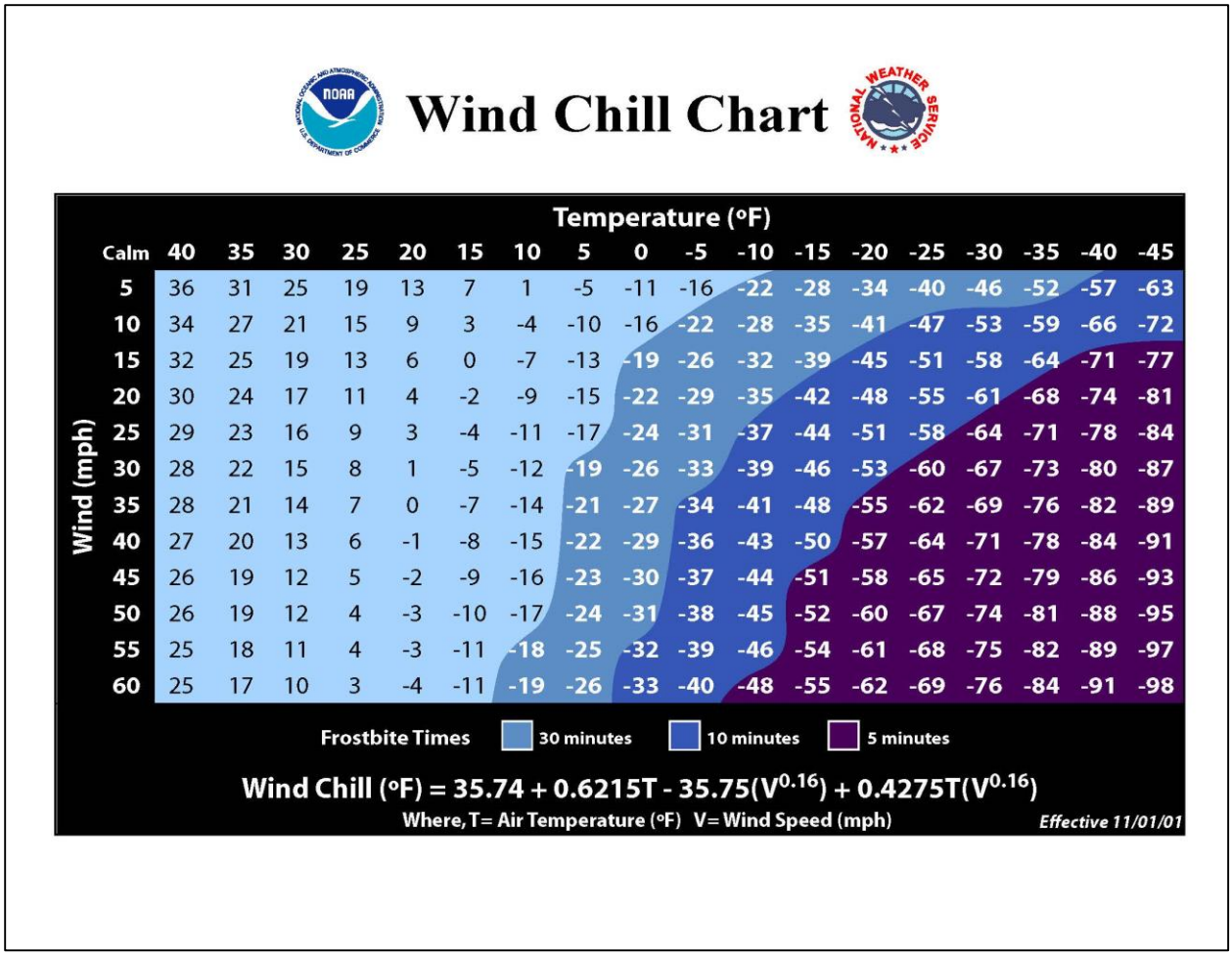


Figure 20. NOAA Wind Chill Chart

The elderly, young children, the homeless, outdoor laborers, the infirm, and low-income communities are the most likely to suffer the negative effects of extreme cold. When conditions are appropriate, the National Weather Service issues wind chill warnings. The table below describes the criteria for these warnings.

Table 29. National Weather Service Wind Chill Warnings

Warning	Description
Wind Chill Watch	Issued by the NWS when there is a chance that wind chill temperatures will decrease to at least 24°F below zero during the next 24 to 48 hours.
Wind Chill Advisory	Issued when the wind chill could be life threatening if action is not taken. The criteria for this advisory are expected wind chill readings from 15°F to 24°F below zero.

Wind Chill Warning	Issued when wind chill readings are life threatening. Wind chill readings of 25°F below zero or lower are expected.

Source: NWS

HAZARD PROFILE: Extreme Heat

Extreme heat events are a considerable public health concern and are one of the leading weather-related killers in the United States. Although extreme heat events can occur in May or September, they are most common between June and August when above average temperatures are sustained for a prolonged period. During extended periods of very high temperatures , or high temperatures coupled with high humidity, individuals can suffer a variety of health problems, including heatstroke, heat exhaustion, heat syncope, and heat cramps.

The Heat Index measures the severity of hot weather by estimating how hot it feels to humans. By combining air temperature and relative humidity, the Heat Index is directly related to skin temperature. The ambient temperature is quantified by examining the relation between relative humidity versus skin temperature. If the relative humidity is higher (or lower) than the base value, the apparent temperature is higher (or lower) than the ambient temperature. The following Table outlines the heat disorders associated with apparent temperature values during extreme heat events.

Table 30. Heat Index and Associated Heat Disorders

Danger Category	Heat Disorders	Apparent Temperature (°F)
I Caution	Fatigue possible with prolonged exposure and physical activity	80-90
II Extreme Caution	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and physical activity	90-105
III Danger	Sunstroke, heat cramps, and heat exhaustion likely; heatstroke possible with prolonged exposure and physical activity	105-130
IV Extreme Danger	Heatstroke or sunstroke imminent	>130

Source: NOAA

Like extreme cold events, young children, the elderly, outdoor laborers, low-income families, the homeless, and the infirm are the most likely to suffer the negative effects of extreme heat. The National Weather Service initiates alerts based on the Heat Index as shown in the table below.

Table 31. Extreme Heat Warnings

Intensity	Detailed Description
Heat Advisory	Typically between 105°F to 110°F (41°C to 43°C) for 3 hours or more during the day and at or above 75°F (24°C) at night.
Excessive Heat Warning	Typically above 105°F (41°C) for 3 hours or more during the day and at or able 80°F (27°C) at night.

Source: National Weather Service

5.2.3.2 Previous Occurrences

Extreme Cold

The State of Colorado experiences winter cold events fairly frequently, although extended periods of sub-zero temperatures are rare. The NCDC storm database includes winter weather and cold/wind chill hazards, both of which represent periods of prolonged cold temperatures. The database defines "significant" extreme cold/wind chill events as periods of extremely low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined warning criteria on a widespread or localized basis. The table following table lists the significant winter weather and cold/wind chill events reported to NCDC for Weld County.

Table 32. Extreme Cold Events in Weld County (1950 – 2015)

Date	Event Type	Area	Injuries	Deaths	Property Damage	Crop Damage
January 17, 1996	Winter Storm[11]	Northeastern, Central, and Southern Weld County	0	0	0	0
April 13, 1996	Winter Storm[11]	Northeastern, Central, and Southern Weld County	0	0	0	0
December 16, 1996	Winter Storm[11]	Northwestern, Northeastern, Central, and Southern Weld County	0	0	0	0

[11] Winter Storm: A winter weather event which has more than one significant hazard (i.e. heavy snow and blowing snow; snow and ice; snow and sleet; sleet and ice; or snow, sleet, and ice) and meets or exceeds locally/regionally defined 12 and/or 24 hour warning criteria for at least one of the precipitation elements, on a widespread or localized basis. Normally a winter storm would pose a threat to life or property.

Date	Event Type	Area	Injuries	Deaths	Property Damage	Crop Damage
December 16, 1996	Cold/Wind Chill	Northeastern, Central, and Southern Weld County	0	0	0	0
December 17, 1996	Cold/Wind Chill	Northeastern, Central, and Southern Weld County	0	0	0	0
April 23, 1997	Winter Storm[11]	Northwestern Weld County	0	0	0	0
March 18, 1998	Winter Storm[11]	Northwestern Weld County	0	0	0	0
December 18, 1998	Winter Storm[11]	Northeastern and Northwestern Weld County	0	0	0	0
February 10, 1999	Winter Storm[11]	Northwestern, Southern Weld County, Greeley and Vicinity	0	0	0	0
November 21, 1999	Winter Storm[11]	Northwestern Weld County	0	0	0	0
April 10, 2001	Winter Storm[11]	Southern, Northwestern, Greeley and Vicinity	0	0	0	0
April 22, 2001	Winter Storm[11]	Northeastern, Northwestern, Greeley and Vicinity	0	0	0	0
March 1, 2002	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	0	0
November 1, 2002	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	0	0
November 21, 2003	Winter Storm	Northwestern Weld County	0	0	0	0
January 3, 2004	Winter Storm	Central and Southern Weld County	0	0	0	0

Date	Event Type	Area	Injuries	Deaths	Property Damage	Crop Damage
January 25, 2004	Winter Storm	Central and Southern Weld County	0	0	0	0
April 9, 2004	Winter Storm	Northwestern Weld County	0	0	0	0
November 28, 2004	Winter Storm	Northwestern Weld County	0	0	0	0
February 15, 2005	Winter Storm	Northwestern Weld County	0	0	0	0
March 13, 2005	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	0	0
April 10, 2005	Winter Storm	Northwestern, Northeastern, Central, and Southern Weld County	0	0	0	0
April 28, 2005	Winter Storm	Northwestern Weld County	0	0	0	0
December 28, 2006	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	$102,000	0
January 5, 2007	Winter Storm	Northwestern Weld County	0	0	0	0
November 20, 2007	Winter Weather[12]	Northwestern Weld County	0	0	0	0
December 27, 2007	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	0	0

[12] Winter Weather Advisory: Issued for a winter weather event in which there is more than one hazard present, but all precipitation is expected to remain below warning criteria. For example, it would be issued if 2 inches of snow were expected with a small amount of sleet mixing in at times.

Date	Event Type	Area	Injuries	Deaths	Property Damage	Crop Damage
April 9, 2008	Winter Storm	Northeastern Weld County	0	0	0	0
December 4, 2008	Winter Weather	Northeastern, Central, and Southern Weld County	0	0	0	0
March 26, 2009	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	0	0
March 26, 2009	Winter Weather	Northeastern Weld County	0	0	0	0
March 30, 2009	Winter Weather	Central and Southern Weld County	0	0	0	0
April 3, 2009	Winter Weather	Northwestern Weld County	0	0	0	0
October 9, 2009	Winter Storm	Northwestern and Northeastern Weld County	0	0	0	0
October 9, 2009	Winter Weather	Central and Southern Weld County	0	0	0	0
October 27, 2009	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	0	0
November 14, 2009	Winter Storm	Central and Southern Weld County	0	0	0	0
December 5, 2009	Winter Weather	Northwestern Weld County	0	0	0	0
December 22, 2009	Winter Weather	Northwestern, Central, and Southern Weld County	0	0	0	0
March 19, 2009	Winter Weather	Northwestern Weld County	0	0	0	0

Date	Event Type	Area	Injuries	Deaths	Property Damage	Crop Damage
March 23, 2010	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	0	0
May 11, 2010	Winter Weather	Northwestern Weld County	0	0	0	0
December 30, 2010	Winter Weather	Northwestern, Northeastern, Central, and Southern Weld County	0	0	0	0
February 1, 2011	Extreme Cold/Wind Chill	Northwestern Weld County	0	0	0	0
October 25, 2011	Winter Storm	Northwestern, Northeastern, Central, and Southern Weld County	0	0	0	0
November 1, 2011	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	0	0
November 1, 2011	Winter Weather	Northeastern Weld County		0	0	0
December 21, 2011	Winter Weather	Northwestern, Central, and Southern Weld County	0	0	0	0
February 2, 2012	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	0	0
November 10, 2012	Winter Weather	Central and Southern Weld County	0	0	0	0
December 19, 2012	Winter Weather	Northwestern Weld County	0	0	0	0
February 20, 2013	Winter Weather	Central and Southern Weld County	0	0	0	0

Date	Event Type	Area	Injuries	Deaths	Property Damage	Crop Damage
March 22, 2013	Winter Storm	Central and Southern Weld County	0	0	0	0
April 8, 2013	Winter Storm	Central and Southern Weld County	0	0	0	0
April 15, 2013	Winter Storm	Central, Southern, Northeastern, and Northwestern Weld County	0	0	0	0
April 22, 2013	Winter Storm	Northwestern Weld County	0	0	0	0
October 17, 2013	Winter Weather	Northwestern Weld County	0	0	0	0
December 3, 2013	Winter Weather	Northwestern Weld County	0	0	0	0
January 30, 2014	Winter Storm	Northwestern, Central, and Southern Weld County	0	0	0	0
May 11, 2014	Winter Storm	Northwestern Weld County	0	0	0	0
November 11, 2014	Winter Weather	Northwestern Weld County	0	0	0	0
December 14, 2014	Winter Weather	Northeastern Weld County	0	0	0	0
December 25, 2014	Winter Storm	Northwestern Weld County	0	0	0	0
December 25, 2014	Winter Weather	Central and Southern Weld County	0	0	0	0
February 25, 2015	Winter Weather	Central and Southern Weld County	0	0	0	0

Date	Event Type	Area	Injuries	Deaths	Property Damage	Crop Damage
		TOTAL:	**0**	**0**	**$102,000**	**0**

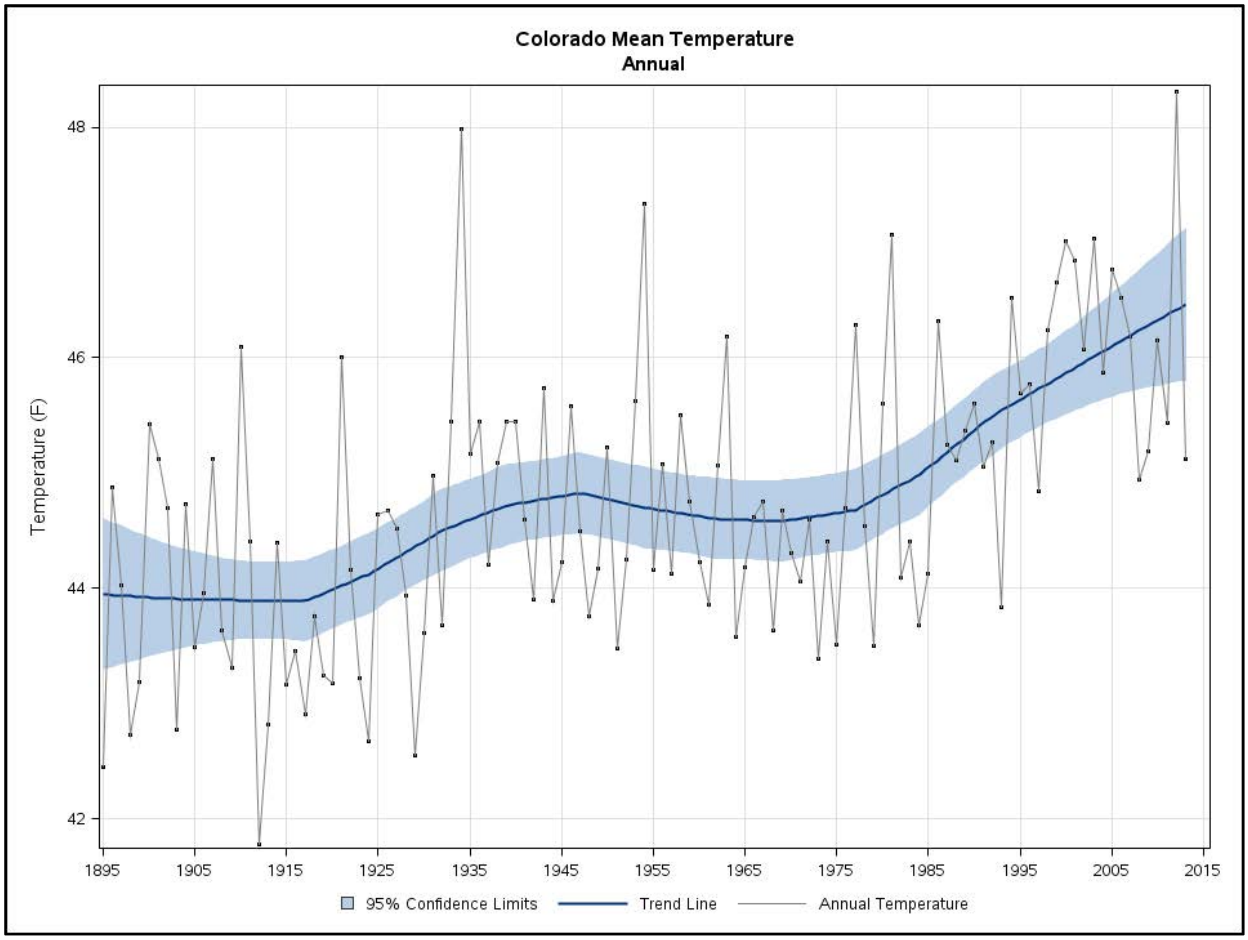
Source: NOAA, NCDC Storm Events Database; SHELDUS

The first extreme cold/winter weather event reported in Weld County and listed in the NCDC database was in 1996. The NCDC database indicates that since then there have been 0 injuries and 0 deaths reported from 65 extreme cold/winter weather events in Weld County. There are most likely additional extreme cold/winter weather events prior to 1996 that have not been captured by the database specifically for Weld County.

Understanding the historical frequency of extreme cold temperatures in Weld County assists in determining the likelihood of future occurrences. The characteristics of past extreme cold and significant winter weather events provide a benchmark for projecting similar conditions into the future. The probability that Weld County will experience extreme cold temperatures in the future can be difficult to quantify, but based on historical record of 65 events since 1996, it can reasonably be assumed that this type of event has occurred once every year from 1996 through 2015. Historic frequencies suggest that there is a 100% chance of a hazardous extreme cold/winter weather event will affect Weld County each year.

Extreme Heat

Data supports a shift towards a warmer climate with an increase in extreme high temperatures across the United States. The graph below depicts annual statewide mean temperature history for the state of Colorado from 1895 to 2015. The probability of continued (and more frequent) extreme heat events across Colorado is supported by the clear upward trend in high temperatures since 1895.



Source: NOAA

Figure 21. Mean Colorado Temperature Trends (1895 – 2015)

5.2.3.3 Inventory Exposed

Unlike other natural hazards that affect Weld County, extreme temperatures have limited physical destructive force. However, damages to inventory assets exposed to extreme cold is dependent on the age of the building, type, construction material used, and condition of the structure. Heavy snow loads on roofs, particularly large span roofs, can cause roofs to leak or even collapse depending on their construction. Extremely cold temperatures may cause pipes to freeze and subsequently burst, causing water damage. During the winter months, freezing temperatures and repeated freeze-thaw events can cause potholes, which may damage vehicles. Hazardous travel conditions may result if potholes are not tended to promptly. Frozen pipes, a common occurrence during extreme cold events, can cause service interruptions in water supply, gas supply, and drainage.

Most likely the greatest issue for critical facilities during significant extreme cold events is the inaccessibility of such facilities due to poor roadways, utility outages, or dangerous wind chills. During periods of heavy snow, ice, or blizzards, roads can quickly become impassable, stranding motorists and isolating communities. Long term road closures during an extended cold period may diminish and threaten propane and fuel supplies. Possible losses to critical infrastructure include:

- Electric power disruption

- Communication disruption
- Water and fuel shortages
- Road closures
- Damaged infrastructure components, such as sewer lift stations and treatment plants

Extended power outages during extreme cold events may make many homes and offices unbearably cold. Additionally, during extended winter-time power outages, people often make the mistake of bringing portable generators inside or not venting them properly, leading to carbon monoxide poisoning. With poor road conditions, sheltering residents may present significant logistical challenges with getting people to heated facilities, feeding, and providing medical care. These situations, accompanied by stranded motorists that need to be rescued, represent significant threats to the population of Weld County. Additional information on construction type and building codes enforced at time of construction would allow a more thorough assessment of the vulnerability of structures to extreme cold impacts.

Extreme heat can cause pavement of roads and bridges, or railroad tracks, to crack or buckle, resulting in service disruptions and potentially hazardous travel conditions. The most significant impact of extreme heat on general building stock and critical facilities within Weld County is the increased demand on air conditioning equipment. Surges in air conditioning demand can sometimes strain electrical systems and energy resources. Public utility infrastructure (including electrical generating and conveyance systems) may become damaged and break down causing localized and/or widespread power outages.

All assets located in Weld County can be considered to be exposed to extreme temperatures. This includes 100 percent of the County's population and all buildings and critical infrastructure located within the County. Most structures, including the county's critical facilities, should be able to provide adequate protection in the event of an extreme temperature event. Facilities with back-up generators are better equipped to handle severe weather situation should the power go out. Additionally, public buildings with cooling systems are ideal shelters for at-risk individuals and families during heat waves.

5.2.3.4 Potential Losses

Although estimated property losses associated with extreme temperature hazards are anticipated to be minimal across the planning area, extreme heat and cold events do present a significant life and safety threat to the population of Weld County. Heat casualties are usually caused by lack of adequate air conditioning and/or heat exhaustion. Extreme heat tends to affect the elderly, infirm, homeless, or low-income families the most, as these populations frequently live on low fixed incomes and cannot afford to run air conditioning on a regular basis. These socially vulnerable populations are often isolated, with no immediate family and/or limited mobility, which makes it more difficult for them to remove themselves from danger.

Casualties caused by extreme cold events can result from a lack of adequate heating, carbon monoxide poisoning from unsafe or unventilated heating systems, and frostbite from exposure to the elements. Again, the most vulnerable populations to extreme cold are the elderly, infirm, homeless, and low-income families. Often, these individuals do not have access to a heat source or are unable to afford to operate one on a regular basis.

Because there is no defined geographic boundary for extreme temperature hazards, all of the people and infrastructure within Weld County are exposed to extreme temperatures. Those with elevated risk and

potential loss are the homeless, infirm, elderly, and low income families. Given the lack of historical data and limited likelihood of structural losses in Weld County resulting from extreme heat or cold, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for Weld County due to extreme temperatures are currently considered unquantifiable.

MULTI-JURISDICTIONAL DIFFERENCES

Due to the regional nature of extreme temperatures hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of extreme temperatures. This includes places with high numbers of elderly residents, low income families and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerable to extreme temperatures by local jurisdiction. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, a high poverty rate and/or large numbers of rental properties can plan accordingly to provide appropriate services and mitigation assistance during extreme temperature events.

Table 33. Populations Vulnerable to Extreme Temperatures

Jurisdiction	Age: 65 and Over (%)	Persons Below Poverty Level (%)	Renter-occupied housing units (%)
Colorado	10.9	12.9	34.5
Unincorporated Weld County	9.5	14.7	30.5
City of Brighton	8.7	8.2	31.2
City of Dacono	9.1	6.0	28.6
Town of Erie	5.7	4.1	17.4
City of Evans	6.1	19.6	41.5
Town of Firestone	5.2	4.5	11.1
Town of Frederick	6.4	7.5	12.5
City of Greeley	10.7	22.9	44.4
Town of Keenesburg	13.7	21.1	30.1
Town of Mead	6.3	4.7	11.7

Jurisdiction	Age: 65 and Over (%)	Persons Below Poverty Level (%)	Renter-occupied housing units (%)
Town of Milliken	6.8	3.4	21.5
Town of Platteville	9.5	16.0	25.8
Town of Severance	5.3	2.9	9.0
Town of Windsor	10.0	4.8	19.8

Source: DOLA; Census 2010

Weld County has a slightly lower percentage of elderly residents than does the state of Colorado. The Town of Keenesburg has the highest percentage of people over the age of 65, and the Town of Firestone has the lowest percentage. The percentage of people living below poverty level in Weld County is higher than the state of Colorado. The City of Greeley has the highest percentage and the Town of Severance has the lowest percentage of people living below poverty level. Weld County percent of renter occupied homes is slightly lower than the State. The City of Greeley has the highest percent and the Town of Severance has the lowest percent of renter occupied homes. Based on these statistics, Greeley residents (in general) appear to be more acutely vulnerable to the impacts of extreme temperatures compared to other communities within Weld County. That said, future mitigation efforts related to extreme temperature should focus on reaching those residents who are elderly, live in poverty or are homeless, or are renters.

5.2.3.5 Probability of Future Occurrences

Based on data provided by the NWS and NCDC, it is likely that Weld County will continue to experience hazardous extreme heat events in the future, and for more prolonged periods of time.

During extreme temperature events, inadequate protection from the elements is especially hazardous. A combination of more frequent heat waves and changing demographics (e.g. an increase in the elderly population) is likely to result in higher rates of temperature-related deaths in Weld County. In order to mitigate the impacts of extreme temperature hazards it is important that the county prioritize outreach and services to specific populations who are most vulnerable. High-vulnerability groups typically experience a disproportionate number of health impacts from extreme heat and cold, often due to physical, social, and economic limitations to adequate participation in mitigation and response activity. In the context of extreme temperature events, the most vulnerable Weld County residents are:

- The elderly (people over 65 years of age)
- Infants (under 1 year old)
- The homeless
- Low income families
- Socially isolated individuals
- People with mobility restrictions and/or mental impairments
- The infirm
- Outdoor laborers

Although stopping extreme temperature events is impossible, limiting their effect on people and property in Weld County is feasible. Ongoing mitigation activities should focus on protecting lives and preventing injuries during periods of extreme heat and cold. This includes, but is not limited to pre-season community outreach campaigns to educate the public about risks and available support; establishing cooling and heating centers; reaching out to vulnerable populations and care givers; and issuing advisories and warnings.

5.2.3.6 Land Use and Development

All future structures built in Weld County will likely be exposed to severe seasonal temperature extremes. As with other large extent hazards, increased development trends in and around Weld County will increase the vulnerability of growing areas to extreme heat and cold. Weld County and its jurisdictions must continue to adhere to building codes to facilitate new development that is built to current standards to account for future climate extremes. Additionally, as homes go up in more rural parts of the county, accessing those rural residents will present new emergency management and response challenges should sheltering or emergency services be needed in an extreme event.

5.2.4 Flood (including Dam & Levee Failure)

NATURAL HAZARDS	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Flooding	0.875	0.675	0.600	0.242	0.300	2.692
HIGH RISK HAZARD (2.5 AND HIGHER)						

5.2.4.1 Hazard Identification

A flood is a naturally occurring event for rivers and streams and occurs when a normally dry area is inundated with water. Excess water from snowmelt or rainfall accumulates and overflows onto the stream banks and adjacent floodplains. As illustrated in the figure below, floodplains are lowlands, adjacent to rivers, streams, and creeks that are subject to recurring floods. Flash floods, usually resulting from heavy rains or rapid snowmelt, can flood areas not typically subject to flooding, including urban areas. Additionally, extreme cold temperatures can cause streams and rivers to freeze, causing ice jams and creating flood conditions.

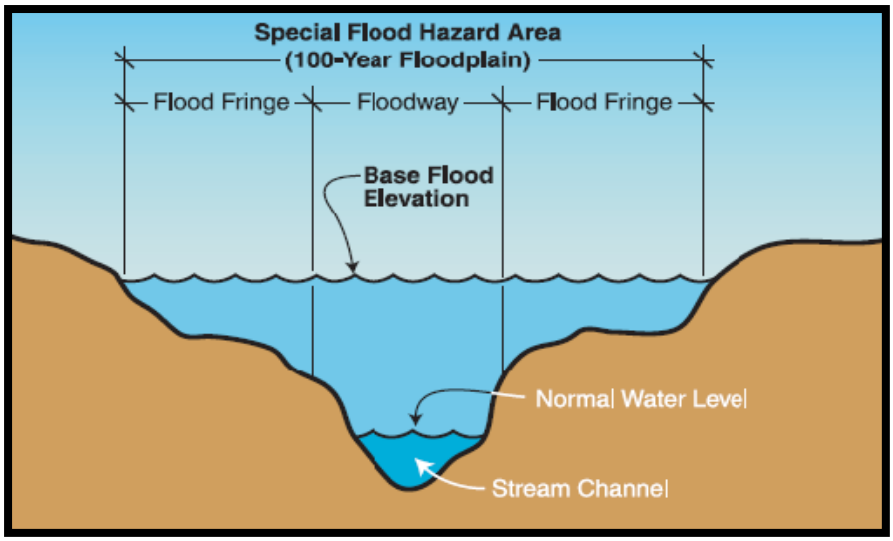


Figure 22. Floodplain Terminology

Floods are considered hazards when people and property are affected. Nationwide, hundreds of floods occur each year, making it one of the most common hazards in all 50 states and U.S. territories. Most injuries and deaths from flooding happen when people are swept away by flood currents and most property damage results from inundation by sediment-filled water. Fast-moving water can wash buildings off of their foundations and sweep vehicles downstream. Pipelines, bridges, and other infrastructure can be damaged when high water combines with flood debris. Basement flooding can also cause extensive damage. Flooding can cause extensive damage to crop lands and bring about the loss of livestock. Several factors determine the severity of floods including rainfall intensity and duration, topography, and ground cover.

Riverine flooding originates from a body of water, typically a river, creek, or stream, as water levels rise onto normally dry land. Water from snowmelt, rainfall, freezing streams, ice flows, or a combination

thereof, causes the river or stream to overflow its banks into adjacent floodplains. Winter flooding usually occurs when ice in the rivers creates dams or streams freeze from the bottom up during extreme cold spells. Spring flooding is usually the direct result of melting winter snow packs, heavy spring rains, or a combination of the two.

Flash floods can occur anywhere when a large volume of water flows or melts over a short time period, usually from slow moving thunderstorms or rapid snowmelt. Because of the localized nature of flash floods, clear definitions of hazard areas do not exist. These types of floods often occur rapidly with significant impacts. Rapidly moving water, only a few inches deep, can lift people off their feet, and only a depth of a foot or two, is needed to sweep cars away. Most flood deaths result from flash floods.

Urban flooding is the result of development and the ground's decreased ability to absorb excess water without adequate drainage systems in place. Typically, this type of flooding occurs when land uses change from fields or woodlands to roads and parking lots. Urbanization can increase runoff two to six times more than natural terrain. The flooding of developed areas may occur when the amount of water generated from rainfall and runoff exceeds a storm water system's capability to remove it.

Stream Bank Erosion is measured as the rate of the change in the position or horizontal displacement of a stream bank over a period of time. It is generally associated with riverine flooding and discharge, and may be exacerbated by human activities such as bank hardening and dredging.

Ice Jams are stationary accumulations of ice that restrict flow through a waterway. Ice jams can cause considerable increases in upstream water levels, while at the same time, downstream water levels may drop. Types of ice jams include freeze up jams, breakup jams, or combinations of both. When an ice jam releases, the effects downstream can be similar to that of a flash flood or dam failure. Ice jam flooding generally occurs in the late winter or spring.

Floods from **Dam Failure** events are typically the result of either hydrologic or structural deficiencies. Dam failure by hydrologic deficiency is a result of inadequate spillway capacity, which can cause a dam to be overtopped during large flows into the reservoir. Failure usually occurs when excessive runoff happens after unusually heavy precipitation events. Large waves generated on reservoirs from landslides, or the sudden inflow from upstream dam failures, are other potential causes of dam failure by overtopping.

Levees provide strong flood protection; however, they do not eliminate risk because they only reduce the risk to individuals and structures behind them. Levees are designed to protect against specific, pre-determined flood levels and are sometimes overtopped during severe weather events. As water passes over the top of a levee, it sometimes erodes the levee, worsening the flooding and potentially causing a breach. **Levee Failure** floods occur when a breach occurs, which may happen gradually or suddenly. The most dangerous breaches happen quickly. The resulting torrent can quickly inundate a large area behind the failed levee with little or no warning.

Flooding events are typically measured in terms of magnitude and the statistical probability that they will occur. The 1% annual chance flood event is the standard national measurement for flood mitigation and insurance. A 1% annual chance flood, also known as the '100-year flood', has a 1 in 100 chance of being equaled or exceeded in any 1 year and has an average recurrence interval of 100 years. It is important to note that this recurrence interval is an average; it does not necessarily mean that a flood of such a magnitude will happen exactly every 100 years. Sometimes, only a few years may pass between one 1% annual chance flood and another while two other 1% annual chance floods may be separated by 150

years. The 0.2% annual chance flood event, or the '500-year flood', is another measurement which represents a 0.2% chance (or 1 in 500 chance) of occurring in a given year.

According to the NFIP's Community Information System (CIS) Weld County has been mapped for flood hazards and participates in the National Flood Insurance Program (NFIP). Details of local jurisdiction participation status are shown in the table below.

Table 34. Communities Participating in the FEMA NFIP

CID	COMMUNITY NAME	COUNTY	INITIAL FIRM IDENTIFIED	CURRENT EFFECTIVE MAP DATE
080266	Weld County	Weld County	03/21/1978	09/22/1999
080179	Town of Ault	Weld County	05/17/1974	06/04/1987
080236	City of Dacono	Weld County	09/05/1975	07/16/1979
080180	Town of Eaton	Weld County	05/10/1974	(NSFHA)
080182	City of Evans	Weld County	04/05/1974	04/02/1979
080241	Town of Firestone	Weld County	09/19/1975	12/18/1979
080183	City of Fort Lupton	Weld County	05/31/1974	04/02/1979
080244	Town of Frederick	Weld County	09/26/1975	07/13/1982
080213	Town of Gilcrest	Weld County	08/22/1975	(NSFHA)
080184	City of Greeley	Weld County	03/03/1974	07/16/1979
080249	Town of Hudson	Weld County	*	*
080251	Town of Keenesburg	Weld County	09/19/1975	(NSFHA)
080186	Town of La Salle	Weld County	05/28/1976	(NSFHA)
080188	Town of Nunn	Weld County	08/30/1974	02/01/1979
080189	Town of Pierce	Weld County	11/29/1974	11/15/1979
080190	Town of Platteville	Weld County	01/16/1976	(NSFHA)
080317	Town of Severance	Weld County	*	09/22/1999

*Data Not Available
(NSFHA) – No Special Flood Hazard Area

Weld County has a total of 412 NFIP policies. Although Weld County participates in the NFIP, the community does not participate in the Community Rating System (CRS). CRS is a voluntary program for NFIP participating communities. The goals of the CRS are to reduce flood damages to insurable property, to strengthen and support the insurance aspects of the NFIP, and to encourage a comprehensive approach to floodplain management.

The CRS was developed to provide incentives in the form of insurance premium discounts to communities that go above and beyond the minimum floodplain management requirements and develop extra measures to reduce flood risk. There are 10 CRS classes and the classification determines the insurance premium discount for policy holders. The discounts range from 5% to a maximum of 45%.

Table 35. CRS Premium Discounts

Class	Discount	Class	Discount
1	45%	6	20%

2	40%	7	15%
3	35%	8	10%
4	30%	9	5%
5	25%	10	--
SFHA (Zones A, AE, A1-A30, V, V1-V30, AO, and AH): Discount varies depending on class. SHFA (Zones A99, AR/A, AR/AE. AR/A1-A30, AR/AH, and AR/AO): 10% discount for Classes 1-6; 5% discount for Classes 7-9.* Non-SFHA (Zones B, C, X, D): 10% discount for Classes 1-6; 5% discount for Classes 7-9. *In determining CRS premium discount, all AR and A99 Zones are treated as non-SFHAs.			

All CRS participating communities start out with a Class 10 rating (which provides no premium discount). Class 1 requires the most credit points and offers the largest premium discount. Within the CRS program, there are 18 activities recognized as measures for eliminating local exposure to flooding. Credit points are assigned to each activity, which have been organized under four main categories:

- Public Information
- Mapping and Regulation
- Flood Damage Reduction
- Flood Preparedness

During the hazard mitigation planning process, participating jurisdictions discussed the benefits of joining CRS. Most communities decided that participating in CRS was not feasible for them at this time but will consider joining the program in the future.

HAZARD PROFILE

Seasonally, Weld County is confronted with the possibility of flooding and flood-related hazards. Floods have the potential to inflict tremendous damages with significant losses of life and property. They can also pose a threat to the health, safety, and welfare of Weld County residents and visitors. Previous flooding events have caused thousands of dollars in damage in just a few hours or days in the region and current development and population growth trends necessitate a heightened awareness that the impact of flooding may likely increase in Weld County over time. The map below depicts the current special flood hazard areas (SFHA) for Weld County. The SFHA areas span roads, infrastructure, property, and jurisdictions across the county.

Special Flood Hazard Areas

SFHA defines the 1% Annual Chance Flood Event. Data shown is from the most recent Preliminary Flood Insurance Rate Maps for Weld County and its jurisdictions.

Legend

- Special Flood Hazard Areas (Preliminary)
- Major Roads
- Weld County

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

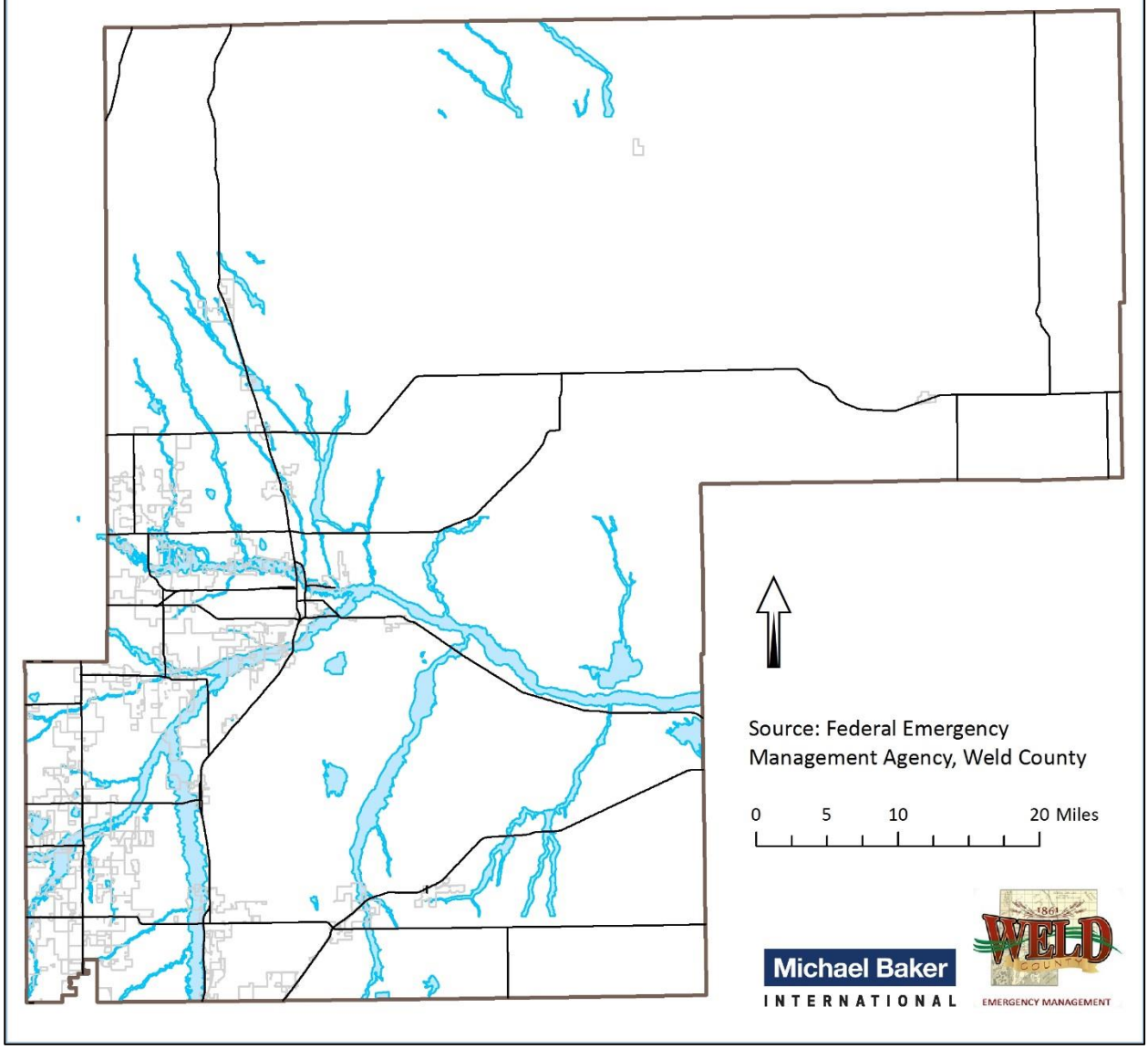


Figure 23. Map of Weld County Special Flood Hazard Areas

EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

The type of property damage caused by flood events depends on the depths and velocity of the floodwaters. Faster moving floodwaters can wash buildings off their foundations and sweep cars downstream. Pipelines, bridges, and other infrastructure can be damaged when high waters combine with flood debris. Extensive damage can be caused by basement flooding and landslide damage related to soil saturation from flood events. Seepage into basements is common during flood events. Most flood damage is caused by water saturating materials susceptible to loss (e.g., wood, insulation, wallboard, fabric, furnishings, floor coverings, and appliances). Homes in flooded areas can also suffer damage to septic systems and drain fields. In many cases, flood damage to homes renders them uninhabitable.

Flood events impact businesses by damaging property and by interrupting business. Flood events can cut off customer access to a business as well as close a business for repairs or permanently. A quick response to the needs of businesses affected by flood events can help a community maintain economic vitality in the face of flood damage. Responses to business damages can include funding to assist owners in elevating or relocating flood-prone business structures.

During flooding events, homes, businesses, and people face the threat of explosions and fires caused by leaking gas lines along with the possibility of being electrocuted. Domestic and wild animals forced out of their homes and brought into contact with humans by floodwaters can also pose a threat. In rural areas, property damage caused by flooding can be devastating to ranchers and farmers. When flooding occurs during the growing season, farmers can suffer widespread crop loss. Stock growers may lose livestock if they are unable to find safety from rising floodwaters. Flooding may also cause damage to pasture land, fences, barns, and out buildings.

Publicly owned facilities are a key component of daily life for all citizens of the county. Public buildings are of particular importance during flood events because they house critical assets for government response and recovery activities. Damage to public water and sewer systems, transportation networks, flood control facilities, emergency facilities, and offices can hinder the ability of the government to deliver services. Loss of power and communications can be expected. Drinking water and wastewater treatment facilities may be temporarily out of operation.

Mitigation against flood events is accomplished through sensible floodplain management and regulations as well as identifying flood prone areas, tributary watersheds that experience instability or sediment loading problems, and channel instability hazards. This involves strategies to modify flooding and to modify infrastructure to decrease the likelihood of damage. To modify the impact of flooding, measures must be taken to decrease susceptibility to flood damage and disruptions. Natural and cultural resources must also be protected and managed. Coordination with mitigation plans by Floodplain Managers will increase effectiveness of flood mitigation projects. City and County Planners will be valuable resources to incorporate flood mitigation plans into their respective plans.

5.2.4.2 Previous Occurrences

Documentation of flooding in Colorado collected by the National Climatic Data Center (NCDC) and the University of South Carolina's Hazards and Vulnerability Research Institute (HVRI) goes back to 1950. The table below provides a history of major flood events that affected Weld County between 1950 and 2014.

Table 36. Weld County Historical Flood Events (1950 – 2015)

Date	Hazard Type	Injuries	Deaths	Property Damage	Crop Damage
8/25/2014	Flood	0	0	$25,000	$25,000
7/29/2014	Flash Flood	0	0	$10,000	$10,000
6/1/2014	Flood	0	0	$250,000	$50,000
5/30/2014	Flash Flood	0	0	$15,000	$10,000
5/25/2014	Flood	0	0	$15,000	$10,000
9/14/2013	Flash Flood	0	0	0	0
9/12/2013	Flood	0	0	$230,000,000	$3,750,000
9/12/2013	Flash Flood	0	0	0	0
9/12/2013	Flash Flood	0	0	0	0
9/11/2013	Flash Flood	0	0	0	0
8/3/2013	Flash Flood	0	0	$50,000	$50,000
9/26/2012	Flash Flood	0	0	$15,000	$10,000
6/7/2012	Flash Flood	0	0	$10,000	$5,000
7/12/2011	Flash Flood	0	0	$50,000	$100,000
6/12/2010	Flash Flood	0	0	$24,000	$50,000
6/11/2010	Flash Flood	0	0	$24,000	$50,000
6/11/2010	Flash Flood	0	0	$24,000	$50,000
5/26/2010	Flash Flood	0	0	$24,000	$250,000
5/25/2009	Flash Flood	0	0	$24,000	$50,000
8/6/2008	Flash Flood	0	0	$50,000	$25,000
8/22/2007	Flash Flood	0	0	$1,000	0
8/2/2007	Flash Flood	0	0	$1,000	0
6/9/2004	Flash Flood	0	0	0	0
7/26/2003	Flash Flood	0	0	0	0
7/13/2001	Flash Flood	0	0	$600,000	0
7/11/2001	Flash Flood	0	0	0	0

Date	Hazard Type	Injuries	Deaths	Property Damage	Crop Damage
6/7/2001	Flash Flood	0	0	0	0
8/17/2000	Flash Flood	0	0	0	0
8/4/2000	Flood	0	0	0	0
7/10/2000	Flood	0	0	0	0
7/19/1999	Flash Flood	0	0	0	0
5/4/1999	Flood	0	0	0	0
5/4/1999	Flood	0	0	0	0
5/1/1999	Flood	0	0	0	0
5/1/1999	Flood	0	0	$200,000	0
4/28/1999	Flood	0	0	0	0
7/4/1998	Flood	0	0	0	0
7/29/1997	Flash Flood	0	0	0	0
7/28/1997	Flash Flood	0	0	0	0
7/27/1997	Flash Flood	0	0	0	0
6/14/1997	Flood	0	0	0	0
6/3/1997	Flood	0	0	0	0
5/24/1997	Flash Flood	0	0	0	0
8/29/1996	Flash Flood	0	0	0	0
8/27/1996	Flood	0	0	0	0
	TOTAL:	**0**	**0**	**$231,412,000**	**$4,495,000**

Source: SHELDUS; NOAA (NCDC Storm Events Database)

The most significant flooding event to collectively impact the State of Colorado occurred during September 2013. During the week beginning on September 9th, a slow moving cold front circulated over the state, clashing with warm, humid monsoonal air from the south. While damages are still being assessed for the 2013 flooding event, NOAA's National Climatic Data Center (NCDC) Storm Events Database estimates that Weld County sustained $231 million in property damage and another $4.5 million in crop damage. It should be noted, however, that the 2013 flooding was not a worst-case event for Weld County.

According to the National Climatic Data Center (NCDC) and the University of South Carolina's HVRI, Weld County has been impacted by 45 major flood events since 1950. Aggregate loss data for these events is included in the "Historical Flood Impacts" previous table.

Repetitive Loss properties (RL) are structures covered by a contract for flood insurance made available under the National Flood Insurance Program (NFIP) that: (a) have incurred flood-related damage on two occasions, in which the cost of repair, on the average, equaled or exceeded 25% of the market value of the structure at the time of each flood event; and (b) at the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage.

A Severe Repetitive Loss property (SRL) is defined as a residential property that is covered under an NFIP flood insurance policy and: a) has at least four NFIP claim payments (including building and contents) over $5,000 each, and the cumulative amount of such claims payments exceeds $20,000; or, b) a property for which at least two separate claim payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building. For both a) and b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than ten days apart.

As of January 2015, there was one severe repetitive loss (SRL) structure located within Weld County. The single family residence is located in the City of Greeley and is currently in a Zone A (it was in a Zone C in 2010-2011). The property has not undergone any mitigation projects.

Table 37. Severe Repetitive Loss Property - City of Greeley

Date of Loss	Building Payment	Contents Payment	Total
5/31/2014	$8,251.70	$3,047.70	$11,299.40
9/15/2014	$102,217	$102,217.42	$204,434
6/11/2011	$7,333.92	$18,055.11	$25,389.03
6/10/2010	$18,055.11	$1,786.72	$19,841.83
Total	$135,857.73	$125,106.95	$260,964.68

Source: Colorado Division of Homeland Security and Emergency Management

Table 38. SRL Structure - City of Greeley Loss Summary

Property Value	$374, 702
Cumulative Loss and LAE Paid	$219,328
Replacement Cost	$329,100
30 Year Savings to the Fund Value	$197,948
100 Year Savings to the Fund Value	$227,622

Source: Colorado Division of Homeland Security and Emergency Management

The City of Greeley has addressed this property in their 2016 mitigation strategy and has developed a Mitigation Action Guide to reduce the risk (and cost) associated with flooding of the SRL structure.

5.2.4.3 Inventory Exposed

Utilizing Hazus 2.2, FEMA's loss estimation and hazard modeling software, a flood risk analysis was conducted for infrastructure within Weld County. The risk assessment leveraged locally managed inventory, hazard, and terrain data, where available. Hazus is a regional multi-hazard loss estimation model developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Buildings Sciences (NIBS). The Hazus delineations developed for this Plan were generated using the fully-automated tools within the software, which use generalized regional regression equations to estimate flows and normal depth calculations to estimate flood depths.

The flood scenario modeled the 100 year return event, based on the latest available FEMA DFIRM data. A flood depth grid was developed utilizing a countywide elevation surface derived from local LIDAR (Post 2013 Colorado Flood Event data) as well as USGS 10 meter national elevation dataset (NED) data. Geo-processing models built in ArcGIS Modelbuilder and Python were leveraged in order to create the ground surface mosaic as well as generate the flood depth grid based on the input data.

Hazus floodplain delineations were post-processed to remove artifacts and flow areas less than 0.5 feet deep. Where Hazus could not determine floodplain delineations, the automated tools within HEC-GeoRAS were used to generate geometry data that was then used in HEC-RAS to model the floodplain. Flows used in HEC-RAS were either taken from the Hazus analysis or were developed using the U.S. Geological Survey's online StreamStats tool to implement the Colorado regional regression equations. HEC-GeoRAS was used to post-process the HEC-RAS model results and produce floodplain delineations.

The map below shows the flooding threat to critical facilities in Weld County by layering identified special flood hazard areas (SFHA) with the locations of community-defined critical facilities. Critical facilities are essential to the health and welfare of the whole population and are especially important both during and after hazard events. Critical structures or areas that overlap or touch the SFHA are considered “flood prone.”

In addition to the SFHA boundaries, the flood risk analysis for this Plan integrates DFIRM depth grids, a digital dataset that shows flood depths at various locations within the floodplain. This enhanced data input allows Hazus to more accurately approximate floodplain boundaries and their associated flood depths for a 100-year flood event.

Due to the availability of LiDAR elevation data, as well as complete countywide floodplain coverage, a detailed depth grid was locally developed for this planning effort. This depth grid was developed by combining the effective FEMA 100 year floodplains with several Urban Drainage Flood Control District FHADs (Flood Hazard Area Delineations) that covered the area of analysis. The resulting floodplain represents the most detailed and temporally accurate depiction of the current flood hazards in Weld County. A water surface elevation surface was created from the aforementioned floodplains and this surface was intersected with the most accurate elevation data available (2013 LiDAR and NED data) to obtain a flood depth surface. The map below shows the SFHA and the associated flood depths within Weld County generated for the 100-year risk analysis.

1% Annual Flood Scenario Loss Est. - Critical Facilities

Loss estimations are derived from Hazus-HM 2.2 flood scenario involving the 1% Annual Chance Flood Event (100-Year Flood). Total economic losses include: building repair costs, contents, business inventory, costs of relocation, capital-related, wage, and rental losses. Critical facilities as defined by the Weld County OEM. Point locations are sometimes approximate and not the actual building location.

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

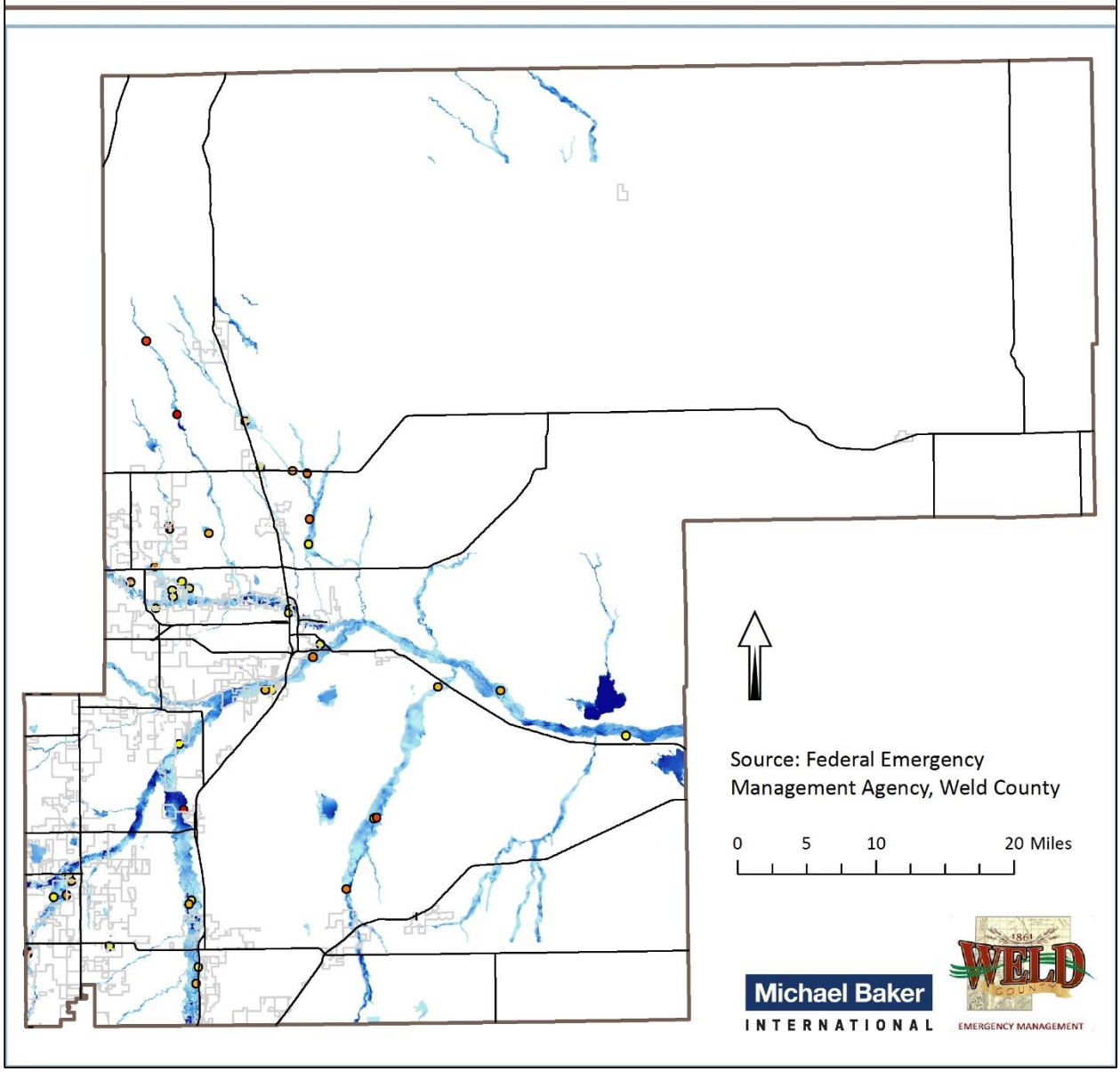


Figure 24. Map of Flooding Threat to Critical Facilities and DFIRM Depth Grid

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The critical facility exposure analysis estimates that there are 55 critical facilities in Weld County that are flood prone (not including the total miles of flood prone infrastructure). The appraised value of these exposed structures is approximately $14.5 million.

The tables below summarize the results of the critical facility flood exposure analysis and include information concerning the appraised value.

Table 39. Flood Prone Critical Areas

CRITICAL FACILITIES	TOTAL # OF STRUCTURES	# OF FLOOD PRONE STRUCTURES
Utility Buildings	47	15
Government Building	1	0
Warehouse	2	0
Daycare	1	0
Church	3	0
Auditorium	1	0
TOTAL STRUCTURES	**55**	**15**

Table 40. Flood Prone Critical Facilities – City and County Facilities

	City Facility		County Facility	
	Count	*Appraised Value*	*Count*	*Appraised Value*
Within SFHA	10	$6,161,901	34	$5,676,211

Table 41. Flood Prone Critical Facilities – Community Services

	Church	
	Count	*Appraised Value*
Within SFHA	3	$5,305,952
Total	154	$84,445,802
% Flood Prone	< 2%	< 6%

5.2.4.4 Potential Losses

The methodology used to determine potential losses to flooding was conducted using FEMA's Hazus loss estimation software. For this Plan, a 100-year flood scenario was modeled for the County. The results of the Hazus assessment are presented below.

HAZUS 100-YEAR FLOOD SCENARIO

The flood depth grid and the parcel centroid points served as the primary inputs into Hazus. The parcel centroid points were produced by utilizing parcel and assessor data provided by Weld County GIS. This data was converted to parcel centroid (point) data and spatially corrected to ensure geographical accuracy of the points and the associated structures in all areas within the designated 100-year floodplain. In some cases there were multiple, distinctly different, structures within a single designated parcel. In these cases, points were generated on top of each individual structure and the total appraised value of the parcel was divided up equally among the structures. Important attributes such as year built and land use were missing for many parcels throughout the county. In these cases the average value of the associated census block was used in the risk assessment.

A 100-year flood scenario was defined in Hazus and losses were calculated for each point that intersected the depth grid based on the Hazus depth damage curves for specific structure attributes (such as foundation type, building type, and first flood height). The map below shows the results of the Hazus 100-year flood scenario economic loss analysis for Weld County.

Future flood risk assessments conducted within Weld County (including Hazus-based assessments) should ensure that they continue to incorporate additional floodplain data sets that were not able to be fully utilized as part of the 2016 Plan.

1% Annual Flood Scenario Loss Estimation

Loss estimations are derived from Hazus-HM 2.2 flood scenario involving the 1% Annual Chance Flood Event (100-Year Flood). Total economic losses include: building repair costs, contents, business inventory, costs of relocation, capital-related, wage, and rental losses. Point locations are sometimes approximate and not the actual building location. Where parcels do not have buildings, the point is the centoid of that parcel.

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

Legend

Major Roads

Weld County

1% Depth Grid (Feet)
High : 57.856
Low : 0

Total Economic Loss (Count)
- $100 - $10,000 (564)
- $10,001 - $50,000 (425)
- $50,001 - $100,000 (85)
- $100,001 - $250,000 (67)
- $250,001 - $1,000,000 (40)
- $1,000,001 - $2,600,000 (6)

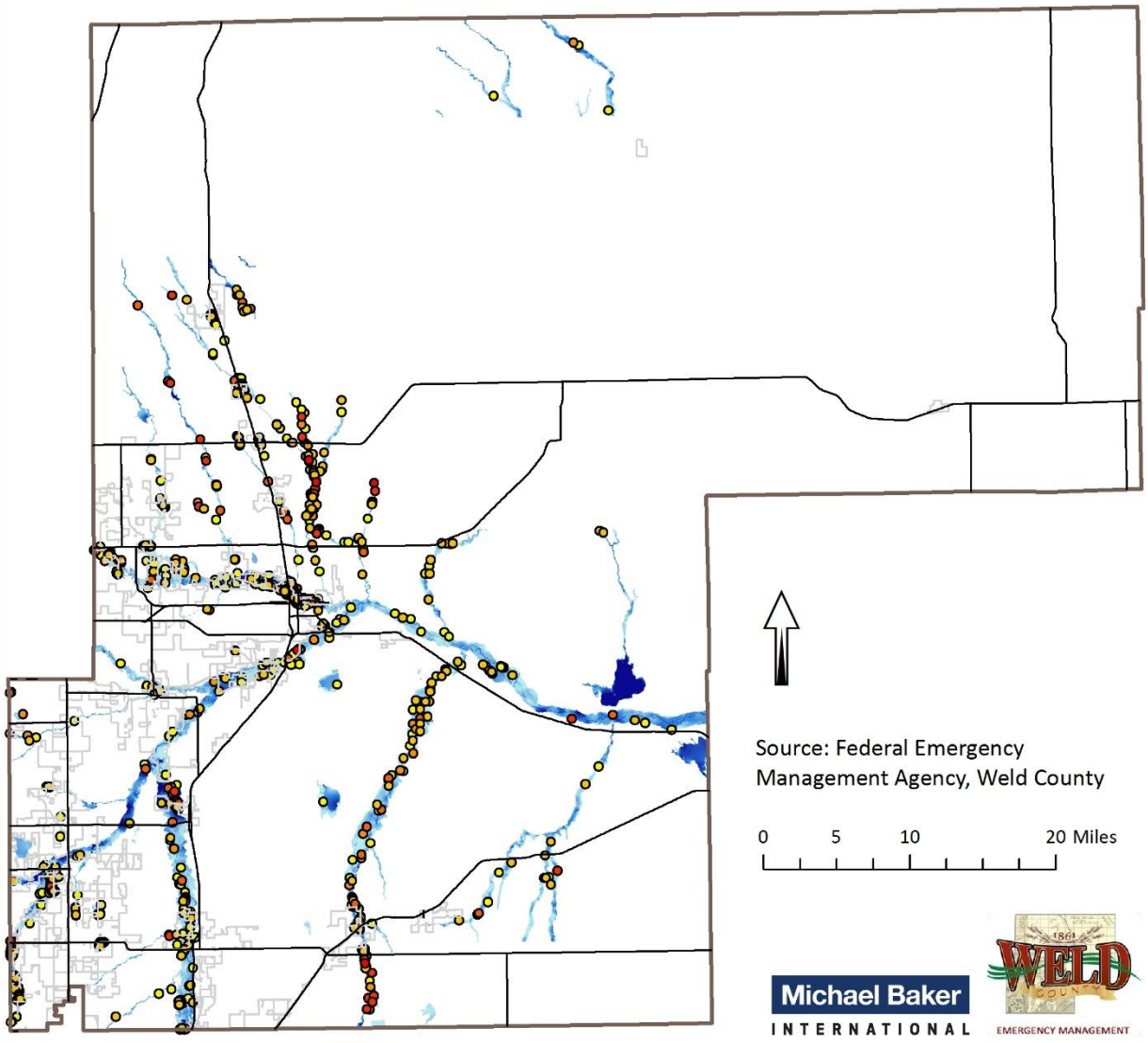

Figure 25.Total Economic Losses (100-Year Flood Scenario)

The map of total Economic losses illustrates a clear loss pattern in which damages are clustered around the most populated areas of the county. These places represent areas where resources and people are concentrated, making those areas of high potential loss and clear priority areas for focused mitigation action.

Hazus estimates for Weld County estimate that for a 100-year flood event, approximately 1,163 buildings will be at least moderately damaged. The total economic loss estimated for the 100-year flood is over $54 million dollars. A number of variables are included in Hazus analyses in order to arrive at the estimated values of loss due to flooding. For this reason, it is important to note that the Hazus loss estimates detailed below should not be used as a precise measure, but rather viewed from the perspective of the potential magnitudes of expected losses.

When calculating building losses Hazus breaks loss values into two categories: direct economic losses and indirect economic losses. Direct economic losses are the estimated costs to repair or replace the damage caused to a building and its contents. These values are organized in terms of Building Losses and Building Content Losses. Indirect economic losses include Inventory Losses and other losses associated with business interruption and the inability to operate a business because of the damage sustained during the flood.

The total building losses for the 100-year flood event were estimated to be over $24.4 million. This represents over 45% of total economic losses from flooding in the county. Building content losses were estimated to be over $18.4 million, representing roughly 34% of total economic losses from flooding. Inventory losses were estimated to be over $1.1 million. This represents roughly 21% of total economic losses due to the 100-year flood modeled in the Hazus scenario.

The table below provides a summary of the economic losses associated with building damage by jurisdiction. Only those jurisdictions with expected losses are included in the table (unlisted jurisdictions do not have structures that are expected to sustain damage from the 100-year flood scenario).

Table 42. Economic Loss Estimates by Jurisdiction (Hazus 100-year Flood Scenario)*

Jurisdiction	Total Building Count	Number of Damaged Buildings	Building Losses	Building Content Losses	Inventory Losses	Total Losses
Dacono	51	32	$137,830	$33,980	$960	$172,770
Eaton	10	1	$0	$80	$100	$180
Erie	104	104	$1,371,710	$223,980	$151,330	$1,747,020
Evans	162	13	$1,870,170	$649,600	$88,670	$2,608,450
Firestone	31	8	$12,940	$1,760	$0	$14,700
Frederick	36	14	$59,300	$25,570	$27,880	$112,760
Greeley	309	202	$1,301,050	$2,291,910	$1,160,750	$4,753,700
Mead	8	7	$97,600	$10,400	$0	$108,000
Milliken	9	2	$1,820	$3,240	$3,510	$8,580
Nunn	22	12	$176,330	$75,940	$0	$252,270
Pierce	100	49	$600,780	$305,420	$37,290	$943,490
Platteville	22	14	$204,740	$43,350	$0	$248,080
Severance	93	20	$590,630	$563,550	$14,930	$1,169,110

Jurisdiction	Total Building Count	Number of Damaged Buildings	Building Losses	Building Content Losses	Inventory Losses	Total Losses
Windsor	78	66	$927,650	$277,760	$147,350	$1,352,750
Unincorporated	1,165	619	$17,058,930	$13,965,500	$9,551,110	$40,575,540
Total	**2,096**	**1,163**	**$24,411,480**	**$18,472,040**	**$1,118,380**	**$54,067,400**

*Loss estimates have been rounded to the nearest $10

The previous table shows a large range of expected damaged buildings due to a 1% annual chance flood event. Portions of Greeley were estimated to have over 300 structures damaged. While affecting only 1% of the building stock in that area, the losses still were expected to total over $4.7 million. Evans has roughly 160 structures estimated to be damaged, with total of 2.6 million dollars. While affecting only 2.4% of the building stock in that area, the losses are still expected to total over $2.6 million.

Loss estimations for some of the less populated jurisdictions in Weld County (Eaton, Firestone, and Milliken) were all relatively low when compared to the scale of losses estimated for the jurisdictions mentioned above.

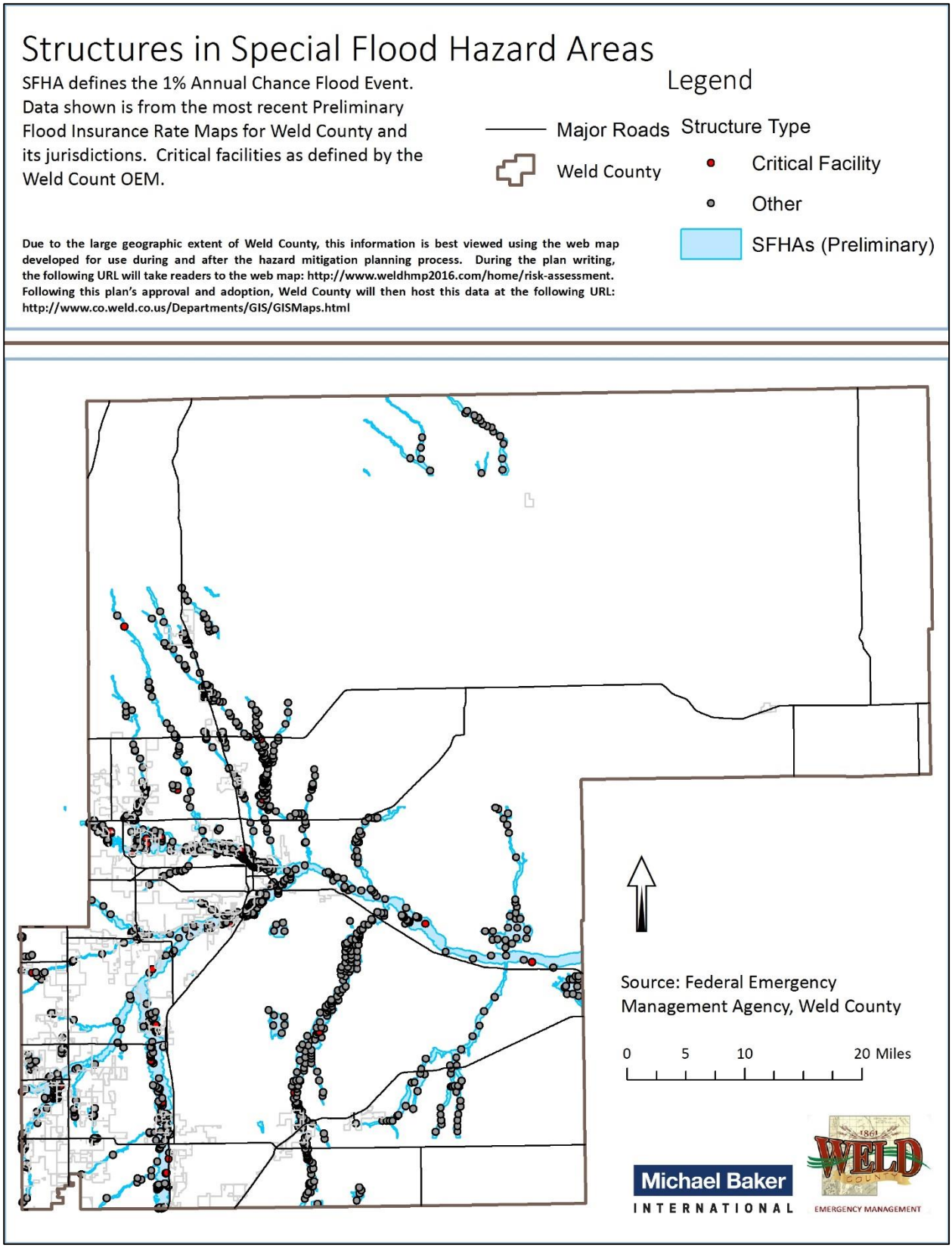

Figure 26. Structures in the Special Flood Hazard Area

The tables below summarize potential loss estimates from flooding based on the Hazus 100-year flood assessment.

Table 43. Inventory Located in SFHA Areas (Current Prelim Data)

	Count	Total Assessor Building Value
Structures/Parcels	2,170	$203,052,878
Critical Facilities	55	$14,434,308

Table 44. Potential Losses of Inventory, 100-Year Flood Event

	Count	Estimated Losses
Structures/Parcels	1,363	$54,198,260
Critical Facilities	55	$2,469,806

5.2.4.5 Probability of Future Occurrences

Frequency of previously reported flood events in Weld County provide an acceptable framework for determining the probability of future flood occurrence in the area. The probability that the County and its municipalities will experience a flood event can be difficult to predict or quantify. However, based on historical records of 45 flood events since 1950, it can reasonably be assumed that this type of event has occurred once every 1.4 years from 1950 through 2015.

Severe flooding has the potential to inflict significant damage to people and property in Weld County. Mitigating flood damage requires that communities throughout the County remain diligent and notify local officials of potential flood (and flash flood) prone areas near infrastructure such as roads, bridges, and buildings. While the potential for flooding is always present, Weld County has existing land-use policies and regulations for development to help lessen potential damage due to floods.

5.2.4.6 Land Use and Development

As population continues to increase in Weld County, future development trajectories can be expected to put more people and property, both private and public, at risk of flooding. It is essential that zoning and land use plans take into account not only the dollar amount of damage that buildings near waterways could incur, but also the added risk of floodplain development activity that alters the natural flood plain of the area (for example, narrowing the floodplains by building new structures close to rivers and streams). The county as a whole should plan for the likelihood of increased exposure of property and humans to flood events.

Existing floodplain management ordinances are intended to address methods and practices to minimize flood damage to new and substantial home improvement projects as well as to address zoning and subdivision ordinances and state regulations. Currently, Weld County is a National Flood Insurance Program (NFIP) participant and continues to support floodplain management activity at the county and local scale.

The greatest protection against flooding is afforded by quality construction and compliance with local ordinances which exceed NFIP requirements. Code adoption by local jurisdictions, compliance by builders, and local government inspection of new homes can greatly reduce the risk of flooding. Moving forward, Weld County will continue to support monitoring, analysis, modeling, and the development of decision-support systems and geographic information applications for floodplain management activities.

Additionally, jurisdictions within the county should consider participating in the Community Rating System (CRS).

In addition to land-use planning, zoning, and codes applicable to new development, flood mitigation measures include structural and non-structural measures to address susceptibility of existing structures. Flood mitigation measures such as acquisition, relocation, elevation-in-place, wet/dry flood proofing, and enhanced storm drainage systems all have the potential to effectively reduce the impact of flood in Weld County.

5.2.5 HAZMAT

NATURAL HAZARDS	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
HAZMAT	0.825	0.600	0.450	0.383	0.225	2.483
MODERATE RISK (2.0 to 2.4)						

5.2.5.1 Hazard Identification

A hazardous material (also known as HAZMAT) is defined by the U.S. Department of Transportation as "a threat that poses an unreasonable risk to health and safety of operating or emergency personnel, the public, and/or the environment if not property controlled during handling, storage, manufacturing, processing, packaging, use, disposal, or transportation."

Hazardous materials are defined and regulated in the United States primarily by laws and regulations administered by the U.S. Environmental Protection Agency (EPA), the U.S. Occupational Safety and Health Administration (OSHA), the U.S. Department of Transportation (DOT), and the U.S. Nuclear Regulatory Commission (NRC). Each has its own definition of a "hazardous material."

For the purpose of tracking and managing hazardous materials, the DOT divides regulated hazardous materials into nine classes:

Table 45. Hazardous Materials -- Classes and Descriptions

Hazard Class	Description
Class 1: Explosives	1.1 mass explosion hazard 1.2 projectile hazard 1.3 minor blast/projectile/fire 1.4 minor blast 1.5 insensitive explosives 1.6 very insensitive explosives
Class 2: Compressed Gases	2.1 flammable gases 2.2 non-flammable compressed 2.3 poisonous
Class 3: Flammable Liquids	Flammable (flash point below 141°) Combustible (flash point 141°-200°
Class 4: Flammable Solids	4.1 flammable solids 4.2 spontaneously combustible 4.3 dangerous when wet
Class 5: Oxidizers and Organic Peroxides	5.1 Oxidizer 5.2 Organic Peroxide
Class 6: Toxic Materials	6.1 Material that is poisonous 6.2 Infectious Agents
Class 7: Radioactive Material	Radioactive I Radioactive II Radioactive III

Hazard Class	Description
Class 8: Corrosive Material	Destruction of the human skin Corrode steel at a rate of 0.25 inches per year
Class 9: Miscellaneous	A material that presents a hazard during shipment but does not meet the definition of the other classes

Weld County's 2035 Transportation Plan summarizes existing transportation conditions including current hazardous materials routes. "Weld County has significant oil well activity," states the 2035 Plan. "As a result, trucks carrying oil well production utilize nearly every road in the county." In November 2010, the Weld County Board of County Commissioners passed a Resolution designating all county roads to be considered "local pick-up and delivery" truck routes for oil production purposes.

Hazardous materials that are being transported must have specific packaging and labeling. Specific safety regulations also apply when handling and storing hazardous materials at fixed facilities. In general, there are three recognized sources for HAZMAT incidents within the County: delivery lines, fixed storage facilities and use locations, and transportation lines. Once a HAZMAT incident occurs, the area impacts will depend on the nature of the chemical and climate conditions. All areas should be considered at risk. However, some areas, such as those close to aquifers and other water supplies can expect greater impacts if a spill occurred in the area.

Transportation of hazardous materials through Weld County happens at all times of day by way of rail, road, and air. Roadway transport account for the largest amount of hazardous materials moving though the county. That said, rail cars are able to carry much larger quantities of hazardous materials than trucks of cars and can be associated with a greater risk.

Title 42, Article 20 of the Colorado Revised Statutes governs the routing of hazardous materials by motor vehicles on all public roads in the state. CDOT Policy Directive 1903.0 (effective 5/20/2010), and CDOT Procedural Directive 1903.1 (effective 2/3/2011), govern CDOT's role in the designation of hazmat routes. In order to designate a state highway in Colorado as hazmat route, CDOT staff members, local governments, or private entities must request the Mobility Section of the Division of Transportation Development to perform an analysis of the route. To perform this analysis the Mobility Section convenes a "Hazmat Advisory Team" to determine if the proposed route meets the required criteria. If the required criteria are met and approved by the Transportation Commission, CDOT will file a petition with the Colorado State Patrol for approval. Once the Colorado State Patrol approves the petition, the route is designated a hazmat route.

The required criteria that the route must meet before it is brought before the Transportation Commission are as follows:

- The route(s) under consideration are feasible, practicable, and not unreasonably expensive for such transportation.
- The route(s) is continuous within a jurisdiction and from one jurisdiction to another.

- The route(s) does not unreasonably burden interstate or intrastate commerce.
- The route(s) designation is not arbitrary or intended by the petitioner merely to divert the transportation of hazardous materials to other communities.
- The route(s) designation will not interfere with the pickup or delivery of hazardous materials.
- The route(s) designation is consistent with all applicable state and federal laws and regulations; and
- The route(s) provides greater safety to the public than other feasible routes. Considerations include but are not limited to:
    - AADT, crash and fatality rates
    - Population within a one-mile swath of each side of the highway
    - Locations of schools, hospitals, sensitive environmental areas, rivers, lakes, etc.
    - Emergency response capabilities on the route
    - Condition of the route, i.e., vertical and horizontal alignment, pavement condition, level of access to the route, etc.

Colorado State Patrol
Hazardous Materials Unit

(303) 273-1900
http://csp.state.co.hazmat.html

Troop 8-C is the Hazardous Materials Section of the Colorado State Patrol. Their mission is to contribute to the safety of hazardous materials transportation in order to protect citizens and the environment. Twenty-eight troopers trained a Hazardous Materials Technicians are deployed throughout the state.

Local Hazardous Materials Response Teams (most often housed in local fire departments and fire protection districts) are the designated emergency response authority for hazardous substance incidents in all areas of Weld County except on highways, where the State Patrol has jurisdiction.

For security reasons, it is not within the scope of this plan to map the locations of all industrial and commercial fixed sites.

The following CDOT map shows the state's designated nuclear, hazardous materials, and gasoline, diesel fuel, and liquid petroleum gas routes, many of which pass through the western portion of Weld County.

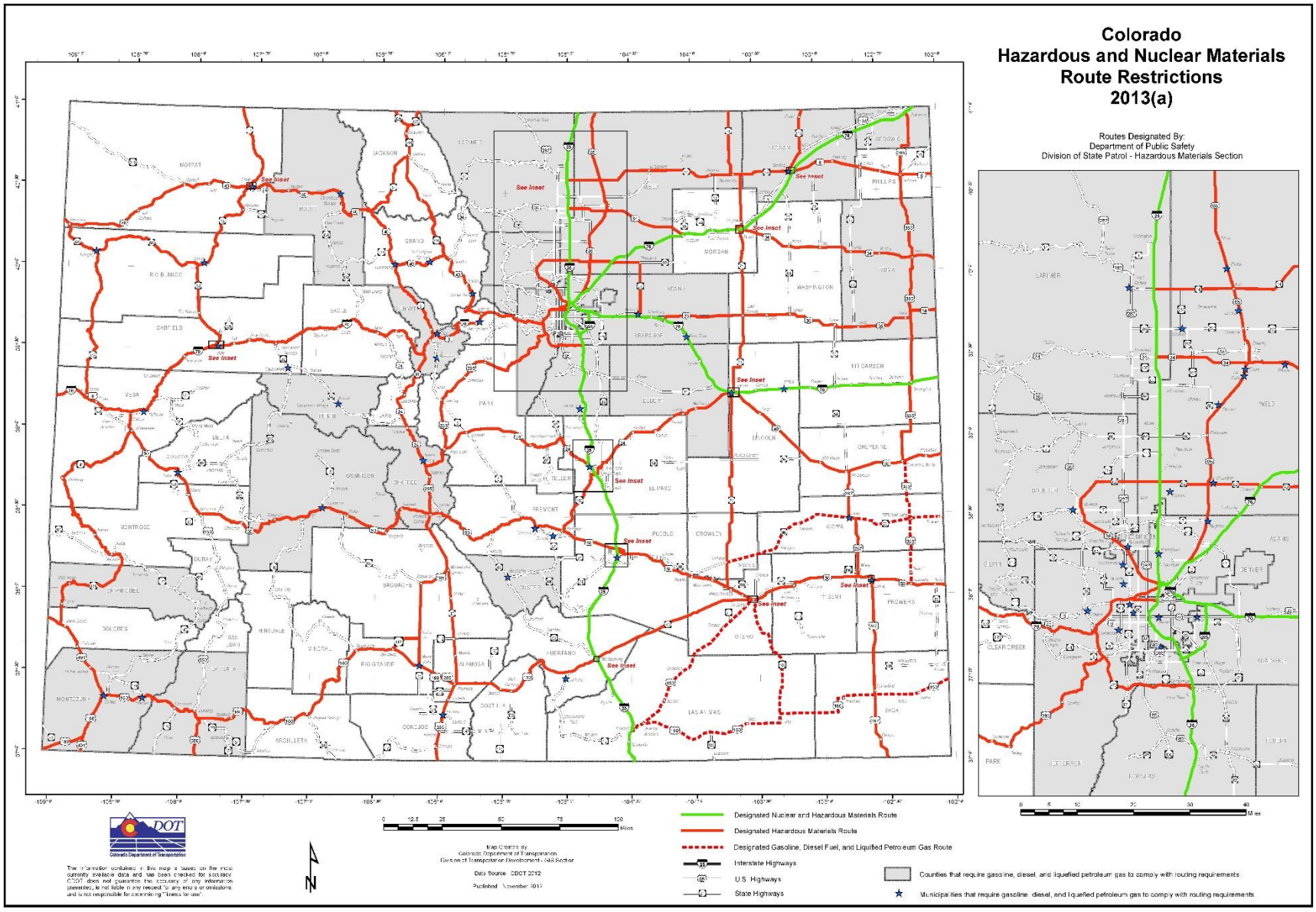

Figure 27. Colorado Hazardous and Nuclear Materials Route Restrictions

5.2.5.2 Previous Occurrences

Based on data collected by the Pipeline and Hazardous Materials Safety Administration's (PHMSA) Incident Reports Database, there have been a total of 219 HAZMAT incidents reported in Weld County between 1972 and 2015. The large majority of these incidents occurred while the materials were moving along a highway (either in transit, loading, or unloading).

Figure 28. A Semitrailer carrying hazardous materials rolled off a ramp and crashed in Greeley (Source: Greeley Fire Department, May 13, 2015)

5.2.5.3 Inventory Exposed

We can't accurately predict when or where a HAZMAT incident may occur. Therefore, for the purpose of this plan, all existing and future buildings, facilities, and populations in Weld County are considered to be equally exposed and could potentially be impacted. This includes 57,180 people, or 100% of the County's population, and all buildings and infrastructure within the County.

When hazardous materials are being transported they are particularly vulnerability to transportation related accidents, misuse, or terrorist threats. Most hazardous materials are transported in large quantities in order to reduce costs and security is difficult to maintain around moving vehicles that cross jurisdictional boundaries. When transported close to populated areas or critical infrastructure, HAZMAT releases can have serious consequences. The inventory that is most often exposed to HAZMAT risks are railways, roadways, and fixed facilities that contain hazardous materials, and all assets that lie within a mile of the potential release areas.

5.2.5.4 Potential Losses

HAZMAT related events occur throughout Weld County every year. The intensity and magnitude of these incidents depend on weather conditions, the location of the event, the time of day, and the process by which the materials are released. *Was it raining when the event happened? Were the hazardous materials being transported by rail when they were released or were they at a fixed facility? Did the spill happen*

during rush hour traffic or in the middle of the night? All of these considerations matter when determining the risk and potential damages associated with a HAZMAT incident.

HAZMAT events have the potential to threaten lives and disrupt business activity. Moreover, HAZMAT incidents can cause serious environmental contamination to non-renewable resources such as air, ground, and water sources.

5.2.5.5 Probability of Future Occurrences

As with most hazards that have limited spatial predictability or warning time, the probability of future occurrences of HAZMAT events is difficult to predict. However, as development continues to encroach into existing industrial areas and becomes more dense along high-risk designated hazardous materials transportation routes, the risk of future occurrences becomes greater. Even if the frequency of HAZMAT spills remains the same over time, population growth will increase the probability of a disaster event.

5.2.5.6 Land Use and Development

As Weld County continues to experience population growth and development over time, it is anticipated that there will be increased exposure to potential life loss, injuries, and environmental damage resulting from a hazardous materials incident. Serious considerations must be made concerning land use and regulations as increasing development pressures push residential and commercial investment closer to railways and identified hazardous and nuclear materials routes.

5.2.6 Land Subsidence

NATURAL HAZARDS	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Land Subsidence	0.600	0.400	0.300	0.267	0.200	1.767
LOW RISK (1.9 or lower)						

5.2.6.1 Hazard Identification

Land Subsidence describes any depressions, cracks, and/or sinkholes in the earth's surface which can threaten people and property. Causes of subsidence include, but are not limited to, the removal or reduction of sub-surface fluids (water, oil, gas, etc.), mine subsidence, and hydro compaction. Of these causes, hydro compaction and mine subsidence usually manifest as localized events, while fluid removal may occur either locally or regionally.

Land subsidence can occur rapidly due to a sinkhole or the collapse of an underground mine, or during major earthquakes. Subsidence can also take place slowly, becoming evident over the time span of many years. Soils that tend to collapse and settle are those characterized by low-density materials that shrink in volume when they become wet and/or are subjected to weight from development. Subsidence events, depending on their location, can pose significant risks to health, safety, and local agricultural economies and interruption to transportation, and other services.

There are hundreds of abandoned underground coal mines scattered throughout Colorado that present potential subsidence hazards to structures and surface improvements. The Colorado Geological Survey (CGS) operates the Colorado Mine Subsidence Information Center (MSIC) which is the repository for all of the known existing maps of inactive or abandoned coal mines in the state. Subsidence tends to be problematic along the Colorado Front Range, Western Slope, and in the central mountains near Eagle and Garfield Counties.[13] Based on data provided by CGS, there are a number of undermined areas within south western Weld County that are more vulnerable to subsidence. The following Figure presents a map identifying the locations within Weld County that have potential for subsidence due to historical mining activity.

[13] 2013 Colorado Natural Hazards Mitigation Plan

Identified Undermined Areas

Undermined areas identified in the data set only includes coal and clay mining activity known by the Colorado Geological Survey.

Legend

- Major Roads
- Weld County
- Undermined Areas

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

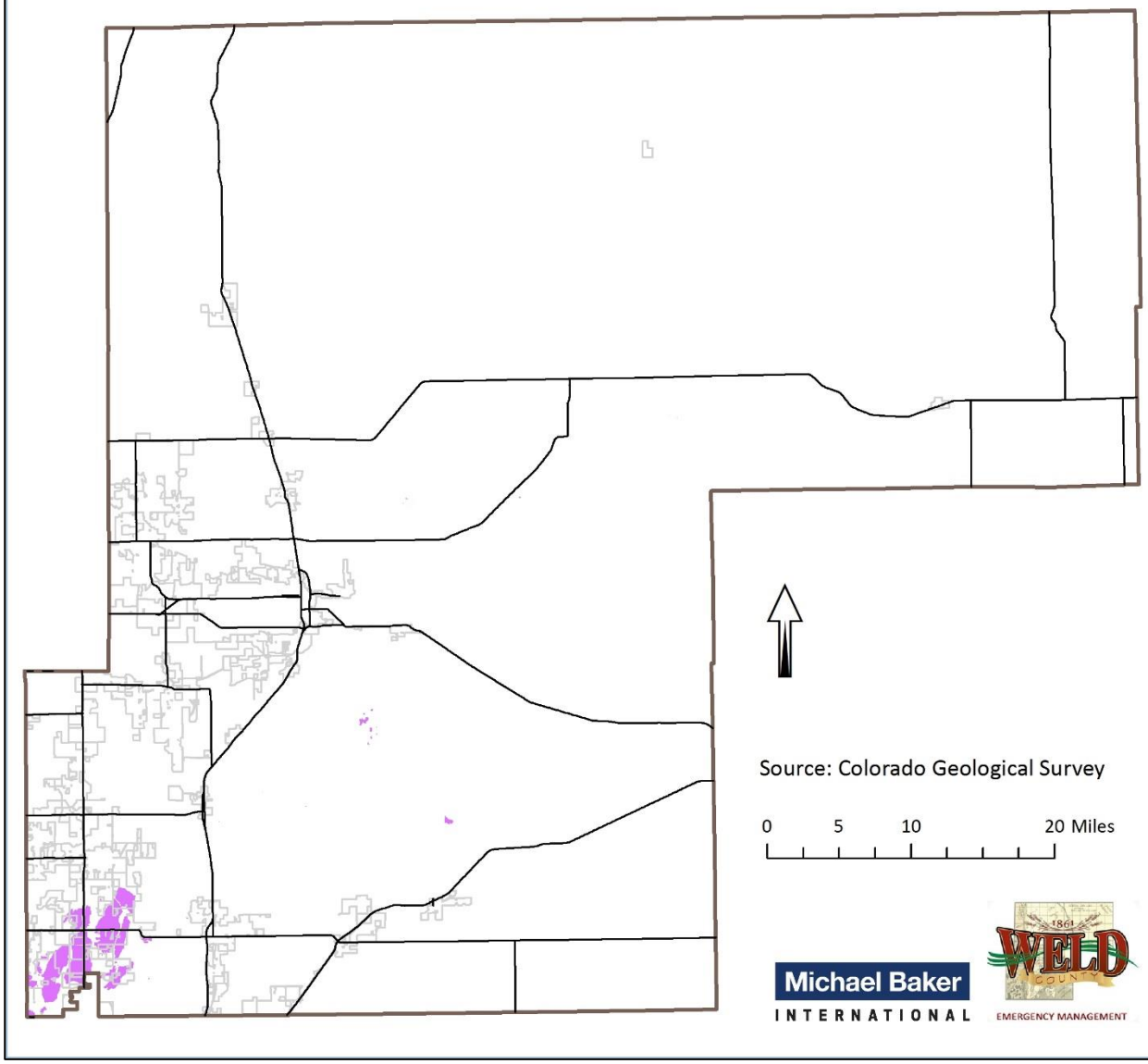

Figure 29. Map of Undermined Areas in Weld County

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The map of undermined areas shows areas of historic (pre-1970s) coal and clay mining activity and potentially undermined areas throughout Weld County. The dataset was developed from multiple sources and digitized by the Colorado Geological Survey in 2008 and presents a spatial view of potential risk.

5.2.6.2 Previous Occurrences

Reliable, county-specific historical records of land subsidence events in the State of Colorado is sparse. That said, the Colorado Geological Survey (CGS) has been researching land subsidence in Colorado for over two decades. In addition to publishing regional susceptibility maps and GIS datasets, the CGS has also compiled a series of case histories that describe select land subsidence events across the state.

Out of the five case histories highlighted on the CGS "Geologic Hazards" resource site, two are located in Weld County.

Table 46. CGS Land Subsidence Case Histories – Weld County

Location	Event Summary
Erie, CO	January 2009 - A large subsidence hole was reported at a residence near the corner of a horse barn. The property owners reported the hole opened up overnight and a fence and gate had been destroyed by the event. The hole measured roughly 25 feet by 25 feet by 15 feet deep and was filled with water. Because of the nature of the opening and the proximity to livestock and human activities, the event was considered a subsidence emergency and was backfilled by the Abandoned Mine Lands program
Erie, CO	December 2008 - A large subsidence hole in a field west of Erie was reported. The hole was about 50 feet in diameter and 35 feet deep before being filled with water. The field where the hole appeared was under consideration for annexation by the town for future residential development. A geophysical investigation conducted 3 months prior did not show any evidence of voids in the area. The hole was located outside of the mined area shown on the mine map indicating that the mine map was inaccurate. During the mitigation process, a secondary subsidence pit of smaller dimensions was found directly west of the original hole. Both holes were backfilled by the Abandoned Mine Lands program.

Source: CGS, 2015

As a general rule of thumb, land subsidence occurrence can be expected where it has occurred in the past. For this reason, the County may benefit from developing a reporting system and database for tracking land subsidence events.

5.2.6.3 Inventory Exposed

A structure may be at risk to the impacts of land subsidence if it is located over or close to an undermined area. Therefore, an important first step in determining exposure at a specific location is to determine if the area is undermined or near an area where underground mining took place. The map below identifies the locations within Weld County that have elevated potential for subsidence due to historical mining activity and development activity. Most of the undermined areas within Weld County that are vulnerable to subsidence are located in the south western portion of the county. This is an area of the county where both development and population are growing rapidly. Impacted communities include Erie, Dacono, and

Frederick. As population growth brings new development into available land in the south western portion of the county, more inventory assets may become exposed to subsidence hazards.

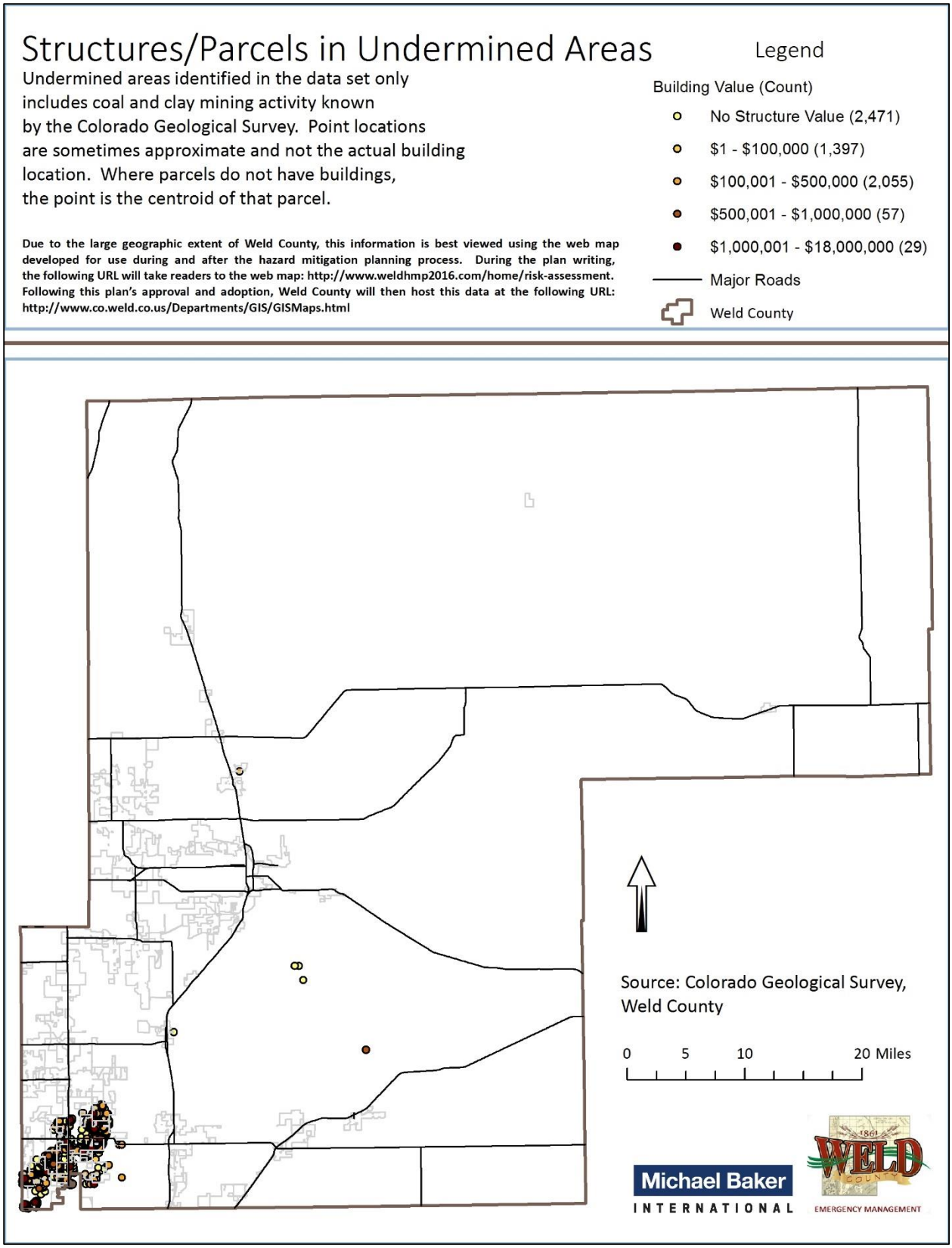


Figure 30. Structures and Parcels Located in Undermined Areas

EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

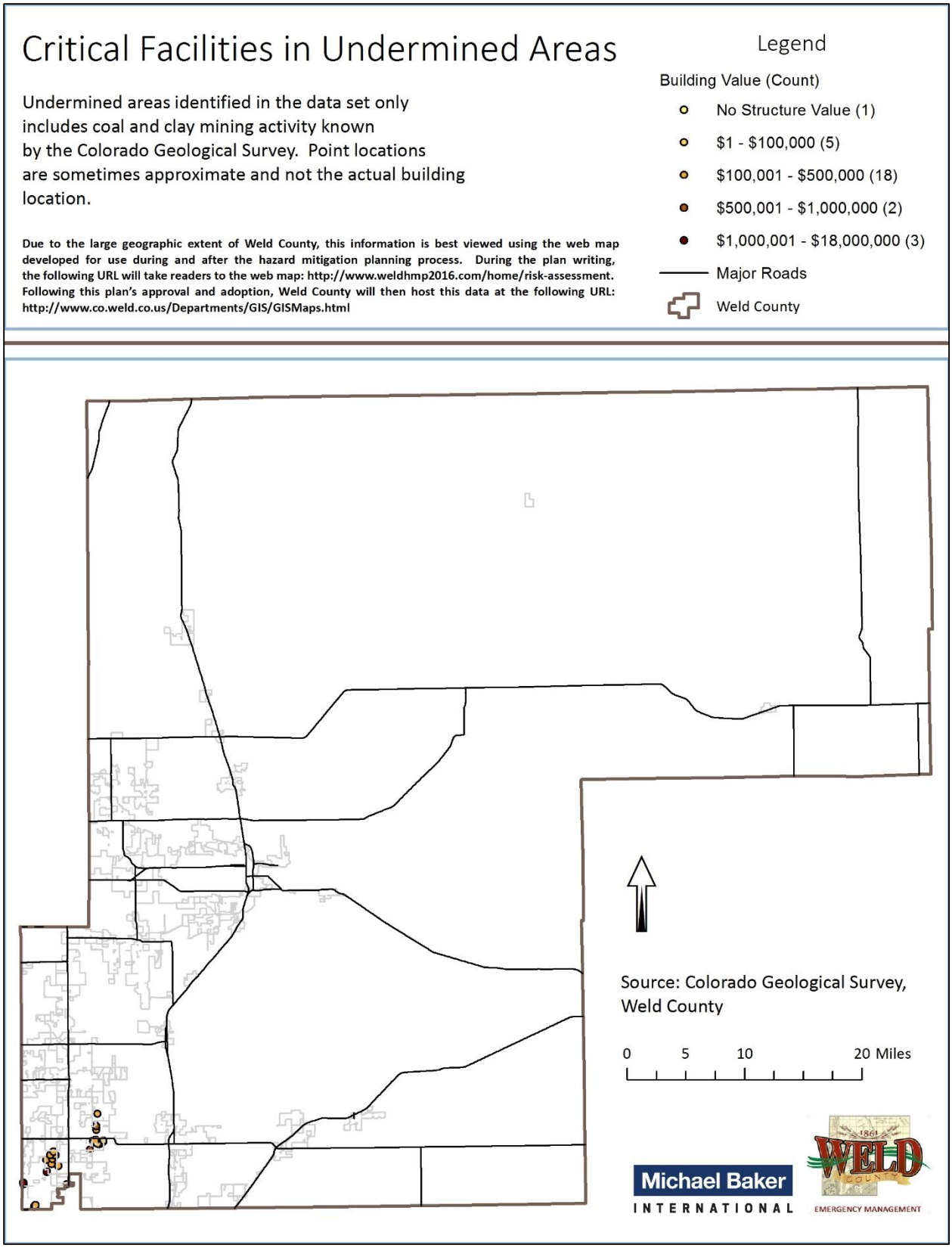


Figure 31. Critical Facilities Located in Undermined Areas

5.2.6.4 Potential Losses

The following table summarizes the potential losses associated with land subsidence events in Weld County. Structures and parcels within high risk areas, as well as critical facilities, have been identified and their collective value quantified.

Table 47. Summary of Structures and Critical Facilities in Areas at High Risk of Land Subsidence

	Count	Total Assessor Building Value
Structure/Parcels	6,009	$525,412,110
Critical Facilities	29	$28,067,056

The risk analysis indicates that Weld County has relatively high exposure to land subsidence, primarily because of the location of historically undermined areas in relation to urban development and population growth. Not only have there been previous land subsidence events reported in the county, CGS data of at-risk areas shows a number of areas of historical undermining in the county, many of which intersect with critical facilities, largely populated areas, and future development areas.

5.2.6.5 Probability of Future Occurrences

Due to the lack of identified subsidence occurrences and uncertainty associated with existing data, it is challenging to calculate any type of probability for future events. It can be assured however, that subsidence will continue to slowly alter the landscape of Weld County going forward.

In areas where climate change results in decreased precipitation in the summer months and reduced surface-water supplies, communities are often forced to pump more ground water to meet their needs. In Colorado, the major aquifers are composed primarily of compressed clay and silt, soil types that are prone to compact when ground-water is pumped. In the past, major land subsidence has occurred in agricultural settings where ground-water has been pumped for irrigation. It is probable that the eastern and south western region of Weld County will experience more frequent land subsidence hazards over time as a result of local climate change. It is important that Weld County consider future mitigation actions that will address this hazard, particularly in rapidly growing areas.

5.2.6.6 Land Use and Development

As the population of Weld County grows, there is a possibility that some development will encroach into identified subsidence hazard areas. These hazards include the potential for sagging ground, sinkholes, and the collapse of mine shafts that have not been adequately closed. Any of these hazards can cause damage to property, structures, transportation infrastructure, utility lines, and in some cases, can threaten human life. Only a few inches of differential settlement beneath a structure could cause many thousands of dollars of damage. It is important that subsidence risk data is considered in the designs and plans of future development proposals.

5.2.7 Prairie Fire

NATURAL HAZARDS	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Prairie Fire / Wildfire	0.900	0.550	0.467	0.383	0.208	2.508
HIGH RISK (2.5 or higher)						

5.2.7.1 Hazard Identification

Prairie Fires (also known as wildfires) are defined as unwanted or unplanned wildland fires. They include unauthorized human caused fires, escaped prescribed burn projects, and all other wildland fires where the objective is to put the fire out.

Prairie fires are fueled by natural ground cover, including native and non-native species of trees, brush and grasses, and crops along with weather conditions and topography. While available fuel, topography, and weather provide the conditions that allow fires to spread, most fires are caused by people through criminal or accidental misuse of fire.

Figure 32. Prairie Fire near Weld County

Prairie fires pose serious threats to human safety and property in Weld County. They can destroy crops, timber resources, recreation areas, and critical wildlife habitat. Prairie fires are commonly perceived as hazards in the western part of the state; however, they are a growing problem in the wildland-urban interfaces of eastern Colorado, including communities within Weld County.

Prairie fire behavior is dictated in part by the quantity and quality of available fuels. Fuel quantity is the mass of material per unit area. Fuel quality is determined by a number of factors, including fuel density, chemistry, and arrangement. Arrangement influences the availability of oxygen surrounding the fuel source. Another important aspect of fuel quality is the total surface area of the material that is exposed to heat and air. Fuels with large area-to-volume ratios, such as grasses, leaves, bark and twigs, are easily ignited when dry.

Climatic and meteorological conditions that influence prairie fires include solar insulation, atmospheric humidity, and precipitation, all of which determine the moisture content of wood and leaf litter. Dry spells, heat, low humidity, and wind increase the susceptibility of vegetation to fire. Additional natural agents can be responsible for igniting fires, including lightning, sparks generated by rocks rolling down a slope, friction produced by branches rubbing together in the wind, and spontaneous combustion.

Arson and accidents, including sparks from equipment and vehicles, can also cause prairie fire. Human-caused fires are typically worse than those caused by natural agents. Arson and accidental fires usually start along roads, trails, streams, or at dwellings that are generally on lower slopes or bottoms of hills and valleys. Nurtured by updrafts, these fires can spread quickly uphill. Arson fires are often set deliberately at times when factors such as wind, temperature, and dryness contribute to the spread of flames.

HAZARD PROFILE

Local impacts from prairie fire events include the following:

- Loss of life (human, livestock, wildlife)
- Damage to municipal watersheds
- Loss of property
- Evacuations
- Transportation interruption (closing highways)
- Reductions in air quality and human health
- Injuries – burns, smoke inhalation, etc.
- Coal seam or other energy facility ignitions
- Loss of vegetation (erosion, loss of forage and habitat for livestock and wildlife)
- Expense of responding (equipment, personnel, supplies, etc.)
- Loss of revenue from destroyed recreation and tourism areas

Predicting the intensity of a prairie fire, its rate of spread, and its duration are important for wildfire mitigation activity, response, and firefighter safety. Listed below are the three key factors affecting prairie fire behavior in the Wildland Urban Interface (WUI). Very often, however, the only factor that a community can have direct influence over is fuel.

1. *Fuels:* The type, density, and continuity of surrounding vegetation and, sometimes, flammable structures, that provide fuel to keep a wildfire burning. Fuels consist of combustible materials and vegetation (including grasses, leaves, ground litter, plants, shrubs, and trees) that feed a fire.
2. *Weather:* Relative humidity, wind, and temperatures all affect wildfire threat and behavior.
3. *Topography:* The steepness and aspect (direction) of slopes, as well as building-site locations, are features that affect fire behavior.

Wildfires are often rated based on their ability of their fuels to ignite. Descriptions for the commonly used "Fire Danger Rating" system are listed below:

- **Low:** Fuels do not ignite readily from small firebrands. However, an intense heat source, such as lightning, may start fires in duff or rotted wood. Fires in open grasslands may burn freely for a few hours after rain, but wood fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.
- **Moderate:** Fires can start from most accidental causes, with the exception of lightning. Fires in open grasslands will burn briskly and rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel may burn hot. Short-distance spotting may occur. Fires are not likely to become serious and control is relatively easy.

- **High:** All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
- **Extreme/Very High:** Fires start easily from all causes and immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.

For the purpose of prairie fire mitigation strategy development, this Plan divides the various land use types within Weld County into four categories: *cultivated agricultural land*, *forested land*, *grazing land*, and *miscellaneous*. Cultivated agricultural lands include both irrigated and non-irrigated crop land. Typically, this category of land has very dynamic burning characteristics and seasons. Crops and dormant stands located on Weld County's cultivated agricultural land can both serve as fuel for wildfires. What makes agricultural land unique is the dynamic nature of the fuel locations and seasons of availability. These factors add to the challenge of wildfire suppression and mitigation.

In the context of the Weld County landscape, forested land includes the riparian forest, windbreaks, shelterbelts, living snow fences, and urban forests. Much of the forested land in Weld County occurs along rivers, seasonal water courses, lakes, and ponds. Other forested lands include farmsteads and urban areas. Here, trees are often planted near homes and outbuildings, which contribute to elevated wildfire risk. In addition to the trees, forested lands include a surface cover of dry brush and grasses, which are primary fuel sources for rapidly moving fires.

Grazing lands are primarily made up of sandhill steppe and prairie landscapes. Sandhill steppe is a combination of mixed grasses and sage, and is widely used for livestock grazing. Fuel loads on grazing lands are moderate to heavy and large fires have occurred with this fuel type during springtime wind events. In some areas within Weld County livestock grazing maintains a rather sparse fuel load. Miscellaneous areas include transportation right of ways, fence lines, disturbed areas, and other locations that contain grasses, tumbleweeds, wild sunflowers, and other vegetation.

Long-term regional weather patterns in Colorado have followed a cyclical pattern of wet years (characterized by average to high precipitation levels for the region), followed by a series of drought years (characterized by below average precipitation levels). During wet years, the typical fire season is from March through November. During drought years, the fire season in Colorado has been as long as a full year.

Before discussing wildland fire risk in Weld County, a key wildfire management term must first be defined. The term ''wildland-urban interface", or WUI, is widely used within the wildland fire management community to describe any area where manmade buildings are constructed close to or within a boundary of natural terrain and fuel, where high potential for wildland fires exist. Communities are able to establish the definition and boundary of their local WUI, and the boundaries often help in meeting local management needs. WUIs can include both public and private land, and can help improve local access to funding sources.

"Wildfire Risk" represents the possibility of loss or harm occurring from a wildfire. For the purpose of this Plan, risk has been derived by combining "Wildfire Threat" and "Fire Effects." Fire Effects is comprised of several inputs that identify damaged assets. These inputs include the following: information on where people live (derived from 2012 LandScan data from Colorado), Colorado forest assets, riparian assets, and drinking water assets. The following Wildfire Risk map identifies areas with the greatest potential impacts from a prairie fire, in other words, those areas most at risk. The highest wildfire risk areas in the county are located in the west, in areas where there are higher population densities or concentrations of structures.

Prairie Fire Risk Index

Wildfire risk represents the possibility of loss or harm occurring from a wildfire. Risk is derived by combining wildfire threat and fire effects. This data was compiled on a statewide level. Weld County does not rank any areas in the high and highest risk rankings.

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

Legend

Prairie Fire Risk Index

- Lowest Risk
- Low Risk
- Moderate Risk
- Major Roads
- Weld County

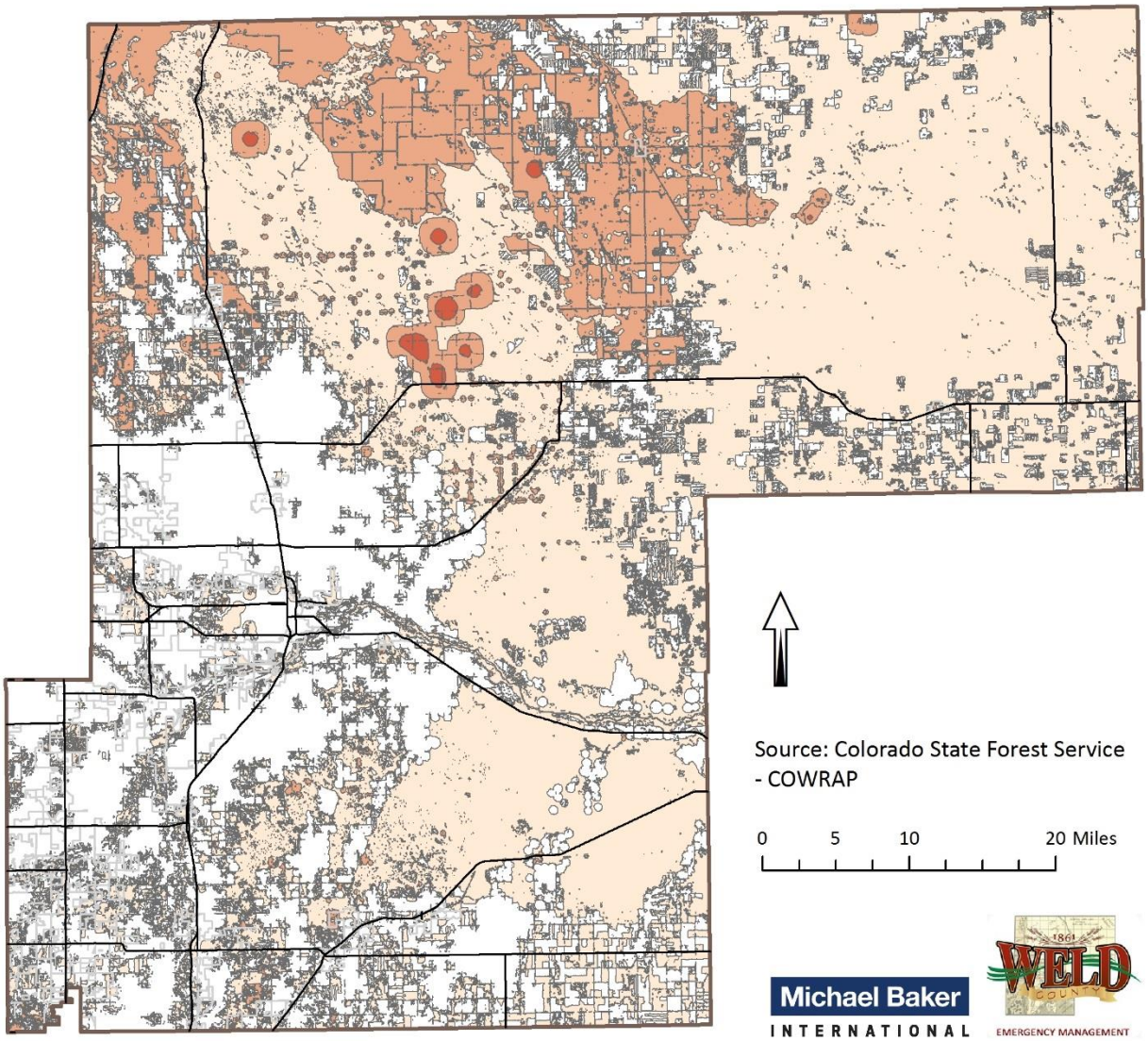


Figure 33. Map of Prairie Fire Risk

As was discussed previously, understanding the location of people living in the wildland-urban interface (WUI) is essential for defining potential wildfire impacts to people and homes. The WUI Risk analysis provides a rating of the potential impact of a wildfire on people and their homes. The key input, the WUI, reflects housing density (houses per acre).

To calculate WUI risk, WUI housing density data was combined with response function data. Response functions are a method of assigning a net change in the value of a resource or asset based on its susceptibility to fire at various intensity levels (such as flame length). The response functions were defined by a team of experts led by Colorado State Forest Service mitigation planning staff. By combining these data sets it is possible to determine where the greatest potential impact to homes and people are likely to occur in Weld County.

The following Figure shows the various levels of WUI Risk within Weld County. The range of values is from -1 to -9, with -1 representing the least negative impacts and -9 representing the most negative impact. For example, areas with high housing density and high flame lengths are rated -9, while areas with low housing density and low flame lengths are rated -1. Understandably so, the Map of WUI Risk shows a number of high risk areas concentrated around densely populated parts of the county. Like the Wildfire Risk and Threat analyses, Wildland-Urban Interface Risk was calculated in the 2013 Colorado State Hazard Mitigation Plan using the same methodology. This allows for comparison and ordination to be made across the state.

Wildfires can occur at any time of day and during any month of the year. Moreover, the length of a wildfire season and/or peak months may vary appreciably from year to year. As evidenced by the wildfire risk map, areas within Weld County that are characterized by dense development and single family homes along the wildland-urban interface are most vulnerable to wildfire. The jurisdictions with the highest WUI Risk Index rating include areas of Erie, Hudson, Firestone, Frederick, Windsor, Greeley, and portions of unincorporated Weld County.

Wildland Urban Interface Risk Index

Wildland urban interface risk index measures the potential impact on people and thier homes from wildfire. This risk ranking was calculated by combining housing density with flame length - for example, areas with high housing density and high flame length are fated as "most negative impact" (-9).

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

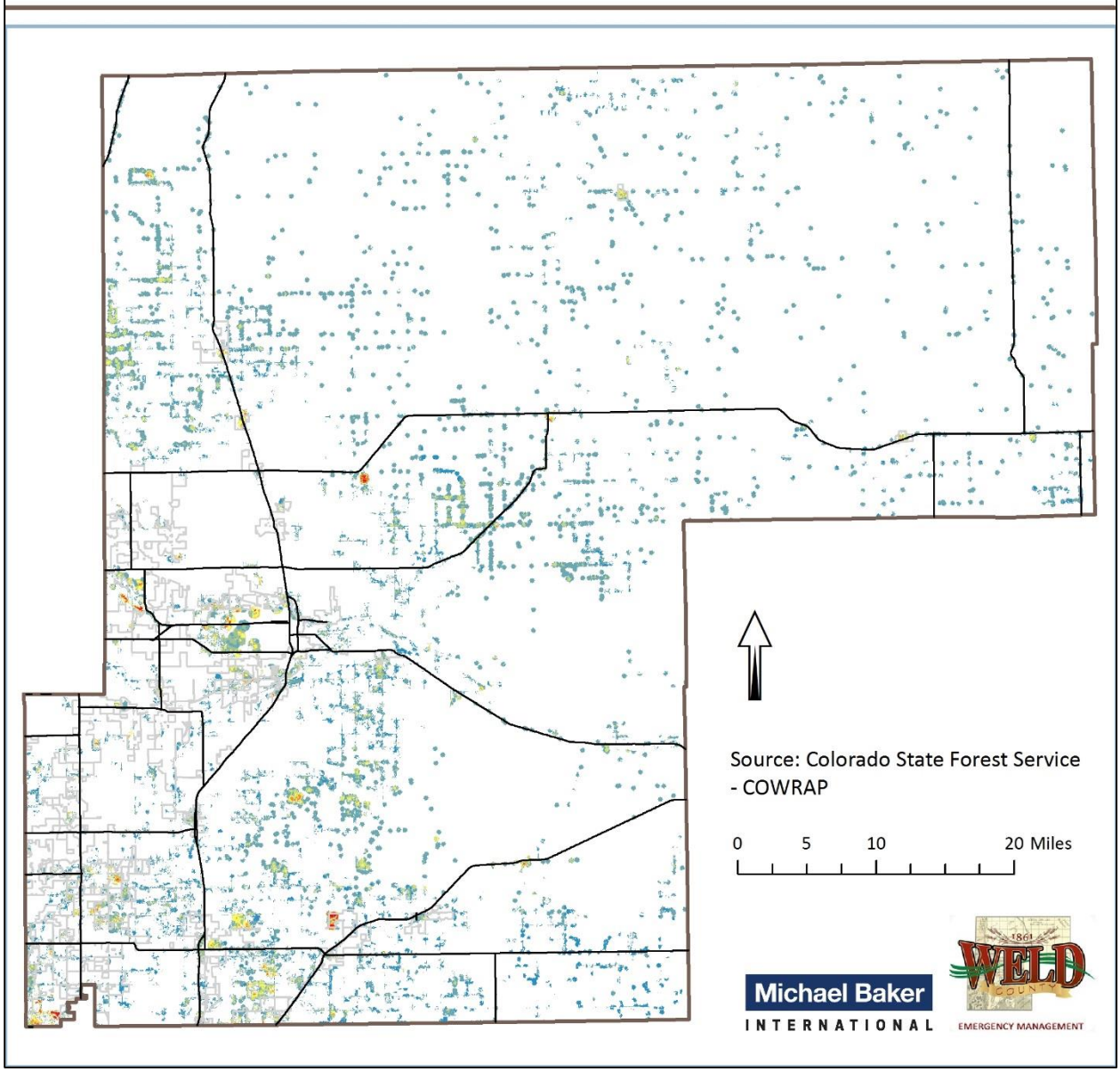


Figure 34. Map of Wildland-Urban Interface Risk

Reported prairie fires in Weld County over the past ten years provide an acceptable framework for determining the future occurrence in terms of frequency for such events. The probability of the County and its municipalities experiencing a wildfire associated with damages or loss can be difficult to quantify, but based on historical record of 81 wildfires since 1986 that have either caused damages to buildings and infrastructure or resulted in burned acreage, it can reasonably be assumed that a wildfire event has occurred in Weld County more than 2 times a year between 1986 and 2013.

5.2.7.2 Previous Occurrences

Based on data provided by NOAA's NCDC Storm Events Database, there has been one prairie fire with reported damages in Weld County in recorded history.

Date	Event	Location	Damages	Details	Data Source
09/12/2010	Wildfire	Northwestern Weld County	$1,500,000	--	NOAA, NCDC Storm Events Database

5.2.7.3 Inventory Exposed

Fires can extensively impact the economy of an affected area, including the agricultural, recreation and tourism industries, water resources, and the critical facilities upon which Weld County depends. The following figure shows structures and parcels located in the County's highest risk class.

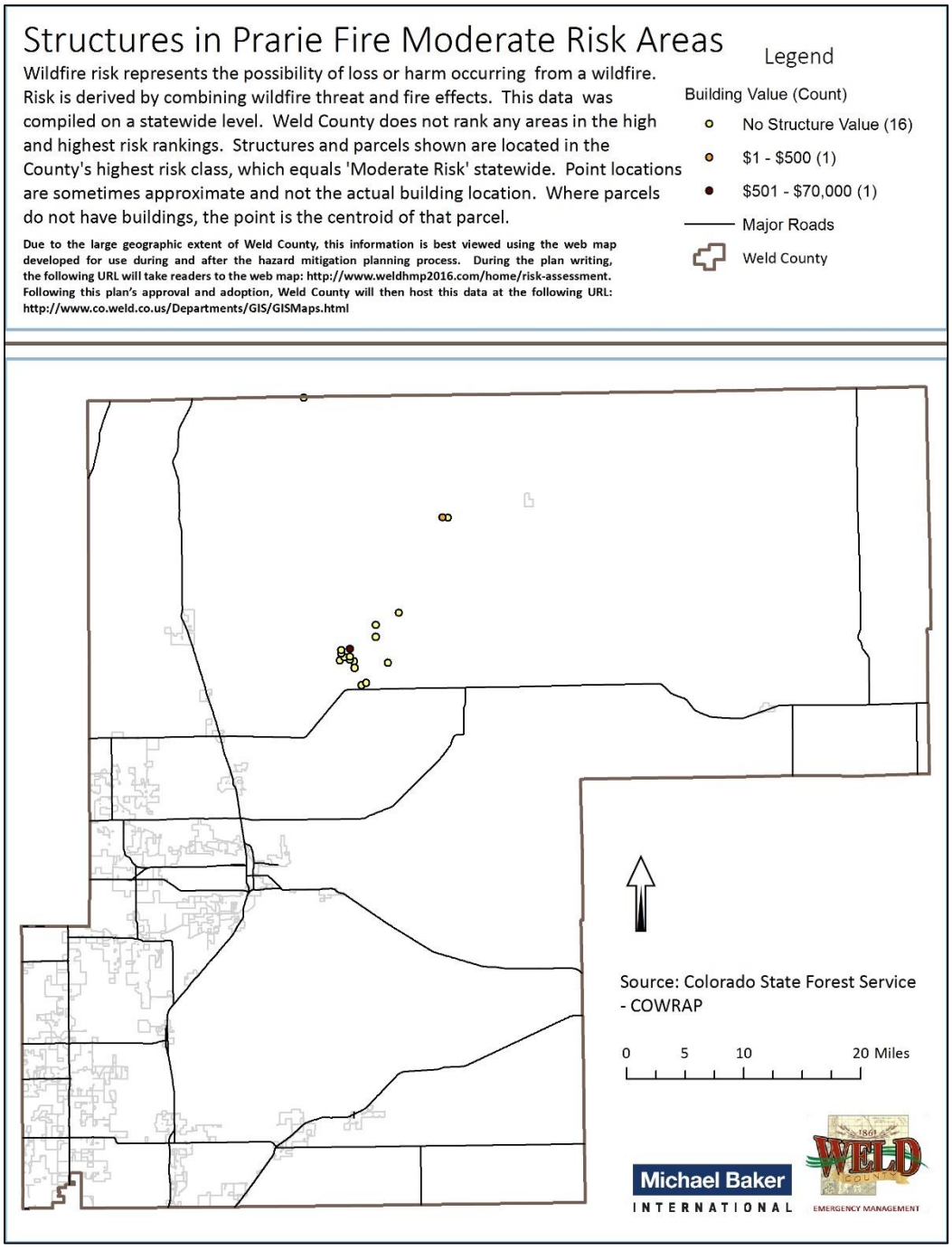


Figure 35. Weld County -- Prairie Fire Risk Index, Structure Exposure

Table 48. Structures and Critical Facilities in Moderate Risk Areas of Weld County

	Count	Total Assessor Building Value
Structures/Parcels	2,323	$ 412,889,083
Critical Facilities	5	$60,027,204

Source: Colorado State Forest Service

5.2.7.4 Potential Losses

Currently, the best method for estimating wildfire loss is by identifying the value of structures and assets located in the wildland urban interface. The exposure data provided in the previous section (Inventory Assets Exposed) provides the clearest picture of potential losses to wildfire in Weld County.

5.2.7.5 Probability of Future Occurrences

Recent wildfires and brush fires across Colorado have forced school closures, disrupted telephone services by burning fiber optic cables, damaged railroads and other infrastructure, and adversely affected tourism, outdoor recreation, and hunting. The likelihood of one of those fires attaining significant size and intensity is unpredictable and highly dependent on environmental conditions and firefighting response. Weather conditions, particularly drought events, increase the likelihood of wildfires occurring. That said, it is important to note that 98% of wildfires are human-caused. Ultimately, the occurrence of future wildfire events will strongly depend on patterns of human activity and events are more likely to occur in wildfire-prone areas experiencing new or additional development.

5.2.7.6 Land Use and Development

Future development is an important factor to consider in the context of wildfire mitigation because development and population growth can contribute to increased exposure of people and property to wildfire. During the past few decades, population growth in the Weld County WUI has increased greatly. Subdivisions and other high-density developments have created a situation where wildland fires can involve more buildings than any amount of fire equipment can possibly protect. As development in Weld County expands into wildland areas, people and property are increasingly at risk.

By identifying areas with significant potential for population growth and/or future development in high-risk areas, communities can identify areas of mitigation interest and reduce hazard risks associated with increased exposure.

Wildfire mitigation in the wildland-urban interface has primarily been the responsibility of property owners who choose to build and live in vulnerable zones. In practice, successful wildfire mitigation strategies can be quite involved. The most important aspect of successful suppression is disruption of the continuity of fuels, achieved by creating breaks or defensible areas. For interface fires, where homes and other structures fill the space, fuel reduction is best accomplished before the fires begin.

Safety zones can be created around structures by reducing or eliminating brush, trees, and vegetation around a home or facility. FEMA recommends using a 30-foot safety zone; including keeping grass below 2 feet tall and clearing all fallen leaves and branches promptly. Additionally, only fire-resistant or non-combustible materials should be used on roofs and exterior surfaces. Firebreaks -- areas of inflammable materials that create a fuel break and reduce the ability for fires to spread over roads and pathways -- can be planned and designed to serve as wildfire mitigation.

5.2.8 Public Health Hazards

NATURAL HAZARDS	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Public Health Hazards	0.625	0.625	0.550	0.192	0.283	2.275
MODERATE RISK (2.0 – 2.4)						

5.2.8.1 Hazard Identification

Public health hazards, including epidemics and pandemics, have the potential to cause serious illness and death, especially among those who have compromised immune systems due to age or underlying medical conditions. There are several contagious and infectious diseases present in the Denver Metro Region that constitute a public health risk. Emergency Support Function 8 (ESF 8) of the State Emergency Operations Plan provides an organizational framework for public health and medical service preparedness, response, and recovery efforts for various emergency epidemics. During the 2016 planning process, pandemic flu was identified as the key public health hazard in the county. This hazard risk assessment includes an analysis of pandemic flu risk in Weld County and an analysis of the impacts of the hazards profiled in this plan on public health.

A pandemic can be defined as a disease that attacks a large population across great geographic distances. Pandemics are larger than epidemics in terms of geographic area and number of people affected. Epidemics tend to occur seasonally and affect much smaller areas. Pandemics, on the other hand, are most often caused by new subtypes of viruses or bacteria for which humans have little or no natural resistance. Consequently, pandemics typically result in more deaths, social disruption, and economic loss than epidemics.

According to data from the Colorado Reportable Disease Statistics (CDPHE) database, Influenza viruses represent the most common cause of hospitalization due to disease in Weld County. Seasonal influenza (often referred to as the flu) is a common infection that affects large numbers of people in Colorado every year. Influenza is an acute respiratory disease caused by influenza type A or B viruses. The typical features of seasonal influenza include abrupt onset of fever and respiratory symptoms such as cough, sore throat, as well as headache, muscle ache, and fatigue. For seasonal influenza, the incubation period ranges from 1 to 4 days and the clinical severity of infection can range from asymptomatic infection to primary viral pneumonia and death. Most people experience influenza as a very-uncomfortable but ultimately benign illness. However, the influenza virus can mutate, causing it to be much more dangerous to humans. Yearly seasonal influenza remains a significant disease in the U.S. and Colorado, and seasonal epidemics can result in high morbidity and mortality, as well as create strains on the health care system and communities.

Unlike influenza viruses that have achieved ongoing transmission in humans, the sporadic human infections with avian A (H5N1) viruses are far more severe with high mortality. Initial symptoms include high fever and other influenza-like symptoms. It also appears that the incubation period in humans may be longer for avian (H5N1) viruses, ranging from 2 to 8 days, and possibly as long as 17 days. Diarrhea, vomiting, abdominal pain, chest pain, and bleeding from the nose and gums have also been reported. The

disease often manifests as a rapid progression of pneumonia with respiratory failure ensuing over several days.

With the increase in global transport, as well as urbanization, epidemics due to new influenza viruses are likely to occur in and around Weld County. A new flu virus, which eventually became known as H1N1, came to the world's attention in March 2009. The symptoms of pandemic H1N1 2009 influenza were similar to those of seasonal influenza. Illness in most cases was mild but there were cases of severe disease requiring hospitalization and a number of deaths. The initial experience with the emerging pandemic of H1N1 prompted the World Health Organization (WHO) to redefine their phase descriptions for an influenza pandemic.

The six-phase approach was designed for the easy incorporation of recommendations into existing national and local preparedness and response plans. Phases 1—3 correlate with preparedness in the **pre-pandemic interval**, including capacity development and response planning activities, while Phases 4—6 signal the need for response and mitigation efforts during the **pandemic interval**.

Pre-Pandemic Interval

In nature, influenza viruses circulate continuously among animals (primarily birds). Even though such viruses might develop into pandemic viruses, in Phase 1 no viruses circulating among animals have been reported to cause infections in humans.

- **Phase 1** is the natural state in which influenza viruses circulate continuously among animals but do not affect humans.

In Phase 2 an animal influenza virus circulating among domesticated or wild animals is known to have caused infection in humans, and is thus considered a potential pandemic threat.

- **Phase 2** involves cases of animal influenza that have circulated among domesticated or wild animals and have caused specific cases of infection among humans.

In Phase 3 an animal or human-animal influenza virus has caused sporadic cases or small clusters of disease in people, but has not resulted in human-to-human transmission sufficient to sustain community-level outbreaks. Limited human-to-human transmission may occur under some circumstances, for examples, when there is close contact between an infected person and an unprotected caregiver. Limited transmission under these circumstances does not indicate that the virus has gained the level of transmissibility among humans necessary to cause a pandemic.

- **Phase 3** represents the mutation of the animal influenza virus in humans so that it can be transmitted to other humans under certain circumstances (usually very close contact between individuals). At this point, small clusters of infection have occurred.

Pandemic Interval

Phase 4 is characterized by verified human to human transmission of the virus able to cause "community-level outbreaks." The ability to cause sustained disease outbreaks in a community marks a significant upward shift in the risk for a pandemic.

- **Phase 4** involves community-wide outbreaks as the virus continues to mutate and become more easily transmitted between people (for example, transmission through the air)

Phase 5 is characterized by verified human to human spread of the virus into at least two countries in one World Health Organization (WHO) region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is imminent and that the time to finalize the organization, communication, and implementation of the planned mitigation measures is short.

- **Phase 5** represents human-to-human transmission of the virus in at least two countries

Phase 6, the pandemic phase, is characterized by community-level outbreaks in at least one other country in a different WHO region in addition to the criteria defined in Phase 5. Designation of this phase will indicate that a global pandemic is underway.

- **Phase 6** is the pandemic phase, characterized by community-level influenza outbreaks.

Zoonotic Diseases

Zoonotic diseases are diseases that can be spread through animals and humans. These diseases can be caused by bacteria, viruses, parasites, and fungi that are carried by animals and insects.

5.2.8.2 Previous Occurrences

Public health hazards can manifest as primary events by themselves, or they may be secondary to another disaster or emergency, such as a flood, a severe storm, or a hazardous materials incident. The common characteristic of most public health emergencies is that they adversely impact, or have the potential to adversely impact, a large number of people.

The Colorado Department of Public Health and Environment releases an annual reportable disease summary for each county. The events with the highest incidences in Weld County between 2010 and 2014 are summarized in the table below.

Table 49. Colorado Reportable Disease Statistics (CDPHE), Weld County

	Year					
Disease	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
ANIMAL BITES	49	36	40	86	38	249
CAMPYLOBACTER	81	86	51	80	56	354
CRYPTOSPORIDIOSIS	26	12	4	9	5	56
GIARDIASIS	26	13	6	10	11	66
HAEMOPHILUS INFLUENZAE	5	4	2	6	2	19

	Year					
Disease	**2010**	**2011**	**2012**	**2013**	**2014**	**Total**
HEPATITIS B, CHRONIC	27	26	23	18	7	101
HEPATITIS C, CHRONIC	107	111	87	89	100	494
INFLUENZA-hospitalized	5	77	57	145	200	484
KAWASAKI SYNDROME	6	2	5	5	-	18
MENINGITIS ASEPTIC/VIRAL	18	10	42	38	13	121
PERTUSSIS	10	5	-	94	183	292
SALMONELLOSIS	28	25	43	45	33	174
SHIGELLOSIS	10	8	41	6	3	68
STEC (shiga toxin producing E.coli)	10	10	6	14	8	48
STREP PNEUMO INVASIVE	29	32	17	22	24	124
VARICELLA(CHICKEN POX)	14	12	11	14	12	63
WEST NILE VIRUS	18	-	-	-	-	18
Total:	**469**	**469**	**435**	**691**	**705**	**2,749**

Source: Division of Disease Control and Environmental Epidemiology, CDPHE

Chronic Hepatitis C and hospitalizations from influenza represent the largest disease incidence in Weld County between 2010 and 2014.

5.2.8.3 Inventory Exposed

The information in the table below is from the Impact Analysis of Potential for Detrimental Impacts of Hazards for the Emergency Management Accreditation Program (EMAP). The following table explains possible impacts to various subjects due to public health emergencies.

Table 50. Impacts to Subjects Impacted by Public Health Emergencies

Subject	Detrimental Impacts
Health and Safety of Persons in the Area as the Time of Incident	Adverse impacts are expected to be severe for unprotected personnel and moderate to light for protected personnel.
Health and Safety of Persons Responding to the Incident	Adverse impacts are expected to be severe for unprotected personnel and uncertain for trained and protected personnel, depending on the nature of the incident.
Continuity of Operations	Danger to personnel in the area of the incident may require relocation of operations and lines of succession execution.
Property, Facilities, and Infrastructure	Access to facilities and infrastructure in the area of the incident may be denied until decontamination is complete.
Delivery of Services	Stress on resources and facilities due to increased volume and demand may overwhelm and/or extensively postpone delivery of services.
The Environment	Incident may cause denial or delays in the use of some areas.
Economic and Financial Condition	Local economy and finances may be adversely affected, possibly for an extended period of time.
Regulatory and Contractual Obligations	Regulatory waivers may be needed. Fulfillment of contracts may be difficult. Demands may exceed the ability to deliver.
Reputation of, or Confidence in, Management and Response Authorities	Ability to respond and recover may be questioned and challenged if planning, response, and recovery are not timely and effective.

5.2.8.4 Potential Losses

FluWorkLoss 1.0 is a tool developed by the CDC to estimate the potential impact of pandemic influenza on a community in terms of cost. Based on local demographic data, the tool allows communities to estimate the potential number of days lost from work due to a pandemic. Users of FluWorkLoss can change input values, such as the number of workdays lost due to a worker staying come to care for a family member. Users can also change the length and virulence of the pandemic so that a range of possible impacts can be estimated.

Days missed from work cost both employees (in lost wages) and employers (in work not completed). The following table shows the total estimated number of days lost from work in Weld County due to a four-

week long influenza pandemic with a 25% clinical attack rate. The available workdays are calculated as a product of the total population in the working age group (Census 2010), the employment rate of Weld County (Census 2010), and the number of workdays in a week (5).

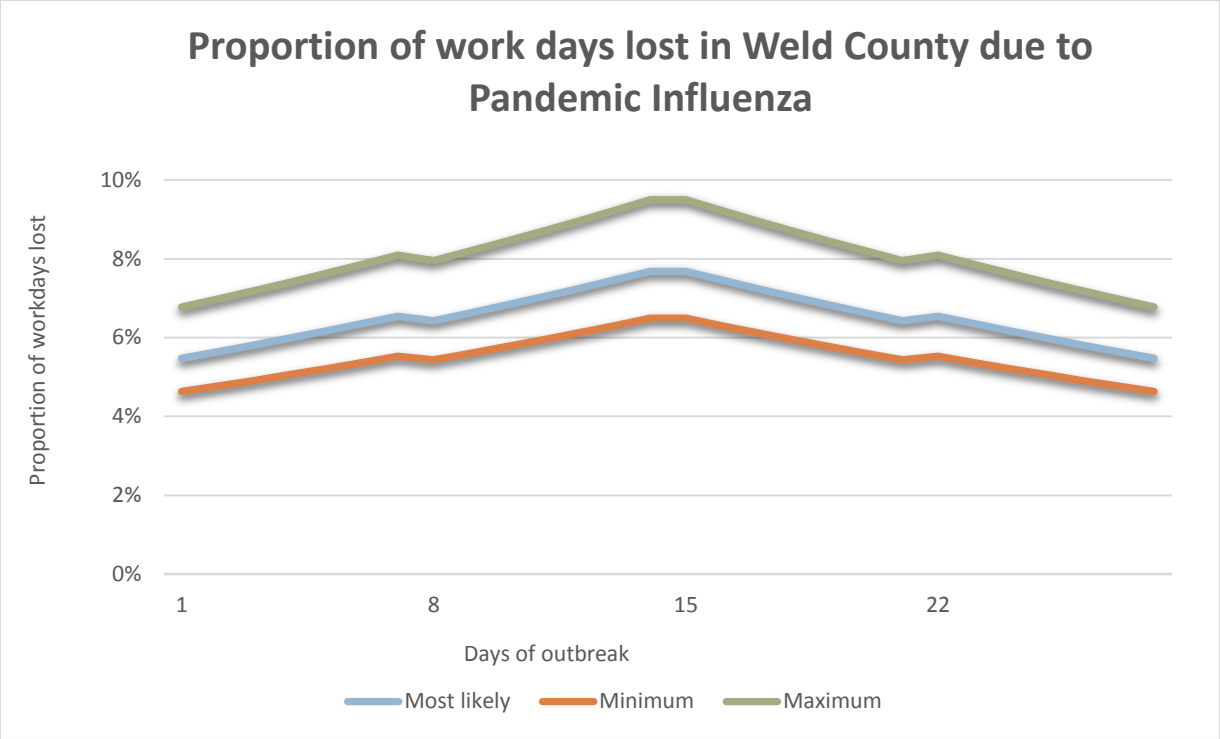
Table 51. Total Workdays Lost

Scenario	Workdays Lost
Most Likely Scenario	101,558
Minimum Loss Scenario	86,341
Maximum Loss Scenario	124,609

Source: FluWorkLoss 1.0, CDC

The number of workdays lost includes the workdays lost for both self-care and care of sick family members due to the pandemic. Although the workdays lost do not include those lost due to factors such as fear and school closings, the model does provide a general picture of the impact on the productivity of the local economy due to an influenza pandemic. Results are estimated to create three scenarios of pandemic impact: the minimum (the best case scenario), which estimates the fewest possible number of hospitalizations/outpatient visits/deaths (i.e., the fewest possible days lost from work); the mean (the most likely scenario); and the maximum (the worst case scenario), which estimates the largest number of hospitalizations/outpatient visits/deaths (i.e., the largest possible number of days lost from work).

The following graph shows the proportion of workdays lost for each day of the modeled influenza outbreak for the three loss scenarios. Again, the scenario assumes a four-week long pandemic with a 25% clinical attack rate.



Source: Census 2010, CDC

Figure 36. Proportion of Workdays Lost due to Pandemic Influenza

The numbers and projections generated through FluWorkLoss are not considered predictions of what *will* happen during an influenza pandemic. Rather, the results should be treated as estimates of what *could* happen.

5.2.8.5 Probability of Future Occurrences

Climate change threatens to increase the spread of infectious diseases because changing heat, rain, and humidity levels allow disease carrying vectors and pathogens to come into closer contact with humans. Climate change has the potential to expand the habitats and infectivity of disease-carrying insects and rodents, thus increasing the risk of disease transmission. For example, mosquitoes capable of transmitting West Nile virus are already present in Colorado. If Colorado's climate becomes warmer, mosquito populations could swell, making the region more favorable for disease transmission.

Hantavirus is another infectious disease that may pose a higher risk to Weld County residents in the future. Deer mice are the primary reservoir for Hantaviruses and climate change (warmer weather) plays a role in elevated seasonal deer mouse populations.

Based on historical record of 2,749 recorded diseases in Weld County since 2010, public health hazards have affected Weld County residents and visitors more than once every year from 2010 through 2014. The historic frequency suggests that there is a 100% chance of some type of public health hazard will affect Weld County every year.

5.2.8.6 Land Use and Development

Future development in and around Weld County has the potential to change how infectious diseases spread through the community and impact human health in both the short and long term. New development may increase the number of people and facilities exposed to public health hazards and greater population concentrations (often found in special needs facilities and businesses) put more people at risk. During a disease outbreak those in the immediate isolation area would have little to no warning, whereas, the population further away in the dispersion path may have some time to prepare and mitigate against disease depending on the hazard, its transmission, and public notification.

Due to the nature of public health hazards, jurisdictions within Weld County with higher numbers of vulnerable individuals are expected to be impacted to a greater extent than others. In the context of public health hazards, the most vulnerable members of the Weld County community are:

- The elderly (people over 65 years of age)
- Children (under 5 years old)
- The infirm

The following table highlights a number of key pandemic vulnerability factors in Weld County jurisdictions.

Table 52. Pandemic Vulnerability Factor Data

Jurisdiction	Age: 5 and Under (%)	Age: 65 and Over (%)	Persons Below Poverty Level (%)
Colorado	6.8	10.9	12.9
Unincorporated Weld County	7.9	9.5	14.7
City of Brighton	8.6	8.7	8.2
City of Dacono	9.2	9.1	6.0
Town of Erie	9.6	5.7	4.1
City of Evans	9.5	6.1	19.6
Town of Firestone	10.2	5.2	4.5
Town of Frederick	9.5	6.4	7.5
City of Greeley	7.8	10.7	22.9
Town of Keenesburg	6.2	13.7	21.1

Jurisdiction	Age: 5 and Under (%)	Age: 65 and Over (%)	Persons Below Poverty Level (%)
Town of Mead	7.3	6.3	4.7
Town of Milliken	9.6	6.8	3.4
Town of Platteville	8.0	9.5	16.0
Town of Severance	10.0	5.3	2.9
Town of Windsor	7.3	10.0	4.8

Although communities located in the eastern region of Weld County are less populated than many communities located to the west, the largely agricultural area is more susceptible to the impacts of health hazards that affect livestock and plants. In these communities, the spread of a highly destructive livestock disease or plant pest/disease could have devastating consequences to the local economy and environment. Early detection and a rapid response to a pest or disease infestation are critical to limiting the economic, social, and environmental impacts of such an incident.

One of the key responsibilities of the Animal Health Division, a branch of the Colorado Department of Agriculture, is to prepare for, control, and mitigate livestock disease outbreaks. The division has a number of preparedness and response plans for the various livestock sectors in Colorado.

5.2.9 Severe Storm (Including Hail, Lightning & Winter Storm)

NATURAL HAZARDS	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
SEVERE STORM	1.100	0.750	0.717	0.317	0.250	3.133
HIGH RISK (2.5 and higher)						

5.2.9.1 Hazard Identification

Severe storms can occur during any season in Weld County. Lightning strikes can all be hazardous under the right conditions and locations. Large hail can damage crops, dent vehicles, break windows, and injure or kill livestock, pets, and people. Snow storms can take down trees and damage property and infrastructure.

Thunderstorms affect relatively small areas when compared with the size of typical winter storms. Despite their small size, all thunderstorms are dangerous. The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Of the estimated 100,000 thunderstorms that occur each year in the United States, about 10 percent are classified as severe. The National Weather Service considers a thunderstorm severe if it produces hail at least 3/4 inch in diameter, winds of 58 MPH or stronger, or a tornado. Every thunderstorm needs three basic components: (1) moisture to form clouds and rain, (2) unstable air which is warm air that rises rapidly, and (3) lift, which is a cold or warm front capable of lifting air to help form thunderstorms.

Lightning, although not considered severe by the National Weather Service definition, can accompany heavy rain during thunderstorms. Lightning develops when ice particles in a cloud collide with other particles. These collisions cause a separation of electrical charges. Positively charged ice particles rise to the top of the cloud and negatively charged ones fall to the middle and lower sections of the cloud. The negative charges at the base of the cloud attract positive charges at the surface of the Earth. Invisible to the human eye, the negatively charged area of the cloud sends a charge called a stepped leader toward the ground. Once it gets close enough, a channel develops between the cloud and the ground. Lightning is the electrical transfer through this channel. The channel rapidly heats to 50,000 degrees Fahrenheit and contains approximately 100 million electrical volts. The rapid expansion of the heated air causes thunder.

The following Figure depicts average cloud-to-ground lightning incidence in the US (or lightning flash densities) between 1997 and 2012.

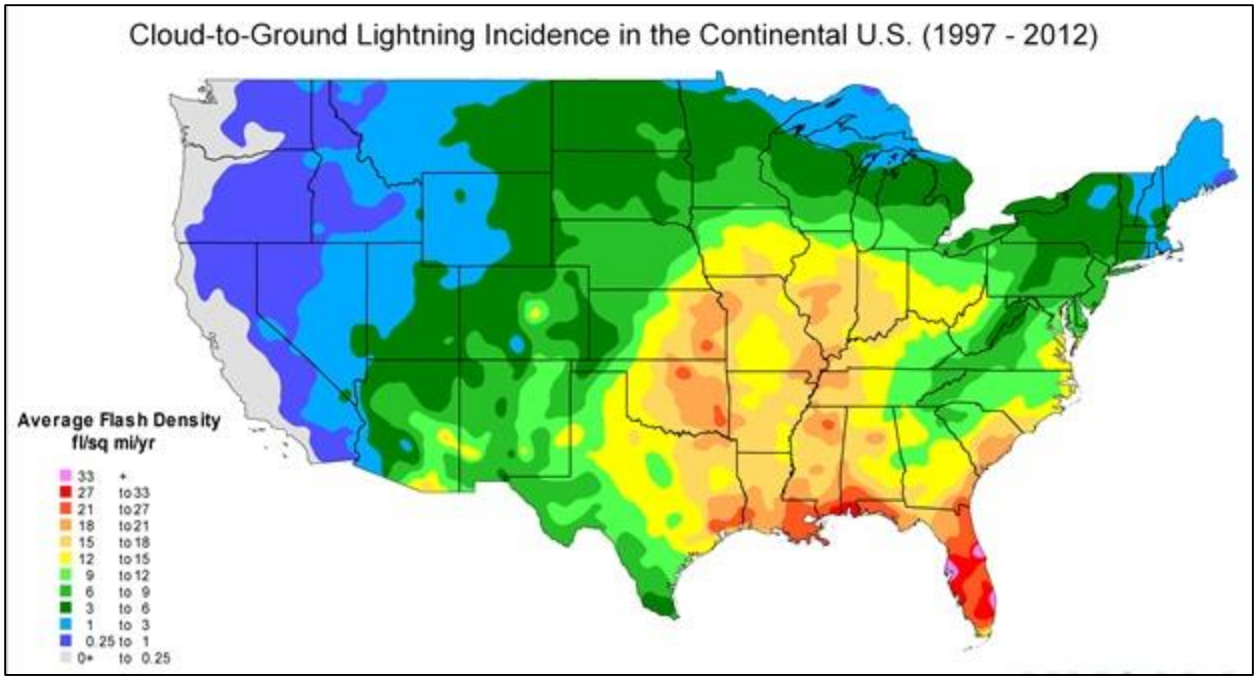


Figure 37. Average Lightning Flash Density in the U.S.[14]

Although the state of Colorado ranks 32nd in terms of its cloud-to-ground lightning flash densities between 1997-2012, the state ranks 2nd in the country in terms of death rate from lightning per million people (between 2003 - 2012). Colorado's lightning death rate per million people from 2003-2012 is 0.51, second only to the state of Wyoming.

The following figure shows lightning flash densities for the State of Colorado for the years 1994 through 2014. Produced by National Weather Service, using data from Vaisala, the image is the result of contouring over 8 million cloud-to-ground lightning flashes for the State of Colorado and averaging annually. The result of the analysis is a picture of average lightning flashes/km^2 per year from 1994 through 2014 (the year 2000 was not included in the dataset).

[14] Source: http://www.lightningsafety.noaa.gov/statistics.htm

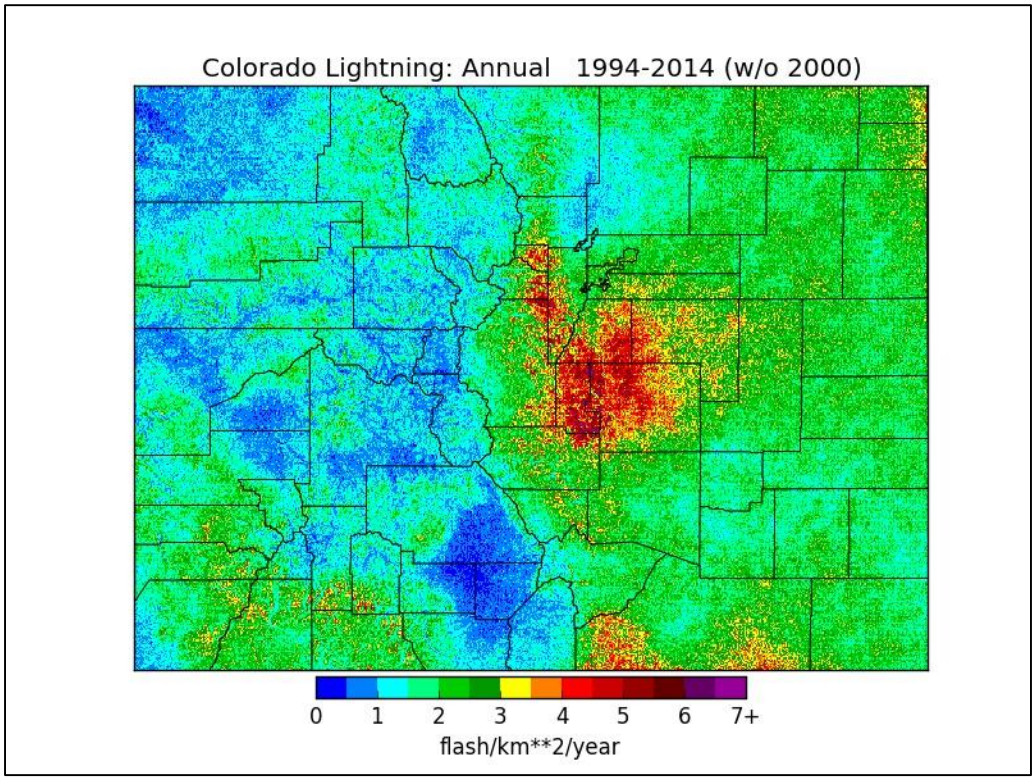


Figure 38. Colorado Lightning Flash Density Map

In general, the flash density map shows a wide range of values across the State of Colorado, ranging from less than 0.5 flashes/year/km^2 over the south central portion of the state to over 6.5 flashes/year/km^2 over the east central part of the state. The higher density of lightning flashes located in the central area of the state is driven by the topography of the area. Where the higher terrain of the Plains intersects with the Rocky Mountains conditions are ripe for lightning events. Here, moist air from lower altitudes initiates and sustains convection systems as they move off of the mountain slopes, generating thunderstorms.

Hail is precipitation that is formed when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere. The super cooled raindrops grow into balls of ice, which pose a hazard to property, people, livestock, and crops when they fall back to the earth.

Severe winter weather can cause hazardous driving conditions, communications and electrical power failure, community isolation, and can adversely affect business continuity. This type of snow-related weather may include one or more of the following winter factors:

Winter storms can include blizzards, heavy snow, ice storms, and extreme cold.

Blizzards as defined by the National Weather Service, are a combination of sustained winds or frequent gusts of 35 mph or greater and visibilities of less than a quarter mile from falling or blowing snow for 3 hours or more. A blizzard, by definition, does not indicate heavy amounts of snow, although they can happen together. The falling or blowing snow usually creates large drifts from the strong winds. The reduced visibilities make travel, even on foot, particularly treacherous. The strong winds may also support dangerous wind chills. Ground blizzards can develop when strong winds lift snow off the ground and severely reduce visibilities.

Heavy snow, in large quantities, may fall during winter storms. Six inches or more in 12 hours or eight inches or more in 24 hours constitutes conditions that may significantly hamper travel or create hazardous conditions. The National Weather Service issues warnings for such events. Smaller amounts can also make travel hazardous, but in most cases, only results in minor inconveniences. Heavy wet snow before the leaves fall from the trees in the fall or after the trees have leafed out in the spring may cause problems with broken tree branches and power outages.

Ice storms develop when a layer of warm (above freezing), moist air aloft coincides with a shallow cold (below freezing) pool of air at the surface. As snow falls into the warm layer of air, it melts to rain, and then freezes on contact when hitting the frozen ground or cold objects at the surface, creating a smooth layer of ice. This phenomenon is called freezing rain. Similarly, sleet occurs when the rain in the warm layer subsequently freezes into pellets while falling through a cold layer of air at or near the Earth's surface. Extended periods of freezing rain can lead to accumulations of ice on roadways, walkways, power lines, trees, and buildings. Almost any accumulation can make driving and walking hazardous. Thick accumulations can bring down trees and power lines.

Extreme Cold, in extended periods, although infrequent, could occur throughout the winter months in Weld County. Heating systems compensate for the cold outside. Most people limit their time outside during extreme cold conditions, but common complaints usually include pipes freezing and cars refusing to start. When cold temperatures and wind combine, dangerous wind chills can develop. Additional information pertaining to extreme cold can be found in the Extreme Temperatures section of the Plan.

5.2.9.2 Previous Occurrences

Hail

According to the best available data there are no reported injuries, deaths, or crop damage in Weld County due to hail. There have been 500 hail events reported in Weld County. Of the 500 incidents, 10 reported property loss. The events with loss to property in Weld County between 1991 and 2004 are summarized in the table below. Based on the historic data showing hazardous impacts on the county, there is a great potential for hail events to occur at any given time.

Table 53. Historic Hail Events reporting loss in Weld County

Date	Location	Hail Size Diameter (in)	Damage to Property
5/16/1991	Unincorporated Weld County	1.00	$4,000
5/31/1994	City of Greeley	0.75	$4,000
7/16/1994	Town of Windsor	1.25	$5,000
7/16/1994	Town of Eaton	2.50	$5,000
7/16/1994	Town of Eaton	2.00	$5,000
7/24/1994	Unincorporated Weld County	2.00	$3,000
7/24/1994	Unincorporated Weld County	1.75	$4,000
7/31/1996	Unincorporated Weld County	0.75	$200
6/23/1997	City of Greeley	1.50	$3,100
8/10/2004	Town of Eaton	2.00	$2,000
		Total:	$35,300

Historical Hail Events

Reported historical events occuring between 1955 - 2014.

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

Legend

Diameter (inches)

- 0.75 - 1.00
- 1.01 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- 4.01 - 5.00
- Major Roads
- Weld County

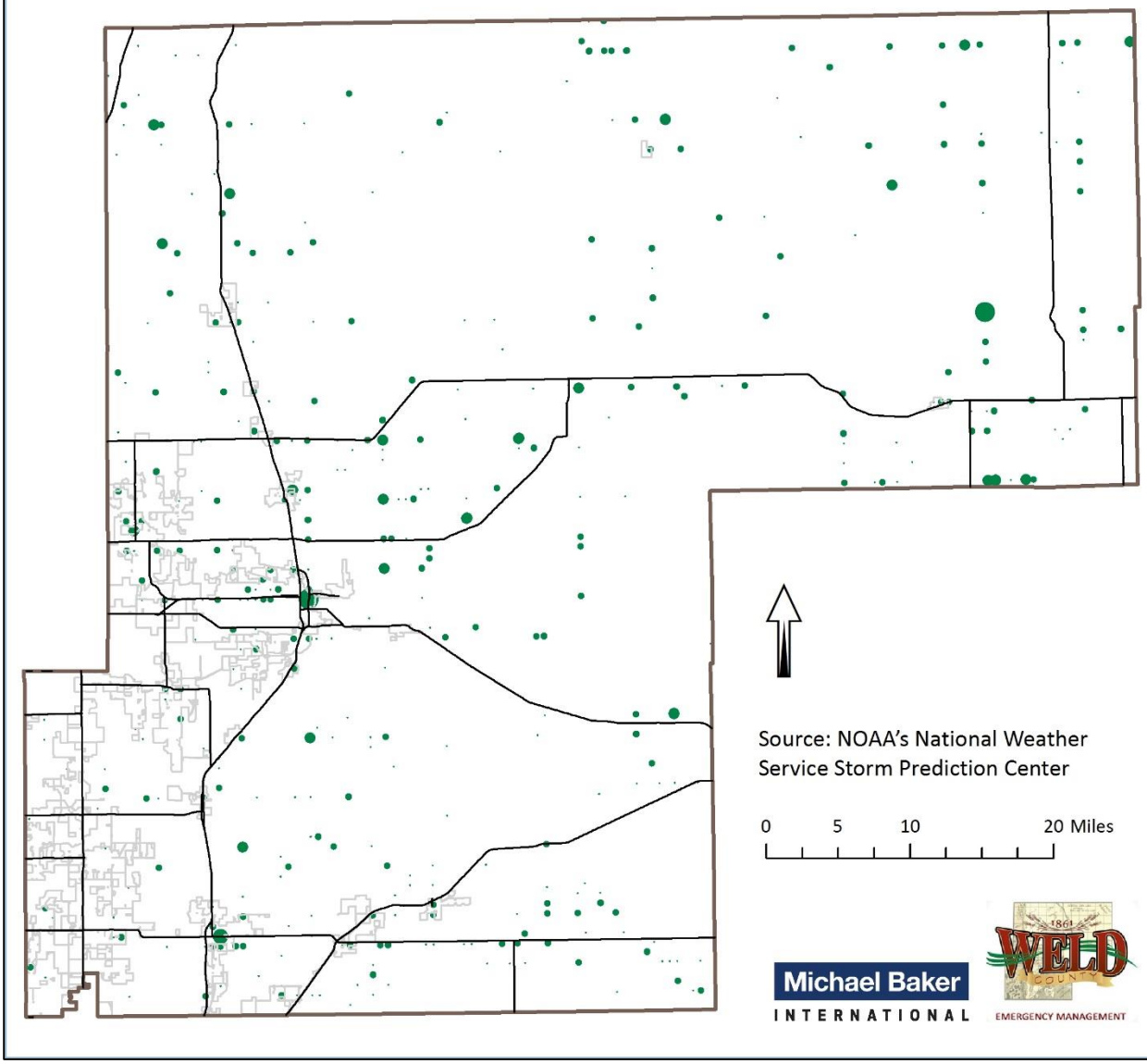


Figure 39. Weld County – Historical Hail Events

EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

Lightning

According to the best available data there was 1 reported death, 4 injuries, $1,044,000 worth of property damage, and $26,000 worth of crop damage in Weld County due to lightning events between 1996 and 2010. The events are summarized in the table below. Based on the historic data showing hazardous impacts on the county, there is a great potential for lightning events to occur at any given time, especially during the summer months when county residents are likely to be working and playing outdoors.

Table 54. Lightning Strikes in Weld County*

Date	Location	Injury	Death	Damage to Property	Damage to Crops
6/4/1996	GREELEY	0	0	$50,000	$0
6/8/1996	LA SALLE	0	0	$1,000	$0
6/22/1996	GREELEY	0	0	$0	$0
6/25/1996	GREELEY	0	0	$0	$6,000
7/23/1996	EATON	0	0	$0	$0
7/23/1996	EATON	0	0	$0	$0
7/8/1997	ROGGEN	0	0	$100,000	$0
5/22/1998	FT LUPTON	0	0	$0	$0
9/20/1998	WINDSOR	0	0	$0	$0
7/27/1999	HUDSON	0	0	$100,000	$0
4/20/2000	WINDSOR	0	0	$200,000	$0
5/17/2000	WINDSOR	0	0	$0	$0
5/17/2000	GREELEY	0	0	$0	$0
7/10/2000	HUDSON	0	0	$0	$0
8/4/2000	GREELEY	0	0	$0	$0
7/10/2001	GREELEY	0	0	$40,000	$0
6/1/2002	NEW RAYMER	0	0	$0	$0
6/1/2002	BRIGGSDALE	1	0	$0	$0
4/17/2003	GREELEY	0	0	$0	$0
7/6/2004	EVANS	0	0	$0	$0
7/30/2004	MILLIKEN	0	0	$0	$0
5/25/2009	LUCERNE	2	0	$0	$0
6/5/2009	EVANS	0	1	$0	$0
6/18/2009	GREELEY	1	0	$0	$0
9/20/2010	KERSEY	0	0	$0	$10,000
9/20/2010	KERSEY	0	0	$0	$10,000
Total:		**4**	**1**	**$1,044,000**	**$26,000**

*Source: NOAA; NCDC Storm Events Database

Winter Storm

According to the best available data there was no reported injury, no deaths, $102,000 worth of property damage, and no crop damage in Weld County due to winter storm events between 1996 and 2014. The table below shows the history of "significant" winter storms and blizzards in Weld County since 1996. "Significant" winter storm, winter weather, and blizzard events are included in the NCDC Storm Events Database if the event has more than one significant hazard (i.e., heavy snow and blowing snow; snow and

ice; snow and sleet; sleet and ice; or snow, sleet, and ice) and meets or exceeds locally/regionally defined twelve or twenty-four hour warning criteria for at least one of the precipitation elements on a widespread or localized basis. According to data there have been at least two to three significant winter storm events recorded in Weld County each year.

Table 55. Historic Winter Storms in the Weld County

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
1/17/1996	C & S WELD COUNTY	Winter Storm	0	0	0	0
1/17/1996	NE WELD COUNTY	Winter Storm	0	0	0	0
4/13/1996	C & S WELD COUNTY	Winter Storm	0	0	0	0
4/13/1996	NE WELD COUNTY	Winter Storm	0	0	0	0
12/16/1996	NW WELD COUNTY	Winter Storm	0	0	0	0
12/16/1996	C & S WELD COUNTY	Winter Storm	0	0	0	0
12/16/1996	NE WELD COUNTY	Winter Storm	0	0	0	0
4/23/1997	NW WELD COUNTY	Winter Storm	0	0	0	0
3/18/1998	NWWELD COUNTIES	Winter Storm	0	0	0	0
12/18/1998	NE WELD COUNTY	Winter Storm	0	0	0	0
12/18/1998	NE WELD COUNTIES / NW WELD COUNTY	Winter Storm	0	0	0	0
2/10/1999	NW WELD COUNTIES	Winter Storm	0	0	0	0
2/10/1999	S WELD COUNTY/GREELEY AND VICINITY	Winter Storm	0	0	0	0
11/21/1999	NWWELD COUNTIES	Winter Storm	0	0	0	0
4/10/2001	SWELD COUNTY/GREELEY AND VICINITY	Winter Storm	0	0	0	0
4/10/2001	NW WELD COUNTIES	Winter Storm	0	0	0	0
4/22/2001	S WELD COUNTY/GREELEY AND VICINITY	Winter Storm	0	0	0	0
4/22/2001	NW WELD COUNTIES	Winter Storm	0	0	0	0
4/22/2001	NEWELD COUNTY	Winter Storm	0	0	0	0
3/1/2002	C & S WELD COUNTY	Winter Storm	0	0	0	0
3/1/2002	NW WELD COUNTY	Winter Storm	0	0	0	0
11/1/2002	C & S WELD COUNTY	Winter Storm	0	0	0	0
11/1/2002	NW WELD COUNTY	Winter Storm	0	0	0	0
11/21/2003	NW WELD COUNTY	Winter Storm	0	0	0	0
1/3/2004	C & S WELD COUNTY	Winter Storm	0	0	0	0
1/25/2004	C & S WELD COUNTY	Winter Storm	0	0	0	0
4/9/2004	NW WELD COUNTY	Winter Storm	0	0	0	0
11/28/2004	NW WELD COUNTY	Winter Storm	0	0	0	0
2/15/2005	NW WELD COUNTY	Winter Storm	0	0	0	0
3/13/2005	NW WELD COUNTY	Winter Storm	0	0	0	0
3/13/2005	C & S WELD COUNTY	Winter Storm	0	0	0	0
4/10/2005	NE WELD COUNTY	Winter Storm	0	0	0	0

Date	Location	Event Type	Injuries	Deaths	Damage to Property	Damage to Crops
4/10/2005	NW WELD COUNTY	Winter Storm	0	0	0	0
4/10/2005	C & S WELD COUNTY	Winter Storm	0	0	0	0
4/28/2005	NW WELD COUNTY	Winter Storm	0	0	0	0
12/28/2006	NW WELD COUNTY	Winter Storm	0	0	0	0
12/28/2006	C & S WELD COUNTY	Winter Storm	0	0	$102,000	0
1/5/2007	NW WELD COUNTY	Winter Storm	0	0	0	0
12/27/2007	C & S WELD COUNTY	Winter Storm	0	0	0	0
12/27/2007	NW WELD COUNTY	Winter Storm	0	0	0	0
4/9/2008	NE WELD COUNTY	Winter Storm	0	0	0	0
3/26/2009	C & S WELD COUNTY	Winter Storm	0	0	0	0
3/26/2009	NW WELD COUNTY	Winter Storm	0	0	0	0
10/9/2009	NW WELD COUNTY	Winter Storm	0	0	0	0
10/9/2009	NE WELD COUNTY	Winter Storm	0	0	0	0
10/27/2009	C & S WELD COUNTY	Winter Storm	0	0	0	0
10/27/2009	NW WELD COUNTY	Winter Storm	0	0	0	0
11/14/2009	C & S WELD COUNTY	Winter Storm	0	0	0	0
3/23/2010	NW WELD COUNTY	Winter Storm	0	0	0	0
3/23/2010	C & S WELD COUNTY	Winter Storm	0	0	0	0
10/25/2011	NW WELD COUNTY	Winter Storm	0	0	0	0
10/25/2011	NE WELD COUNTY	Winter Storm	0	0	0	0
10/25/2011	C & S WELD COUNTY	Winter Storm	0	0	0	0
11/1/2011	NW WELD COUNTY	Winter Storm	0	0	0	0
11/1/2011	C & S WELD COUNTY	Winter Storm	0	0	0	0
2/2/2012	NW WELD COUNTY	Winter Storm	0	0	0	0
2/2/2012	C & S WELD COUNTY	Winter Storm	0	0	0	0
3/22/2013	C & S WELD COUNTY	Winter Storm	0	0	0	0
4/8/2013	C & S WELD COUNTY	Winter Storm	0	0	0	0
4/15/2013	NE WELD COUNTY	Winter Storm	0	0	0	0
4/15/2013	NW WELD COUNTY	Winter Storm	0	0	0	0
4/15/2013	C & S WELD COUNTY	Winter Storm	0	0	0	0
4/22/2013	NW WELD COUNTY	Winter Storm	0	0	0	0
1/30/2014	C & S WELD COUNTY	Winter Storm	0	0	0	0
1/30/2014	NW WELD COUNTY	Winter Storm	0	0	0	0
5/11/2014	NW WELD COUNTY	Winter Storm	0	0	0	0
12/25/2014	NW WELD COUNTY	Winter Storm	0	0	0	0
		Total:	**0**	**0**	**$102,000**	**0**

Source: NOAA; NCDC Storm Events Database

5.2.9.3 Inventory Exposed

All assets located in Weld County can be considered at risk from severe storms. This includes 57,180 people, or 100% of the County's population, and all buildings and infrastructure within the County. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the County's critical facilities, should be able to provide adequate protection from

hail but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

5.2.9.4 Potential Losses

Severe storms affect the entire planning area of Weld County and its jurisdictions including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for Weld County. It is likely that lightning and hail will also be experienced in the area due to such storms.

5.2.9.5 Probability of Future Occurrences

Severe winter storms can be predicted with a reasonable level of uncertainty. Through the identification of various indicators of weather systems, and by tracking these indicators, warning time for snow storms can be as much as a week in advance. Understanding the historical frequency, duration, and spatial extent of severe winter weather assists in determining the likelihood and potential severity of future occurrences. The characteristics of past severe winter events provide benchmarks for projecting similar conditions into the future. The probability that Weld County will experience a severe winter storm event can be difficult to quantify. However, based on historical records and frequencies there is nearly a 100% chance this type of event will occur somewhere in Weld County at least once every year.

5.2.9.6 Land Use and Development

All future structures built in Weld County will likely be exposed to severe weather extremes and damage. Since the previous statement is assumed to be uniform countywide, the location of development does not increase or reduce the risk necessarily. Weld County and its jurisdictions must adhere to building codes, and therefore, new development can be built to current standards to account for adverse weather. Additionally, as homes go up in more remote parts of the county, accessing those rural residents may become impossible should sheltering or emergency services be needed in an extreme event.

5.2.10 Straight-Line Winds & Tornadoes

NATURAL HAZARDS	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Straight-Line Winds &Tornadoes	0.975	0.800	0.750	0.392	0.167	3.083
HIGH RISK (2.5 and higher)						

5.2.10.1 Hazard Identification

Tornadoes in Colorado are most often generated by thunderstorm activity when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of high wind velocities and wind-blown debris. According to the National Weather Service, tornado wind speeds can range between 30 to more than 300 miles per hour. They are more likely to occur during the spring and early summer months of March through June and are most likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touchdown briefly, but even small, short-lived tornadoes can inflict tremendous damage. Destruction ranges from minor to catastrophic depending on the intensity, size, and duration of the storm. Structures made of light materials such as mobile homes are most susceptible to damage. Each year, an average of over eight hundred tornadoes is reported nationwide, resulting in an average of eighty deaths and fifteen hundred injuries (NOAA, 2002). The majority of Colorado tornadoes occur in the eastern plains, including large areas of Weld County.

Tornadoes were previously classified by their intensity using the Fujita (F) Scale, with FO being the least intense and F6 being the most intense. The Fujita Scale (seen in the table below) is used to rate the intensity of a tornado by examining the damage caused by the tornado after it has passed over a man-made structure.

Table 56. Fujita Tornado Damage Scale[15]

Fujita Scale			
F-Scale Number	**Intensity Phrase**	**Wind Speed**	**Type of Damage**
F0	Gale tornado	40-72 mph	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages signboards.
F1	Moderate tornado	73-112 mph	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
F2	Significant tornado	113-157 mph	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe tornado	158-206 mph	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted
F4	Devastating tornado	207-260 mph	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible tornado	261-318 mph	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.
F6	Inconceivable tornado	319-379 mph	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly identified as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies

On February 1, 2007, the Fujita scale was decommissioned in favor of the more accurate Enhanced Fujita Scale (aka the EF Scale). The EF-Scale measures tornado strength and associated damages and classifies

[15] Information provided by NOAA at http://www.spc.noaa.gov/faq/tornado/f-scale.html

tornadoes into six intensity categories, as shown in the following table. The scale was revised to reflect better examinations of tornado damage surveys, so as to align wind speeds more closely with associated storm damage. The new scale takes into account how most structures are designed, and is thought to be a much more accurate representation of the surface wind speeds in the most violent tornadoes.

Table 57. Enhanced Fujita (EF) Scale[16]

Enhanced Fujita (EF) Scale		
Enhanced Fujita Category	**Wind Speed (mph)**	**Potential Damage**
EF0	65-85	**Light damage**: Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	86-110	**Moderate damage**: Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	**Considerable damage**: Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	**Severe damage**: Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	**Devastating damage**: Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.

[16] Source: http://www.spc.noaa.gov/faq/tornado/ef-scale.html

Enhanced Fujita (EF) Scale		
Enhanced Fujita Category	**Wind Speed (mph)**	**Potential Damage**
EF5	>200	**Incredible damage**: Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (109 yds.); high-rise buildings have significant structural deformation; incredible phenomena will occur.

The Storm Prediction Center has developed damage indicators to be used with the Enhanced Fujita Scale for different types of buildings. These indicators can be also be used to classify any high wind event. Indicators for different building types are shown in the following tables.

Table 58. Institutional Buildings

DAMAGE DESCRIPTION	WIND SPEED RANGE (Expected in Parentheses)
Threshold of visible damage	59-88 MPH (72 MPH)
Loss of roof covering (<20%)	72-109 MPH (86 MPH)
Damage to penthouse roof & walls, loss of rooftop HVAC equipment	75-111 MPH (92 MPH)
Broken glass in windows or doors	78-115 MPH (95 MPH)
Uplift of lightweight roof deck & insulation, significant loss of roofing material (>20%)	95-136 MPH (114 MPH)
Façade components torn from structure	97-140 MPH (118 MPH)
Damage to curtain walls or other wall cladding	110-152 MPH (131 MPH)
Uplift of pre-cast concrete roof slabs	119-163 MPH (142 MPH)
Uplift of metal deck with concrete fill slab	118-170 MPH (146 MPH)
Collapse of some top building envelope	127-172 MPH (148 MPH)
Significant damage to building envelope	178-268 MPH (210 MPH)

Source: Storm Prediction Center, 2009

Table 59. Educational Institutions (Elementary Schools, High Schools)

DAMAGE DESCRIPTION	WIND SPEED RANGE (Expected in Parentheses)
Threshold of visible damage	55-83 MPH (68 MPH)
Loss of roof covering (<20%)	66-99 MPH (79 MPH)
Broken windows	71-106 MPH (87 MPH)
Exterior door failures	83-121 MPH (101 MPH)
Uplift of metal roof decking; significant loss of roofing material (>20%); loss of rooftop HVAC	85-119 MPH (101 MPH)
Damage to or loss of wall cladding	92-127 MPH (108 MPH)
Collapse of tall masonry walls at gym, cafeteria, or auditorium	94-136 MPH (114 MPH)
Uplift or collapse of light steel roof structure	108-148 MPH (125 MPH)
Collapse of exterior walls in top floor	121-153 MPH (139 MPH)
Most interior walls of top floor collapsed	133-186 MPH (158 MPH)
Total destruction of a large section of building envelope	163-224 MPH (192 MPH)

Source: Storm Prediction Center, 2009

Table 60. Metal Building Systems

DAMAGE DESCRIPTION	WIND SPEED RANGE (Expected in Parentheses)
Threshold of visible damage	54-83 MPH (67 MPH)
Inward or outward collapsed of overhead doors	75-108 MPH (89 MPH)
Metal roof or wall panels pulled from the building	78-120 MPH (95 MPH)
Column anchorage failed	96-135 MPH (117 MPH)
Buckling of roof purlins	95-138 MPH (118 MPH)

DAMAGE DESCRIPTION	WIND SPEED RANGE (Expected in Parentheses)
Failure of X-braces in the lateral load resisting system	118-158 MPH (138 MPH)
Progressive collapse of rigid frames	120-168 MPH (143 MPH)
Total destruction of building	132-178 MPH (155 MPH)

Source: Storm Prediction Center, 2009

Table 61. Electric Transmission Lines

DAMAGE DESCRIPTION	WIND SPEED RANGE (Expected in Parentheses)
Threshold of visible damage	70-98 MPH (83 MPH)
Broken wood cross member	80-114 MPH (99 MPH)
Wood poles leaning	85-130 MPH (108 MPH)
Broken wood poles	98-142 MPH (118 MPH)

Source: Storm Prediction Center, 2009

Severe wind can also occur outside of tornadoes, severe thunderstorms, and winter storms. These winds typically develop with strong pressure gradients and gusty frontal passages. The closer and stronger two systems (one high pressure, one low pressure) are, the stronger the pressure gradient, and therefore, the stronger the winds are.

Although severe wind events often garner less attention in the local media than tornadoes do, damaging **straight line winds** (or downbursts) can injure and kill animals and humans. Straight-line winds, which can cause more widespread damage than a tornado, occur when air is carried into a storm's updraft, cools rapidly, and comes rushing to the ground. Cold air is denser than warm air, and therefore, wants to fall to the surface. On warm summer days, when the cold air can no longer be supported up by the storm's updraft, or when an exceptional downdraft develops, the air crashes to the ground in the form of strong winds. These winds are forced horizontally when they reach the ground and can cause significant damage. These types of strong winds can also be referred to as straight-line winds. Downbursts with a diameter of less than 2.5 miles are called microbursts and those with a diameter of 2.5 miles or greater are called macrobursts. A "derecho" is a series of downbursts associated with a line of thunderstorms.

5.2.10.2 Previous Occurrences

Colorado, lying just west of "tornado alley," is fortunate to experience less frequent and intense tornadoes than its neighboring states to the east. However, tornadoes remain a significant hazard in the region. Tornadoes are the most intense storm on earth having been recorded at velocities exceeding 315 mph. The phenomena results in a destructive rotating column of air ranging in diameter from a few yards to greater than a mile, usually associated with a downward extension of cumulonimbus clouds.

All portions of Weld County have the potential to be affected by tornadoes. Historically, tornadoes have been relatively small on the EF Scale but F1 tornadoes can still produce dangerous winds up to 112mph. High winds can cause damage to buildings (tearing shingles from roofs, tearing awnings, collapsing structures, etc.).

The following Table summarizes tornado history and damage data for Weld County from 1950 – 2014 collected by the NOAA Storm Prediction Center. Over that time, NOAA's damage reporting methodologies have evolved. Prior to 1996, estimates of property damage from tornadoes were categorized within the NOAA database by ranges of dollar amounts (0 = unknown; 1< $50, 2 = $50 - $500; 3 = $500 - $5,000; 4 = $5,000 - $50,000; 5 = $50,000 - $500,000; 6 = $500,000 - $5,000,000; 7 = $5,000,000 - $50,000,000; 8 = $50,000,000 - $500,000,000; 9 = $5,000,000,000). From 1996 on, tornado damages were recorded in millions of dollars. A damage value of 0.0 meant damages were under $100,000. Starting in 2007, estimated crop damages were recorded in millions of dollars. In NOAA's database a damage value of 0.0 means that damages were under $100,000.

Table 62. Tornado History in Weld County (1950 – 2014)

DATE	F & EF SCALE	INJURIES	DEATHS	ESTIMATED PROPERTY DAMAGE	ESTIMATED CROP DAMAGE
7/22/1950		0	0	0	0
5/15/1952	F3	5	0	$25,000	0
6/19/1954		0	0	$250	0
5/09/1955		0	0	$250	0
6/26/1955		0	0	$250	0
6/27/1955		0	0	$30	0
6/27/1955		0	0	$30	0
7/10/1955	F2	0	0	$2,500	0
5/24/1957	F1	0	0	$250	0
5/24/1957	F1	0	0	$250	0
5/30/1957	--	0	0	$30	0
5/30/1957	F0	0	0	$30	0
5/12/1958	F2	0	0	$2,500	0
6/8/1958	F2	0	0	$2,500	0
7/1/1958	F2	1	0	$2,500	0
7/20/1958	--	0	0	$2,500	0
7/23/1958	F2	0	0	$2,500	0
5/15/1960	--	0	0	$2,500	0
6/5/1961	--	0	0	0	0
5/8/1965	--	0	0	$2,500	0
5/22/1965	F1	0	0	$250	0
6/23/1965	F0	0	0	0	0
6/26/1965	F2	0	0	$25,000	0

DATE	F & EF SCALE	INJURIES	DEATHS	ESTIMATED PROPERTY DAMAGE	ESTIMATED CROP DAMAGE
5/17/1966	F1	0	0	$25,000	0
7/14/1967	F1	0	0	0	0
5/23/1968	F1	0	0	$30	0
4/19/1971	F0	0	0	0	0
6/29/1971	F0	0	0	0	0
6/29/1971	F1	1	0	$25,000	0
5/10/1972	F1	0	0	$2,500	0
6/18/1975	F0	0	0	0	0
7/22/1975	F0	0	0	0	0
7/23/1975	F1	0	0	$2,500	0
5/29/1976	F1	0	0	$2,500	0
5/29/1976	F1	0	0	0	0
5/29/1976	F1	0	0	0	0
5/29/1976	F0	0	0	0	0
5/29/1976	F0	0	0	0	0
5/29/1976	F0	0	0	0	0
5/29/1976	F0	0	0	0	0
5/29/1976	F0	0	0	0	0
6/4/1976	F0	0	0	0	0
6/4/1976	F0	0	0	0	0
6/4/1976	F0	0	0	0	0
6/4/1976	F2	0	0	$25,000	0
6/4/1976	F1	0	0	0	0
6/4/1976	F1	0	0	0	0
6/4/1976	F1	0	0	0	0
6/4/1976	F1	0	0	0	0
7/4/1976	F1	0	0	$2,500	0
8/10/1976	F0	0	0	0	0
5/1/1977	F0	0	0	0	0
6/19/1977	F1	0	0	$25,000	0
7/6/1979	--	1	0	$2,500	0
7/6/1979	F1	0	0	0	0
7/12/1979	F0	0	0	0	0
7/16/1979	F0	0	0	0	0
7/29/1979	F0	0	0	0	0
5/27/1980	F0	0	0	$25,000	0

DATE	F & EF SCALE	INJURIES	DEATHS	ESTIMATED PROPERTY DAMAGE	ESTIMATED CROP DAMAGE
5/29/1980	F0	0	0	0	0
6/21/1980	F0	0	0	0	0
7/25/1980	F1	0	0	$250	0
8/7/1980	F1	0	0	$250,000	0
8/27/1980	F1	0	0	0	0
5/31/1981	F1	0	0	0	0
5/31/1981	F0	0	0	0	0
6/3/1981	F1	0	0	$2,500	0
6/3/1981	F1	0	0	$2,500	0
6/3/1981	F1	0	0	0	0
6/3/1981	F1	2	0	$2,500,000	0
7/24/1981	F1	0	0	0	0
7/25/1981	F1	0	0	0	0
9/23/1981	F1	0	0	0	0
6/2/1982	F0	0	0	0	0
6/3/1982	F0	0	0	0	0
6/12/1982	F0	0	0	0	0
6/14/1982	F1	0	0	$30	0
6/25/1982	F1	0	0	$30	0
6/29/1982	F1	0	0	$30	0
7/25/1982	F1	0	0	$30	0
7/26/1982	F2	0	0	$30	0
7/26/1982	F1	0	0	$2,500	0
8/9/1982	F1	0	0	$30	0
4/30/1983	F1	0	0	$30	0
6/2/1983	F1	0	0	$30	0
6/4/1983	F1	0	0	$30	0
6/16/1983	F0	0	0	$30	0
7/10/1983	F1	0	0	$2,500	0
8/12/1983	F1	0	0	$30	0
8/12/1983	F1	0	0	$30	0
8/12/1983	F1	0	0	$25,000	0
8/17/1983	F1	0	0	$30	0
8/17/1983	F1	0	0	$30	0
4/19/1984	F1	0	0	$30	0
4/19/1984	F1	0	0	$30	0

DATE	F & EF SCALE	INJURIES	DEATHS	ESTIMATED PROPERTY DAMAGE	ESTIMATED CROP DAMAGE
4/25/1984	F1	0	0	$30	0
5/18/1984	F1	0	0	$2,500	0
5/18/1984	F1	0	0	$25,000	0
5/18/1984	F1	0	0	$250	0
6/13/1984	F2	0	0	$25,000	0
6/17/1984	F2	0	0	0	0
8/1/1984	F2	0	0	$2,500	0
8/1/1984	F1	0	0	$2,500	0
8/19/1984	F1	0	0	0	0
7/26/1985	F1	0	0	0	0
5/12/1986	F1	0	0	$2,500	0
6/9/1986	F1	0	0	$2,500	0
8/2/1986	F1	3	0	$25,000	0
6/23/1987	F1	0	0	0	0
6/23/1987	F1	0	0	0	0
7/7/1987	F1	0	0	$2,500	0
7/7/1987	F1	0	0	0	0
7/7/1987	F1	0	0	0	0
4/19/1988	F1	0	0	0	0
4/21/1988	F2	0	0	$25,000	0
4/24/1988	F1	0	0	0	0
6/5/1988	F1	0	0	$25,000	0
7/7/1988	F1	0	0	$250	0
6/25/1989	F1	0	0	0	0
6/1/1990	F2	0	0	$250000	0
6/9/1990	F1	0	0	0	0
6/9/1990	F0	0	0	0	0
6/9/1990	F1	0	0	0	0
6/15/1990	F2	0	0	$25,000	0
6/2/1991	F0	0	0	0	0
6/2/1991	F0	0	0	0	0
6/9/1991	F1	0	0	0	0
6/9/1991	F0	0	0	0	0
6/9/1991	F0	0	0	0	0
6/22/1991	F1	0	0	0	0
6/22/1991	F0	0	0	0	0

DATE	F & EF SCALE	INJURIES	DEATHS	ESTIMATED PROPERTY DAMAGE	ESTIMATED CROP DAMAGE
7/25/1991	F0	0	0	0	0
7/25/1991	F0	0	0	0	0
7/25/1991	F0	0	0	$250,000	0
7/25/1991	F0	0	0	0	0
7/25/1991	F0	0	0	0	0
6/13/1992	F0	0	0	0	0
6/14/1992	F0	0	0	0	0
6/14/1992	F0	0	0	0	0
6/14/1992	F0	0	0	0	0
6/20/1992	F0	0	0	0	0
6/20/1992	F0	0	0	0	0
6/26/1992	F0	0	0	$25,000	0
6/26/1992	F0	0	0	0	0
6/18/1994	F0	0	0	0	0
7/16/1994	F0	0	0	0	0
7/16/1994	F0	0	0	0	0
7/16/1994	F0	0	0	0	0
7/16/1994	F0	0	0	0	0
7/16/1994	F0	0	0	0	0
7/16/1994	F0	0	0	0	0
5/7/1995	F0	0	0	0	0
6/3/1995	F0	0	0	0	0
6/6/1995	F0	0	0	0	0
6/6/1995	F0	0	0	0	0
6/7/1995	F0	0	0	0	0
6/7/1995	F0	0	0	0	0
6/7/1995	F0	0	0	0	0
6/7/1995	F0	0	0	0	0
6/7/1995	F0	0	0	0	0
5/30/1996	F0	0	0	0	0
7/9/1996	F0	0	0	0	0
7/12/1996	F0	0	0	0	0
7/13/1996	F0	0	0	0	0
7/28/1996	F0	0	0	0	0
7/31/1996	F0	0	0	0	0
7/31/1996	F0	0	0	0	0

DATE	F & EF SCALE	INJURIES	DEATHS	ESTIMATED PROPERTY DAMAGE	ESTIMATED CROP DAMAGE
7/31/1996	F0	0	0	0	0
7/31/1996	F0	0	0	0	0
8/27/1996	F0	0	0	0	0
8/29/1996	F0	0	0	0	0
8/29/1996	F2	0	0	0	0
8/29/1996	F0	0	0	0	0
5/25/1997	F0	0	0	0	0
6/15/1997	F0	0	0	0	0
6/22/1997	F0	0	0	0	0
7/6/1997	F0	0	0	0	0
7/30/1997	F1	0	0	$50,000	0
6/9/1998	F0	0	0	0	0
7/4/1998	F0	0	0	0	0
7/14/1998	F1	0	0	0	0
7/14/1998	F0	0	0	0	0
7/19/1998	F0	0	0	0	0
7/25/1998	F0	0	0	0	0
8/9/1998	F0	0	0	0	0
6/17/1999	F0	0	0	0	0
8/10/1999	F0	0	0	0	0
8/10/1999	F0	0	0	0	0
8/10/1999	F0	0	0	0	0
8/10/1999	F1	0	0	0	0
8/10/1999	F0	0	0	0	0
9/1/1999	F1	0	0	0	0
5/17/2000	F1	0	0	0	0
5/17/2000	F0	0	0	0	0
5/17/2000	F0	0	0	0	0
5/17/2000	F0	0	0	0	0
7/10/2000	F0	0	0	0	0
7/21/2000	F0	0	0	0	0
9/1/2000	F1	0	0	0	0
6/3/2002	F0	0	0	0	0
8/28/2002	F1	0	0	0	0
4/30/2003	F0	0	0	0	0
4/30/2003	F0	0	0	0	0

DATE	F & EF SCALE	INJURIES	DEATHS	ESTIMATED PROPERTY DAMAGE	ESTIMATED CROP DAMAGE
5/8/2003	F0	0	0	0	0
3/24/2004	F0	0	0	0	0
5/10/2004	F0	0	0	0	0
6/4/2004	F0	0	0	0	0
8/10/2004	F0	0	0	0	0
8/10/2004	F0	0	0	0	0
10/4/2004	F0	0	0	0	0
10/4/2004	F0	0	0	0	0
10/4/2004	F0	0	0	0	0
10/4/2004	F0	0	0	0	0
10/4/2004	F0	0	0	0	0
10/4/2004	F0	0	0	0	0
5/24/2005	F1	0	0	0	0
5/31/2006	F1	0	0	0	0
5/3/2007	F1	0	0	0	0
5/3/2007	F0	0	0	0	0
5/3/2007	F0	0	0	0	0
5/3/2007	EF0	0	0	0	0
5/3/2007	EF0	0	0	0	0
5/14/2007	EF0	0	0	0	0
7/12/2007	EF0	0	0	0	0
5/22/2008	EF0	0	0	0	0
5/22/2008	EF0	0	0	0	0
5/23/2008	EF0	0	0	0	0
5/23/2008	EF3	78	1	$147,000,000	0
6/9/2009	EF1	1	0	0	0
6/10/2009	EF0	0	0	0	0
6/10/2009	EF1	0	0	0	0
6/22/2009	EF0	0	0	0	0
6/22/2009	EF0	0	0	0	0
8/8/2009	EF0	0	0	0	0
5/15/2010	EF0	0	0	0	0
5/15/2010	EF0	0	0	0	0
5/18/2010	EF0	0	0	0	0
5/18/2010	EF0	0	0	0	0
5/26/2010	EF0	0	0	0	0

DATE	F & EF SCALE	INJURIES	DEATHS	ESTIMATED PROPERTY DAMAGE	ESTIMATED CROP DAMAGE
6/10/2010	EF0	0	0	0	0
6/6/2012	EF0	0	0	0	0
6/7/2012	EF0	0	0	0	0
9/27/2012	EF0	0	0	0	0
8/3/2013	EF0	0	0	0	0
8/3/2013	EF0	0	0	0	0
8/3/2013	EF0	0	0	0	0
8/3/2013	EF0	0	0	$5,000	$5000
5/7/2014	EF0	0	0	0	0
6/6/2014	EF0	0	0	0	0
6/6/2014	EF0	0	0	0	0
6/8/2014	EF0	0	0	0	0
6/8/2014	EF0	0	0	0	0
7/28/2014	EF0	0	0	0	0
	TOTAL:	**92**	**1**	**$150,715,160**	**$5000**

Source: NOAA; NCDC Storm Events Database

NCDC's Storm Events Database estimates that 256 tornadoes have touched down in, or moved through, Weld County between 1950 and 2014. The most destructive tornado event occurred on May 22, 2008. The Town of Windsor sustained the most damage while many other towns were also affected. This tornado event caused one death in the City of Greeley. The following figure depicts the tornado touchdown locations that occurred on May 22, 2008.

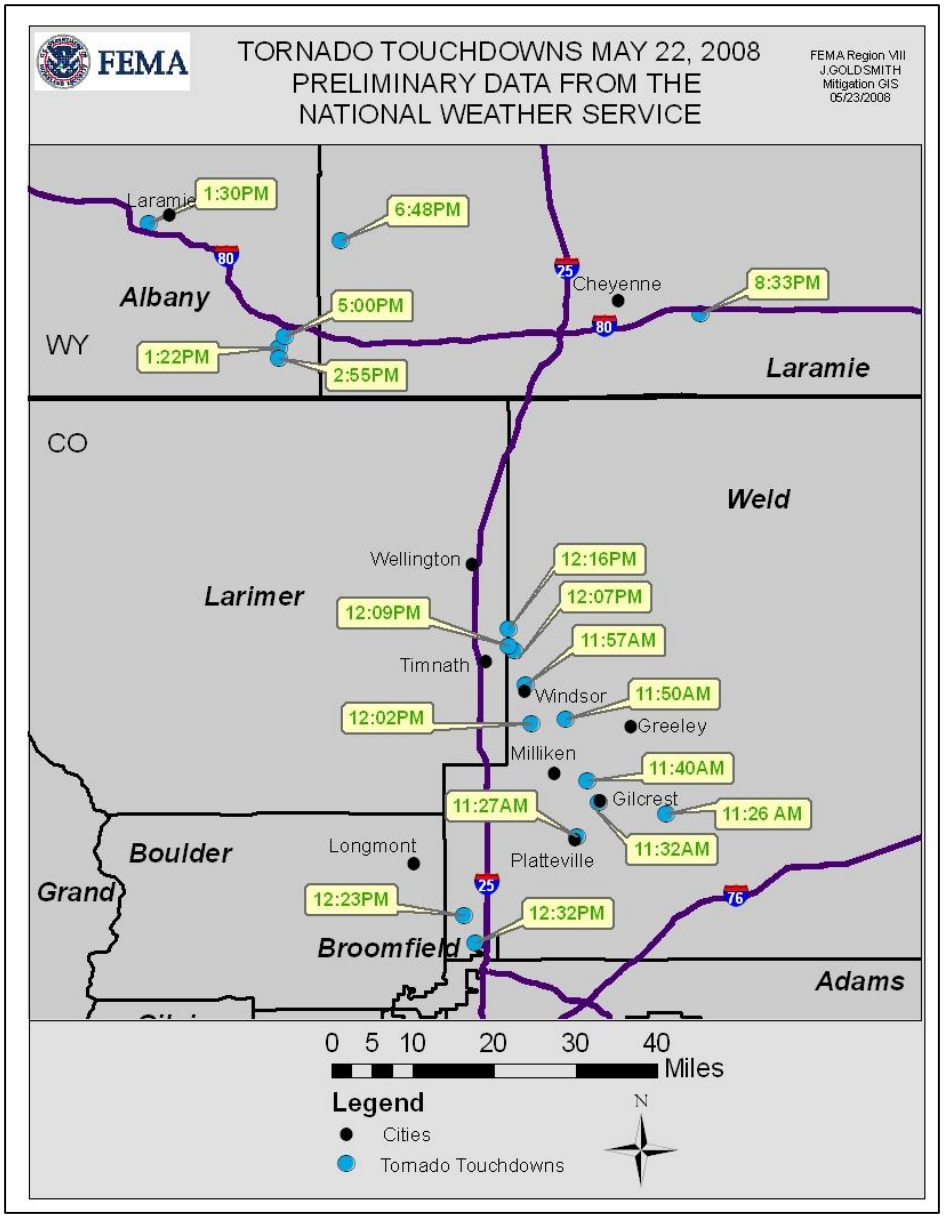


Figure 40. Tornado Touchdowns in Weld County, May 22, 2008[17]

The following figure depicts historical tornado tracks and events in and around Weld County. The map illustrates where tornadoes have touched down (and traveled) between 1955 and 2014. It is important to note that all portions of the County are susceptible to tornado hazard, from the urban western portions to the rural eastern side.

[17]Image courtesy of Eric Thaler, SOO WFO DEN/BOU; Data source – NOAA/NWS; Map – FEMA

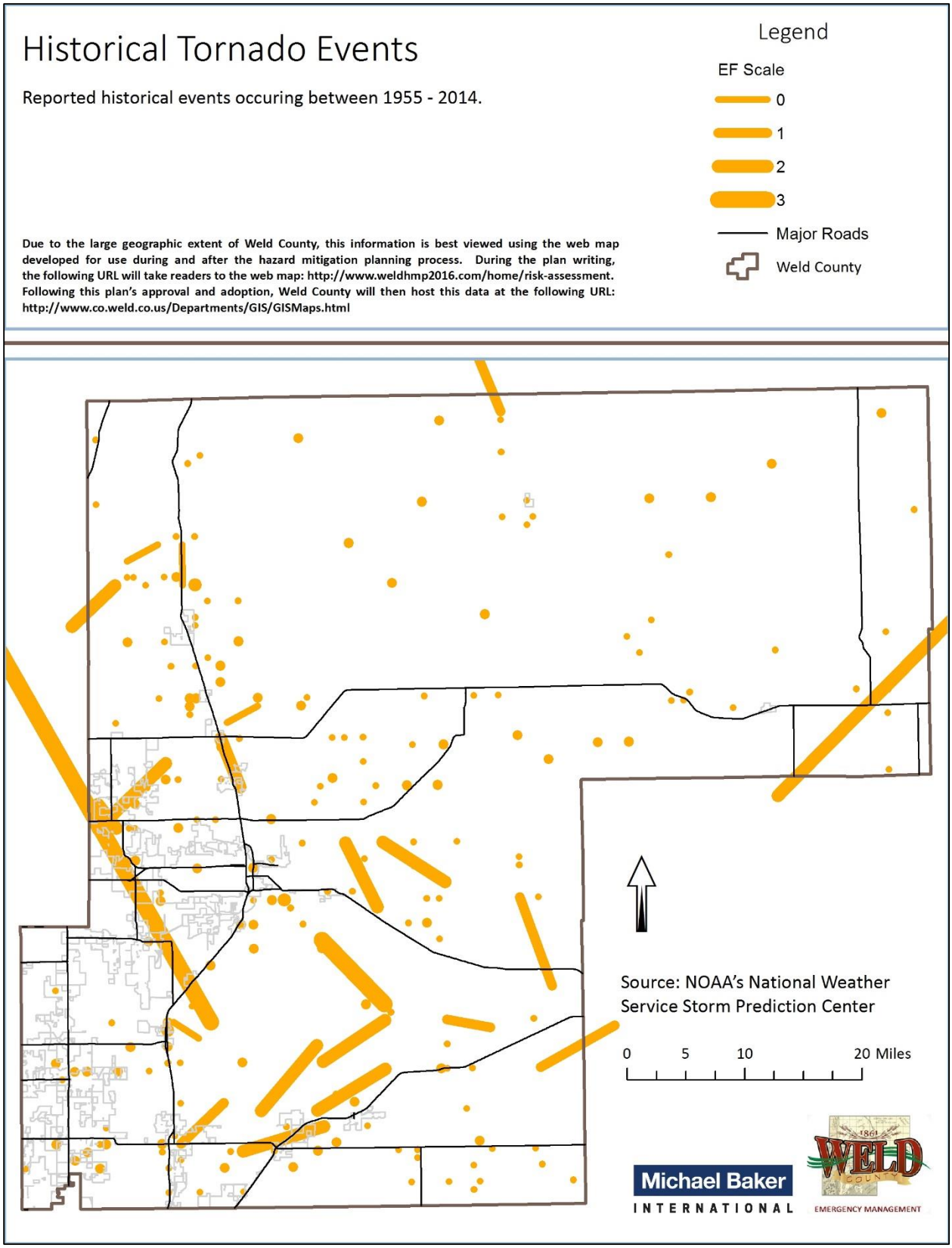


Figure 41. Weld County – Historical Tornado Events

HAZARD PROFILE: STRAIGHT-LINE WIND

Data from NOAA's NCDC Storm Events Database was used to complete the risk assessment for straight-line wind events in Weld County. Currently, the Storm Events Database only includes wind events that are classified as "Thunderstorm Winds" (including downbursts). These events are defined as winds with speeds of at least fifty knots (58 mph), or winds of any speed (non-severe winds under fifty knots) that result in a fatality, injury and/or damage. The following Table summarizes severe wind history and damage totals in Weld County from 1996 to 2014.

Table 63. Severe Wind Event History in Weld County (1996 – 2014)

DATE	MAGNITUDE (KNOTS)[18]	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
1/3/1996	--	0	0	0	0
4/19/1996	71	0	0	0	0
4/19/1996	72	0	0	0	0
4/24/1996	53	0	0	0	0
4/24/1996	58	0	0	0	0
10/29/1996	61	0	0	0	0
12/2/1996	82	0	0	0	0
12/4/1996	100	0	0	0	0
12/17/1996	50	0	0	0	0
12/17/1996	56	0	0	0	0
12/17/1996	68	0	0	0	0
1/4/1997	53	0	0	0	0
1/4/1997	62	0	0	0	0
1/4/1997	58	0	0	0	0
3/27/1997	60	0	0	0	0
3/27/1997	70	0	0	0	0
3/27/1997	--	0	0	0	0
4/5/1997	51	0	0	0	0
10/31/1997	73	0	0	0	0
12/27/1997	64	0	0	0	0
2/25/1998	59	0	0	0	0
6/13/1998	68	0	0	0	0
12/27/1998	83	0	0	0	0
12/30/1998	78	0	0	0	0
1/5/1999	60	0	0	0	0

[18] 1 knot = 1.15 mph

DATE	MAGNITUDE (KNOTS)[18]	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
2/2/1999	56	0	0	0	0
2/2/1999	93	0	0	0	0
2/10/1999	58	0	0	0	0
2/10/1999	50	0	0	0	0
2/17/1999	61	0	0	0	0
2/22/1999	73	0	0	0	0
2/22/1999	52	0	0	0	0
4/8/1999	50	0	0	0	0
4/8/1999	90	0	0	0	0
4/8/1999	78	0	0	0	0
4/9/1999	70	0	0	0	0
4/9/1999	82	0	0	0	0
5/6/1999	55	0	0	0	0
11/18/1999	77	0	0	0	0
11/25/1999	67	0	0	0	0
11/25/1999	67	0	0	0	0
1/3/2000	81	0	0	0	0
1/7/2000	67	0	0	0	0
2/15/2000	56	0	0	0	0
2/15/2000	56	0	0	0	0
2/25/2000	63	0	0	0	0
2/25/2000	52	0	0	0	0
3/7/2000	88	0	0	0	0
3/7/2000	55	0	0	0	0
4/5/2000	78	0	0	0	0
12/15/2000	50	0	0	0	0
12/17/2000	56	0	0	0	0
12/17/2000	52	1	0	0	0
3/15/2001	55	0	0	0	0
5/9/2001	47	0	0	0	0
5/9/2001	50	0	0	0	0
5/20/2001	72	6	0	$1,400,000	0
5/20/2001	61	0	0	$36,000	0
2/8/2002	65	0	0	0	0
2/9/2002	39	0	0	0	0
2/9/2002	55	0	0	0	0

DATE	MAGNITUDE (KNOTS)[18]	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
4/1/2002	56	0	0	0	0
5/21/2002	57	0	0	0	0
1/15/2003	52	0	0	0	0
1/15/2003	52	0	0	0	0
1/30/2003	52	0	0	0	0
1/30/2003	59	0	0	0	0
4/15/2003	69	0	0	0	0
11/11/2003	70	0	0	0	0
6/4/2004	61	0	0	0	0
6/4/2004	54	0	0	0	0
6/20/2004	56	0	0	0	0
10/29/2004	65	0	0	0	0
10/29/2004	50	0	0	0	0
12/20/2004	85	0	0	0	0
4/5/2005	52	0	0	0	0
4/5/2005	52	0	0	0	0
11/3/2005	61	0	0	0	0
11/12/2005	54	0	0	0	0
11/12/2005	56	0	0	0	0
11/28/2005	59	0	0	0	0
11/28/2005	52	0	0	0	0
11/30/2005	60	0	0	0	0
11/30/2005	51	0	0	0	0
12/5/2005	50	0	0	0	0
12/23/2005	58	0	0	0	0
12/29/2005	57	0	0	0	0
12/29/2005	53	0	0	0	0
4/2/2006	52	0	0	0	0
11/14/2006	52	0	0	0	0
1/7/2007	77	0	0	0	0
2/16/2007	54	0	0	0	0
2/16/2007	80	0	0	0	0
6/6/2007	88	0	0	0	0
5/2/2008	57	0	0	$200,000	$200,000
5/2/2008	63	0	0	0	0
5/2/2008	60	0	0	0	0

DATE	MAGNITUDE (KNOTS)[18]	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
6/11/2008	68	0	0	0	0
6/22/2008	60	0	0	0	0
6/26/2008	52	0	0	0	0
8/2/2008	52	6	0	0	0
11/6/2008	64	0	0	0	0
12/29/2008	85	0	0	0	0
1/7/2009	65	0	0	$5,000	0
3/31/2009	52	0	0	0	0
1/24/2010	52	0	0	0	0
2/13/2010	70	0	0	0	0
5/4/2010	58	0	0	$10,000	$50,000
5/4/2010	58	0	0	0	0
5/24/2010	53	0	0	0	0
5/24/2010	50	0	0	0	0
3/22/2011	43	0	0	0	0
5/9/2011	35	0	0	0	0
10/6/2011	48	0	0	$20,000	$5,000
10/6/2011	54	0	0	0	0
10/6/2011	51	0	0	0	0
11/12/2011	45	1	0	0	0
12/31/2011	61	0	0	0	0
12/31/2011	63	0	0	0	0
12/31/2011	70	0	0	0	0
1/18/2012	61	0	0	0	0
1/18/2012	52	0	0	0	0
1/18/2012	56	0	0	0	0
2/21/2012	55	0	0	0	0
2/22/2012	56	0	0	0	0
3/18/2012	51	0	0	0	0
3/18/2012	56	0	0	0	0
4/15/2012	67	0	0	0	0
10/17/2012	35	0	0	0	0
10/17/2012	62	0	0	0	0
4/8/2013	54	0	0	0	0
4/8/2013	50	0	0	0	0
12/24/2013	60	0	0	0	0

DATE	MAGNITUDE (KNOTS)[18]	INJURIES	DEATHS	PROPERTY DAMAGE	CROP DAMAGE
2/16/2014	54	0	0	0	0
3/30/2014	52	0	0	0	0
4/27/2014	52	0	0	0	0
	TOTAL	**8**	**0**	**$1,671,000**	**$255,000**

*Source: NOAA; NCDC Storm Events Database

Based on data provided by NCDC's Storm Events Database, 136 severe wind events have occurred in Weld County between 1996 and 2014. The following Figure provides a geospatial view of these historical severe wind events in Weld County between 1996 and 2014. As with tornadoes, it should be noted that severe winds affect all portions of the County.

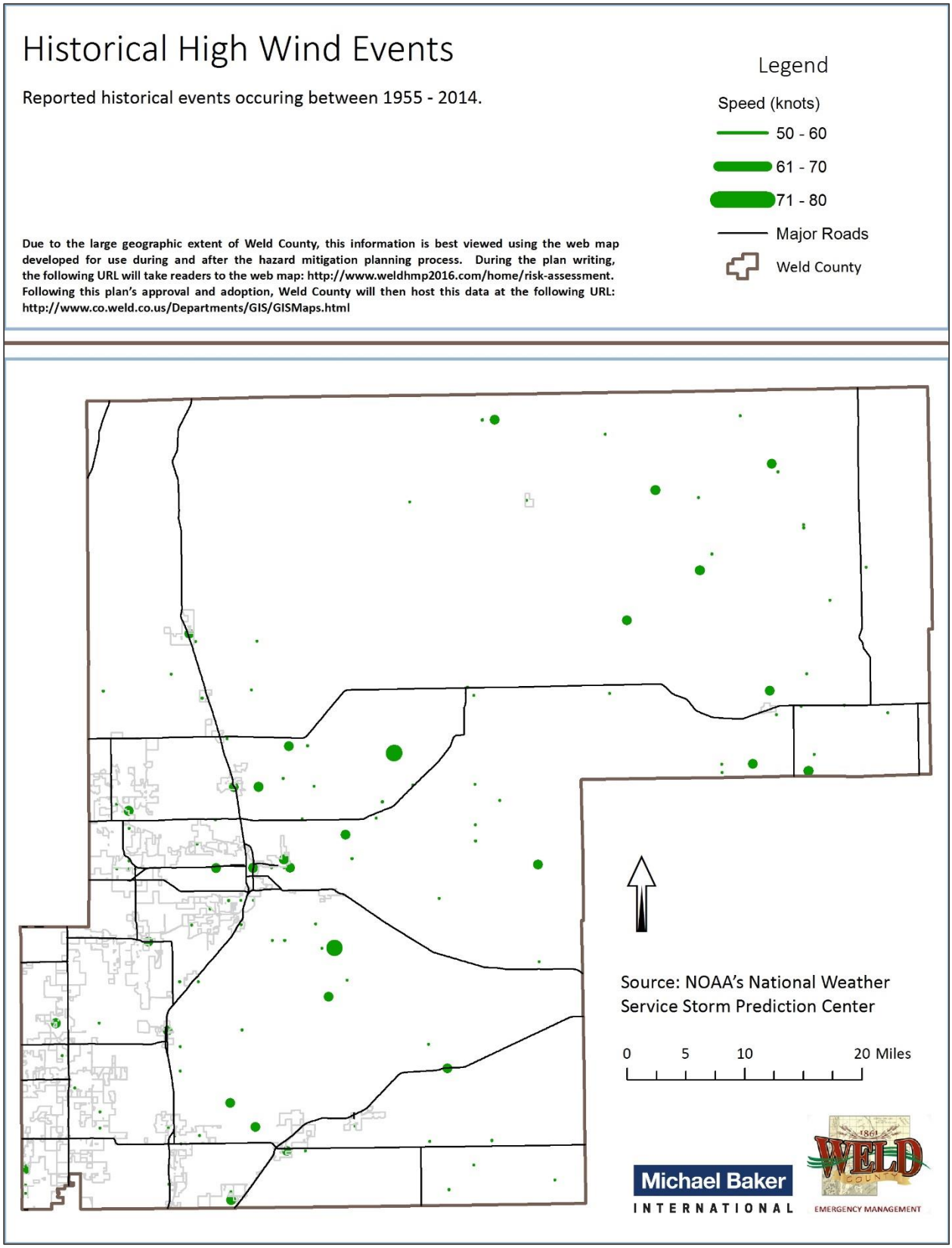


Figure 42. Weld County – Historical High Wind Events

5.2.10.3 Inventory Exposed

Inventory assets exposed to severe wind is dependent on the age of the building, type, construction material used, and condition of the structure. Possible losses to critical infrastructure include:

- Electric power disruption
- Communication disruption
- Water and fuel shortages
- Road closures
- Damaged infrastructure components, such as sewer lift stations and treatment plants
- Damage to homes, structures, and shelters

All assets located in Weld County can be considered at risk from severe wind and tornadoes. This includes 252,825 people, or 100% of the County's population and all buildings and infrastructure within the County.[19] Most structures, including the county's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

5.2.10.4 Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, countywide loss estimation exists for wind and tornado hazards, potential losses are related to historical property damage and injuries/deaths.

Over the last 65 years there has been 1 death reported in Weld County due to a tornado event and no deaths due to severe wind. During the same time period, there have been 92 reported injuries from tornadoes and 14 reported injuries from severe wind. Monetary losses to property and crops are largely unknown.

5.2.10.5 Probability of Future Occurrences

Reported tornadoes over the past forty nine years provide an acceptable framework for determining the future occurrence in terms of frequency for such events. The probability of the County and its municipalities experiencing a tornado associated with damages or injuries can be difficult to quantify, but based on historical record of sixty four tornadoes since 1964 that have either caused damages to buildings and infrastructure or resulted in an injury or death, it can reasonably be assumed that this type of event has occurred once a year between 1964 and 2013. Historic tornado frequencies suggest that there is roughly a 100% chance of this type of event occurring somewhere within the county boundaries each year.

Similarly, reported straight-line wind events over the past forty nine years provide an acceptable framework for determining the future occurrence in terms of event. The probability of Weld County and its municipalities experiencing a severe wind event associated with damages or injuries can be difficult to

[19] 2010 Census

quantify, but based on historical record of 136 severe wind events since 1964, there is a high chance of this type of event occurring each year.

5.2.10.6 Land Use and Development

All future structures built in Weld County will likely be exposed to severe wind and tornado damage. As with other large extent hazards, increased development trends within Planning Reserve Areas and along the I-76 and I-25 corridors will increase the vulnerability of these areas. Weld County and its jurisdictions must continue to adhere to building codes and to facilitate new development that is built to the highest design standards to account for heavy winds.

Due to the nature of tornadoes and severe wind events, not all jurisdictions within Weld County are expected to be impacted equally. For example, older homes, which are often subject to less advanced building codes, suffer increased vulnerability to wind and tornadoes over time. Mobile homes, which are most often occupied by low-income, socially vulnerable residents, are the most dangerous places during a windstorm or tornado. Studies indicate that 45% of all fatalities during tornadoes occur in mobile homes, compared to 26% in traditional site-built homes.[20] As communities across Weld County continue to grow, it is important that local agencies monitor the inventory and locations of mobile homes, particularly in areas of high tornado risk. Moreover, when discussing mitigation actions for straight-line winds and tornadoes, communities or geographic locations with large numbers of mobile homes deserve added attention.

[20] Ashley, W.S., A.J. Krmenec, and R. Schwantes, 2008: Vulnerability due to nocturnal tornadoes. *Weather and Forecasting*, 23, 795 – 807.

6 Mitigation Strategy

This section of the Plan provides the blueprint for Weld County and its participating jurisdictions to become less vulnerable to natural hazards. The goals, objectives, and strategies are based on the general consensus of the Weld County HMPC and local stakeholder feedback, along with the findings of the Hazard Identification and Risk Assessment. This section consists of the following subsections:

- INTRODUCTION
- GOALS AND OBJECTIVES SUMMARY
- 2009 HAZARD MITIGATION PLAN ACTION REPORT
- 2016 HAZARD MITIGATION PLAN ACTION REPORT

6.1 Introduction

The intent of the Mitigation Strategy is to provide Weld County and participating jurisdictions with the goals that will serve as the guiding principles for future mitigation policy and project administration, along with a list of proposed actions deemed necessary to meet those goals and reduce the impact of natural hazards. It is designed to be comprehensive and strategic in nature. The development of the strategy included a thorough review of natural hazards and identified policies and projects intended to not only reduce the future impacts of hazards, but also to help Weld County and participating jurisdictions achieve compatible economic, environmental, and social goals. The development of this section is also intended to be strategic, in that all policies and projects are linked to establish priorities assigned to specific departments or individuals responsible for their implementation. Potential funding sources are identified when possible and identified projects were assumed to be realistically achievable over the coming five years.

- *Mitigation goals* are general guidelines that explain what the county wants to achieve. Goals are usually expressed as broad policy statements representing desired long-term results.
- *Mitigation objectives* describe strategies or implementation steps to attain the identified goals. Objectives are more specific statements than goals; the described steps are usually measurable and can have a defined completion date.
- *Mitigation Actions* provide more detailed descriptions of specific work tasks to help the county and its municipalities achieve prescribed goals and objectives.

Based on participation from the Weld County HMPC, the mitigation strategy from the 2009 Northeast Colorado Regional Hazard Mitigation Plan has been modified and updated. Objectives were clarified to better document roles and responsibilities. Previously identified actions were updated and new actions have been added to address particular hazards facing Weld County and its local jurisdictions.

In order to prioritize the mitigation actions in this plan, the County and each participating jurisdiction referred to FEMA's STAPLEE methodology as a guide. The STAPLEE approach allows for a careful review of the feasibility of mitigation actions by using seven criteria. The criteria are described below:

- *S - Social*
- *T - Technical*
- *A - Administrative*

- *P - Political*
- *L - Legal*
- *E - Economic*
- *E - Environmental*

FEMA mitigation planning requirements indicate that any prioritization system used shall include a special emphasis on the extent to which benefits are maximized according to a cost-benefit review of the proposed projects. To do this in an efficient manner that is consistent with FEMA's guidance on using cost-benefit review in mitigation planning, the STAPLEE method was adapted to include a higher weighting (x1.5) for the economic feasibility factor – Cost Effective. This method incorporates concepts similar to those described in Method C of FEMA 386-5: Using Benefit Cost Review in Mitigation Planning (FEMA, 2007).

In order to ensure that a broad range of mitigation actions were considered for the Mitigation Strategy, the Weld County HMPC analyzed a comprehensive range of specific mitigation actions for each hazard after the risk assessment was complete. This helped to ensure that there was sufficient span and creativity in the mitigation actions considered.

There are six categories of mitigation actions which Weld County considered in developing its mitigation action plan. Those categories include:

- **Prevention**: Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning, zoning, building codes, subdivision regulations, hazard specific regulations (such as floodplain regulations), capital improvement programs, and open-space preservation and stormwater regulations.
- **Property Protection**: Actions that involve modifying or removing existing buildings or infrastructure to protect them from a hazard. Examples include the acquisition, elevation and relocation of structures, structural retrofits, flood-proofing, storm shutters, and shatter resistant glass. This category also includes insurance.
- **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about potential risks from hazards and potential ways to mitigate them. Such actions include hazard mapping, outreach projects, library materials dissemination, real estate disclosures, the creation of hazard information centers, and school age / adult education programs.
- **Natural Resource Protection**: Actions that in addition to minimizing hazard losses also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, forest and vegetation management, wetlands restoration or preservation, slope stabilization, and historic property and archeological site preservation.
- **Structural Project Implementation**: Mitigation projects intended to lessen the impact of a hazard by using structures to modify the environment. Structures include stormwater controls (culverts); dams, dikes, and levees; and safe rooms.
- **Emergency Services**: Actions that typically are not considered mitigation techniques but reduce the impacts of a hazard event on people and property. These actions are often taken prior to,

during, or in response to an emergency or disaster. Examples include warning systems, evacuation planning and management, emergency response training and exercises, and emergency flood protection procedures.

6.2 Goals and Objectives Summary

The following table provides an update summary of the goals identified within the 2009 Northeast Colorado Regional Hazard Mitigation Plan and of how they were incorporated into the 2016 Weld County Hazard Mitigation Plan.

Table 64. Goals – 2009 Northeast Colorado Regional Hazard Mitigation Plan

Goal	Goal	Continue	Change	Delete
1	Maintain FEMA eligibility/position communities for Federal mitigation funding	**X**		
2	Improve county capability to reduce disaster losses.	**X**		
3	Reduce loss of life, property damages, and economic impacts from hazards.	**X**		
4	Increase public awareness of potential hazard losses.		**X**	

Mitigation Goals are general guidelines that explain what a community wants to achieve with their local hazard mitigation plan. Goals are overarching targets and describe the ideal long-term outcomes envisioned by the community. For the 2016 Plan, Weld County and the local jurisdictions participating in the hazard mitigation plan update identified the following four mitigation goals as the foundation of their local mitigation strategies:

- **GOAL 1:** Reduce loss of life, property damages and economic impacts from disasters
- **GOAL 2:** Improve the County's and local jurisdictions' capabilities to reduce disaster losses
- **GOAL 3:** Increase community resilience through community engagement and preparedness education
- **GOAL 4:** Position Weld County communities to maintain eligibility for FEMA and other federal mitigation funding through active participation in mitigation planning

More specific than Goals, Mitigation Objectives are the fundamental strategies prescribed by the Plan to achieve the identified Goals. In other words, Objectives describe the "how" of the mitigation strategy. In the 2016 Plan, Weld County and the local jurisdictions participating in the hazard mitigation plan update identified the following five mitigation objectives:

- **OBJECTIVE 1:** Continue to develop and expand community preparedness education and resilience programs

- **OBJECTIVE 2:** Enhance training for hazard prevention and mitigation options
- **OBJECTIVE 3:** Incorporate risk reduction principles into policy documents and initiatives as well as other institutional plans
- **OBJECTIVE 4:** Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts
- **OBJECTIVE 5:** Reduce the vulnerability of local assets to the impacts of hazards.

In order to maintain continuity within the local mitigation strategy, each mitigation objective is associated with one or more mitigation goals (as is shown in the following table). This helps communities stay on track during the development of the mitigation strategy and focus their planning efforts around clear priorities. Together, the goals and objectives identified during the Weld County mitigation strategy meeting and refined over the course of the planning process established the scope and focus of the proposed mitigation actions outlined in this Plan.

The following table provides a summary of the updated and/or revised mitigation goals for the 2016 Plan. It also outlines the planning objectives identified by the HMPC for each goal and identifies whether the Goal is new to Weld County or was previously identified in the 2009 Northeast Colorado Regional Hazard Mitigation Plan.

Table 65. 2016 Weld County Mitigation Strategy – Updated Goals and Objectives

Goal	Objective	New
GOAL 1: Reduce loss of life, property damages and economic impacts from disasters.	1. Continue to develop and expand community preparedness education and resilience programs.	
	2. Enhance training for hazard prevention and mitigation options.	
	3. Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans.	
	4. Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts.	
	5. Reduce the vulnerability of local assets to the impacts of hazards.	
GOAL 2: Improve county's and local jurisdictions' capabilities to reduce disaster losses.	1. Continue to develop and expand community preparedness education and resilience programs.	
	2. Enhance training for hazard prevention and mitigation options.	
	3. Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans.	

Goal	Objective	New
	4. Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts.	
	5. Reduce the vulnerability of local assets to the impacts of hazards.	
GOAL 3: Increase community resilience through community engagement and preparedness education.	1. Continue to develop and expand community preparedness education and resilience programs.	
	2. Enhance training for hazard prevention and mitigation options.	
GOAL 4: Position Weld County communities to maintain eligibility for FEMA and other federal mitigation funding, through active participation in mitigation planning.	1. Continue to develop and expand community preparedness education and resilience programs.	X
	2. Enhance training for hazard prevention and mitigation options.	
	3. Incorporate risk reduction principles into policy documents and initiatives, as well as other institutional plans.	
	4. Continue to collaborate with area partners through mutual aid agreements and long-term planning efforts.	
	5. Reduce the vulnerability of local assets to the impacts of hazards.	

6.3 2009 Hazard Mitigation Plan Action Report

The Weld County HMPC reviewed the mitigation actions included in the 2004 and 2009 Northeast Colorado Regional Hazard Mitigation Plans that were specific to Weld County and its local jurisdictions. The following Mitigation Action Guides present status updates on each of the documented Weld County mitigation actions. Action status updates for each of the participating jurisdictions are included below in the community profiles Appendix.

WELD COUNTY: Establish an ongoing or annual Public Education campaign regarding Hazards and Emergency Management	
PRIORITY: HIGH	**HAZARDS ADDRESSED:** Dam Safety, Seismic Risk, Tornado Safety, Flood Insurance Program and Insurance Coverage
LOCATION: Countywide	**GOALS ADDRESSED: 1, 2, 3**
RECOMMENDATION DATE: 2004	**OBJECTIVES ADDRESSED: A, B, E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: There are many emergency management issues that need to be reinforced with public education so that citizens know what risks they face, what protective actions they can take, and what government programs are in place to assist them.	
RECOMMENDATION: The potential for saving just one life, and providing time for individuals and businesses to take effective protective actions, outweighs the potential cost of the public education program. Public Education may be the most effective and least-expensive way to reduce disaster losses by changing human behavior to promote appropriate actions	
ACTION: Establish an ongoing or annual Public Education campaign regarding Hazards and Emergency Management	
LEAD AGENCY: County Emergency Manager in conjunction with appropriate County/Town Departments with municipalities	**EXPECTED COST:** $2,500 for printing and distribution costs
SUPPORT AGENCIES: State/Federal Agencies	**POTENTIAL FUNDING SOURCES:** Monitor grants, and seek private partners for cost-share opportunities
PROGRESS MILESTONES: An All Hazards Emergency Operations Plan and Crisis Action Guide were completed in the Town of Hudson in November of 2008. Hudson was the pilot community for a grant designed to assist three rural jurisdictions with their emergency preparedness. Kersey and Keenesburg were the other two communities. The project was facilitated by Greg Moser of CISPR and some of his students from the University of Denver. Participation by Town Administration, Hudson's elected officials, Weld County Department heads responsible for responding to a disaster, utility company representatives, and social service agency providers made the exercise extremely valuable. Follow-up presentations with members from our business community, Weld County RE-3J School District, and local residents are ongoing. It was an added bonus to be a part of the strategic planning that took place in Kersey and Keenesburg. The City of Evans added new annexes to the EOP for major snow storm, blizzard, and tornado. The City website was updated with emergency management information, and the establishment of a public information function. The City of Dacono has a monthly newsletter in which messages, warnings and updates are included. The planning team agreed that this should remain a high priority, ongoing project. The Town of Firestone noted that public education is an ongoing effort. Information is being disseminated to the public via the Town website, semi-annual emergency preparedness courses, brochures on preparedness, articles in the bi-monthly Town newsletter, and articles in the local paper. Additionally there is a strong effort in sharing information with the local schools and businesses within Firestone. Since 2009, Weld County OEM and many participating jurisdictions have continued to make public preparedness outreach and education a priority. In 2014, Weld County OEM developed a "preparedness train-the-trainer" curriculum, and invites community members to participate in the	

course. These trainers are equipped to teach preparedness in their communities, health care facilities, assisted living centers, or wherever their sphere of influence might be. Weld County OEM also actively participates in community outreach events, raising awareness about disaster preparedness. This action item will continue to be a priority in 2016. Weld County OEM will develop a new mitigation action focused on studying disaster resilience in communities throughout Weld County in order to better understand how to develop the preparedness program.

WELD COUNTY: Inventory critical facilities within the floodplain to determine if they should be protected.	
PRIORITY: HIGH	**HAZARDS ADDRESSED:** Flooding
LOCATION: Countywide	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 2004	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 2009	
ISSUE: In floodplains there is a known risk. Not having critical facilities protected against such risks can severely handicap a community's ability to respond and recover from a flood. Potential losses should be estimated for the failure of each critical facility. Then a cost estimate should be calculated for the favored method of protection. Then a benefit-cost comparison will indicate whether or not the facility is worth protecting.	
RECOMMENDATION: The potential for saving just one life, and providing time for individuals and businesses to take effective protective actions, outweighs the potential cost of the public education program. Public Education may be the most effective and least-expensive way to reduce disaster losses by changing human behavior to promote appropriate actions	
ACTION: Each incorporated community with a mapped floodplain should inventory critical facilities within the floodplain to determine if they should be protected. Facilities would include power substations, water sources such as wellheads, sewage treatment facilities, police and fire stations, hospitals, and nursing homes.	
LEAD AGENCY: County Emergency Manager in conjunction with appropriate County/Town Departments. Technical Assistance is available from state agencies if help in making these determinations is needed	**EXPECTED COST:** Staff time only for initial inventory and discussion of protection methods, and cost-benefit analysis
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** There is not cost for the initial inventory and decision-making. Protective measures should be taken where cost-effective.
PROGRESS MILESTONES: This project was completed as part of the 2009 update to this plan. Critical facilities that are at risk from flooding are shown in Tables 8 and 9 and on the maps in Figures 2 and 3. The Town of Hudson has learned through the review of existing flood plain maps that the Town limits were not affected by an existing flood plain. However, recent land annexations may have one property within a flood plain, but there is no anticipated development of that area at this time. The Town's new Waste Water Treatment Plant being built in the vicinity on the annexed property is being built above the flood plain. The City of Evans has no critical facilities in the floodplain. The City of	

Dacono has a mapped floodplain. Frederick still wants to do a detailed inventory. The floodplain analysis should be updated with DFIRM mapping when that becomes available. No further work is required on this action item, as it was completed in 2009.

WELD COUNTY: Develop Pawnee Buttes sub-area land use plan	
PRIORITY: Medium	**HAZARDS ADDRESSED:** All
LOCATION: Weld County	**GOALS ADDRESSED: 2**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 2 years (2009-2010)	
ISSUE: Weld County anticipates a planning process for the northeast part of the County that would establish goals and policies unique to the area. This could be tied into the community wildfire protection plan.	
RECOMMENDATION: Wildfires, extreme temperatures, and wind/dust storms can be mitigated, avoiding loss of livestock and productive land/soil.	
ACTION: Develop Pawnee Buttes sub-area land use plan	
LEAD AGENCY: Weld County Planning Services.	**EXPECTED COST: $20,000 (time and materials).**
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** In house funding; possible DOLA.
PROGRESS MILESTONES: This action was not pursued by Weld County. It was anticipated as a possibility related to the Community Wildfire Protection Plan (CWPP), which was also not pursued. Weld County has elected to prepare an Annual Operating Plan instead.	

WELD COUNTY: Develop Wildland Fire Protection Plan	
PRIORITY: High	**HAZARDS ADDRESSED:** Wildland Fire
LOCATION: Weld County	**GOALS ADDRESSED: 2**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Completion by December 2010	
ISSUE: Over the last three years Weld County has had several Wildland fires in the South and Eastern part of the county. In July 2009 Gov. Ritter signed into law SB09-001 The establishment of Community Wildfire Protection Plans (CWPP). This law requires each county to develop a CWPP.	
RECOMMENDATION: Identification of Wildfire prone areas, Development of Mitigation programs	
ACTION: Wildland Fire Protection Plan	
LEAD AGENCY: Weld County OEM	**EXPECTED COST:** Staff Time, Printing $2,000.00
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Grants and County Budget

PROGRESS MILESTONES: Weld County OEM, after discussion with the Weld County Sheriff's Office, elected not to pursue this mitigation action. Weld County is not an EFF county, and SB09-001 requires EFF counties to have a CWPP. For wildfire planning purposes, Weld County works with our fire departments, fire protection districts and the Colorado Division of Fire Safety to prepare an annual operating plan (AOP) for wildfire each year.

WELD COUNTY: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Weld County	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the County will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION:	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: Weld County is not participating in the CRS program. However, we are a member of NFIP and Weld County adopted the model ordinance in January of 2014, as required by the State of Colorado. The County enforces floodplain regulations as outlined in Article XI of Chapter 23 of the Weld County Code, in accordance with FEMA's requirements.	

Weld County: Detailed Floodplain Mapping	
PRIORITY: High	**HAZARDS ADDRESSED:** Flood
LOCATION: Weld County	**GOALS ADDRESSED: 2**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Completed	
ISSUE: Many of the floodplains located in Weld County are mapped as Zone A. To better protect residents, it would be beneficial to have the mapping update to include BFEs and floodways. There are also many floodplains that are not accurately mapped or that have known issues with their accuracy. The FIRMs don't always show what the floodplains are when compared with HAZUS. The County Public Works has some of the unfinished floodplain mapping for flashflood prone small drainages. Most floodplains in Weld County are in the A zone with no BFEs determined and several floodplains are only partially mapped. The partially mapped floodplains include Crow Creek, Lone Tree Creek, Owl Creek, Coalbank Creek, and various tributaries of Crow Creek. Many of the floodplains are mapped at the lower end and the upper end with no mapping in between. As a result flood risk is unknown; there is no floodplain mapping to provide guidance for developers and others that build close to flashflood creeks. The floodplain mapping should be completed to	

connect the upper and lower stream reaches so that the appropriate building/development requirements can be enforced. Additionally, many of the Zone A floodplains could be mapped in more detail to provide a floodway and Base Flood Elevations. Those floodplains include the lower portion of Lone Tree Creek, Box Elder Creek, St. Vrain Creek, Big Thompson River, and the South Platte River. All of these floodplains are in areas that have experienced significant growth over the past several years. Because of the approximate nature of the floodplain mapping, the mapped floodplain is known to be at least partially incorrectly delineated. The floodplains should be mapped in more detail so that the appropriate building/development requirements can be enforced. While the risk to residents is not changed by more detailed floodplain mapping, future risk can be mitigated by providing information on safe places and methods to build. UPDATE: The County is moving forward with the required adoption of the DFIRM's, which will go into effect in January 2016. During the DFIRM process, the County was successful in identifying several areas in the County that took people out of the floodplain. Conversely, however, the DFIRM's also brought some folks into the floodplain. The DFIRM's will become the new effective rate maps in 2016 and will be sufficient. With that said, the County does not have any interest in spending tax dollars to identify areas of the County that are not mapped or have approximate A zones. Any changes to the floodplain will be done by private property owners, developers or state and federal agencies. No further action is required for the 2016 HMP with respect to floodplain mapping
ACTION: The County will be able to use floodplain regulations and building codes to ensure that people and property are relatively safe from flooding.

LEAD AGENCY: Weld County Planning Department/ Flood Plain Management.	**EXPECTED COST:** Unknown. The cost is likely to be high.
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** CWCB grants, FEMA grants. Will likely need cooperation/funding with other municipalities.
PROGRESS MILESTONES:	

Weld County: ALERT Flood warning System	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flood
LOCATION: Weld County	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Unknown	
ISSUE: ALERT systems provide up to the minute weather data, including precipitation and stream flow/water level data. An ALERT system can provide data much more timely that the NWS. Known flood prone areas can be targeted so that real-time notification can happen. There is the potential to piggyback on existing systems that are already located along the Front Range. The implementation of a County wide real-time early warning system would reduce the potential for loss of life due to flooding. The warning system should consist of real-time ALERT stream gages, rain gages, and weather stations. The data can be used by the NWS to help provide more accurate and timely weather forecasts and warnings. Many other cities, counties, and jurisdictions along the	

Front Range have implemented the ALERT warning system and have successfully used the real-time data to provide warnings to affected residents in a timely manner.	
RECOMMENDATION: The County can provide more accurate information and give citizen's greater warning that an event may be happening. Greater warning ensures greater life safety.	
ACTION: ALERT Flood warning System	
LEAD AGENCY: Weld County Public Works/OEM	**EXPECTED COST:** $200,000.00
SUPPORT AGENCIES: Colorado Division of Water Resource and USGS	**POTENTIAL FUNDING SOURCES:** CWCB and FEMA grants, affected municipalities that partner with Weld County.
PROGRESS MILESTONES:	

Weld County: Public Warning System	
PRIORITY: High	**HAZARDS ADDRESSED: Severe Weather**
LOCATION: Weld County	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 10.12.15	**OBJECTIVES ADDRESSED: A**
TARGET COMPLETION DATE: 10.31.2018	
ISSUE: Weld County needs to add additional warning sirens to the warning system in Weld County. Currently there are 11 communities that have sirens in Weld County. The focus of this action is to add sirens to unincorporated subdivisions in Weld County	
RECOMMENDATION: Weld County has a high number of tornado warnings each year, Weld County in coordination local communities obtained a grant for sirens in each community after the tornado in 2008. Some of the areas not covered are the unincorporated subdivisions in the county, adding sirens to Briggsdale, Roggan, Galeton, Aristocrat Acers and Carr will help with early warning for citizens that live in these areas. Weld County Communication has the ability to launch all sirens in a warned area and these additional sirens would be included in our current network.	
ACTION: Public Warning System	
LEAD AGENCY: Weld County Emergency Management	**EXPECTED COST:** $25,000.00 for each siren system
SUPPORT AGENCIES: Buildings and Grounds	**POTENTIAL FUNDING SOURCES:** Grant funding
PROGRESS MILESTONES:	

Weld County: Storm Ready	
PRIORITY: High	**HAZARDS ADDRESSED: Severe Storms**
LOCATION: Weld County-wide	**GOALS ADDRESSED: 2,3,**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: A, B**
TARGET COMPLETION DATE: Two classes held in the spring March-May, annually	
ISSUE: One of the goals for the Northeast region is to have all 11 counties participate in Storm Ready. Weld County has been a participant in the past, and the intent is to maintain Storm Ready status.	

RECOMMENDATION: As a Storm Ready County, we hold several Weather Spotter Classes. These classes are taught by NOAA and participants can become a spotter and report information to NOAA or the WCRCC.	
ACTION: Apply and maintain 'Storm Ready" status with NOAA.	
LEAD AGENCY: Weld County OEM in conjunction with appropriate County/Town Departments with municipalities.	**EXPECTED COST:** Staff Time and funds for meeting for drinks and goodies. This will come from the OEM budget
SUPPORT AGENCIES: Sheriff's Office, Weld County Regional Communications, Public Works.	**POTENTIAL FUNDING SOURCES:** OEM Budget and local business sponsor's
PROGRESS MILESTONES:	

Weld County: Improve Dam Safety	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Dam Failure/Flooding
LOCATION: Weld County	**GOALS ADDRESSED: 2, 4**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: B, D**
TARGET COMPLETION DATE: Annual updates and reviews	
ISSUE: Weld County has 28 dams, 6 are class 1 Hazard. Several other dams in Boulder and Larimer counties are class 1 and have a direct effect on planning for Weld County.	
RECOMMENDATION: Continue to maintain emergency response plans for the dams in Weld County, Work with the Division of Water Resource to update all documentation and coordinate with Dam owners for planning and preparedness. Participate with the Division of Water Resource and the Bureau of Reclamation on Dan Safety Exercises and planning.	
ACTION: Improve Dam Safety	
LEAD AGENCY: Weld County OEM, Coordinated with the Division of Water Resource	**EXPECTED COST:** Staff Time
SUPPORT AGENCIES: Planning Department / Flood Plain Manager	**POTENTIAL FUNDING SOURCES:** OEM Budget
PROGRESS MILESTONES:	

6.4 2016 Hazard Mitigation Plan Action Report

The final, and arguably the most important step in updating the Mitigation Strategy was the creation of new Mitigation Actions. In preparing their Mitigation Actions, the County and each participating jurisdiction considered the planning goals and their individual hazard risks, priorities, and capabilities to mitigate identified hazards. The actions below represent the key outcome of the mitigation planning process.

As detailed above, members of the HMPC referred to STAPLEE to assist with the prioritization of their actions. All actions are tied to specific goals and objectives to ensure alignment with the Plan's overall mitigation strategy. The following Mitigation Action Guides describe the newly identified mitigation actions for Weld County. The 2016 actions for each of the participating jurisdictions are included in the community profiles.

Weld County: County Resiliency Study	
PRIORITY: Medium	**HAZARDS ADDRESSED: Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat**
LOCATION: County Wide	**GOALS ADDRESSED: 3, 1, 2**
RECOMMENDATION DATE: 10/13/2015	**OBJECTIVES ADDRESSED: A, D**
TARGET COMPLETION DATE: 10/31/2020	
ISSUE: Traditional preparedness education has not been measured, and as a result, we don't have a good understanding of their effectiveness. Weld County wants to better understand the vulnerability and capability of the people in our communities, and work toward building resilience to disaster, with a "whole community" approach to preparedness outreach and education.	
RECOMMENDATION: Weld County would like to pursue a resiliency study over the next three to four years. The goal would be to better understand each community's resilience (social vulnerability, capabilities and social capital) and then build upon the existing preparedness education program to target the areas that will make communities more resilient. The program would include a tool for measuring results annually, and evaluating the effectiveness of preparedness outreach.	
ACTION: Conduct a resiliency study	
LEAD AGENCY: Weld County OEM	**EXPECTED COST:** OEM staff time, contractor costs $100,000.
SUPPORT AGENCIES: Community Emergency Managers and First Responder Agencies	**POTENTIAL FUNDING SOURCES:** CDBG, HMGP grants; private grant or Weld County government special project funding (if available).
PROGRESS MILESTONES:	

Weld County: Load-limited Bridge Replacement	
PRIORITY: High	**HAZARDS ADDRESSED: Flooding**
LOCATION: Six locations	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 10.12.2015	**OBJECTIVES ADDRESSED: E, D**
TARGET COMPLETION DATE: 10.12.2018	
ISSUE: Weld County has six load-limited bridges, four of which are rated as "structurally deficient." The bridges were constructed between 1957 and 1978. There is a potential danger to motorists	

crossing the bridges, especially for trucks over the posted weight limits. These bridges are also more likely to fail in storm events, which would lead to road closures.	
RECOMMENDATION: Weld County Public Works will replace the bridges as funding becomes available.	
ACTION: Replace all six bridges.	
LEAD AGENCY: Weld County Public Works	**EXPECTED COST:** Each bridge costs approximately $400,000 to replace, plus staff time, if design is done in-house. CDOT grants typically cover 80% of the construction cost.
SUPPORT AGENCIES: None	**POTENTIAL FUNDING SOURCES:** annual budget, FHWA/ CDOT grant funding
PROGRESS MILESTONES: Two of the bridges are currently contracted for replacement. Another will be replaced by Public Works staff early in 2016. Below is an image of Bridge 26-25A	

Weld County: County Road 49 Interchanges	
PRIORITY: Medium	**HAZARDS ADDRESSED: Severe Weather, Hazmat**
LOCATION: Intersections of 49 and 22, 30, 54	**GOALS ADDRESSED: 2, 4**
RECOMMENDATION DATE: 10.12.2015	**OBJECTIVES ADDRESSED: D, E**
TARGET COMPLETION DATE: 10.12.2025	
ISSUE: In the event of an evacuation event, state highways will be congested to the point of stand-still. Once widening of County Road 49 is completed at the end of 2017, it will function as a north-south alternative to I-25 and US 85 and draw development to the area, but the road may not be able to handle the influx of traffic during such an evacuation event. To keep traffic on 49 flowing, no new traffic signals are planned at intersections. The County is exploring constructing grade-separated interchanges at major intersections.	

RECOMMENDATION: Since constructing interchanges is a long-term project, the County should consider obtaining cost estimates and traffic studies, and incrementally obtain necessary right-of-way and designs.	
ACTION: Improvements include constructing grade-separated interchanges.	
LEAD AGENCY: Weld County Public Works	**EXPECTED COST:** Costs are unknown at this time.
SUPPORT AGENCIES: CDOT	**POTENTIAL FUNDING SOURCES:** annual budget, FHWA/ CDOT
PROGRESS MILESTONES: None at this time.	

Weld County: Drainage Improvements Near Parkway	
PRIORITY: High	**HAZARDS ADDRESSED: Flooding**
LOCATION: Weld County Parkway	**GOALS ADDRESSED: 1,2,4**
RECOMMENDATION DATE: 10.12.2015	**OBJECTIVES ADDRESSED: D, E**
TARGET COMPLETION DATE: 10.12.2018	
ISSUE: The new Weld County Parkway crosses through an area hit hard by the 2013 flood at the confluence of the South Platte and Cache la Poudre Rivers. The County is hiring a consultant to help study the drainage in the area and produce a project list for improvements that would help protect people and property in the area from future floods and ensure the road stays open to travel.	
RECOMMENDATION: Once the study is complete, it should be implemented as funding becomes available.	
ACTION: Exact actions required are unknown at this time but will likely entail purchasing land and constructing drainageways and detention ponds. Designs will need to be completed beyond the conceptual designs that will be provided in the study.	
LEAD AGENCY: Weld County Public Works	**EXPECTED COST:** Implementation costs are unknown at this time.
SUPPORT AGENCIES: US Army Corps of Engineers	**POTENTIAL FUNDING SOURCES:** annual budget, possible grant funding
PROGRESS MILESTONES: The study is expected to be completed in June, 2016.	

Parkway Bridge over Cache la Poudre River

Weld County: Railroad Crossing Improvements	
PRIORITY: Medium	**HAZARDS ADDRESSED: Severe Weather, Hazmat**
LOCATION: Numerous locations	**GOALS ADDRESSED: 2, 4**
RECOMMENDATION DATE: 10.12.2015	**OBJECTIVES ADDRESSED: D, E**
TARGET COMPLETION DATE: 10.12.2018	
ISSUE: In the case of an accident involving a train, the train could block railroad crossings on county roads for an extended period of time, blocking evacuation routes and emergency response vehicles. Many crossings have only a stop sign at the crossing. Many crossings are close to highway/county road intersections where traffic stopped at the intersection often stops on the railroad tracks.	
RECOMMENDATION: Weld County Public Works will prioritize necessary improvements at railroad crossings, with the help of support agencies. The plan will be reviewed by Public Works and the BOCC to identify projects supported by annual budgets and projects eligible for grant funding. The County should consider adopting a recommended minimum distance between grade-separated railroad crossings and work to meet that goal.	
ACTION: Improvements include constructing grade-separated railroad crossings, crossing gates, bells, and signals, road improvements to access the next nearest crossing, and installing additional signage at crossings to warn motorists of the dangers of trains.	
LEAD AGENCY: Weld County Public Works	**EXPECTED COST:** Each grade-separated crossing would likely cost at least $10 million. Lower cost projects may include crossing gates, bells, and signals, which may require extension of electricity to the crossing, road improvements, and additional signage.
SUPPORT AGENCIES: CDOT, PUC, railroads, OEM, Sheriff's Office and other emergency response agencies near railroads	**POTENTIAL FUNDING SOURCES:** annual budget, FHWA/ CDOT, railroads

PROGRESS MILESTONES: The County has begun discussing options for some crossings of concern along the Union Pacific line that runs parallel to US Highway 85 with CDOT and will begin discussions with UP soon. Crossings of other railroad lines need to be examined as well.

Union Pacific Railroad crossing on Weld County Road 86 at US 85

Weld County: River Channel Clearing	
PRIORITY: High	**HAZARDS ADDRESSED: Flooding**
LOCATION: Numerous bridge locations	**GOALS ADDRESSED: 2, 4**
RECOMMENDATION DATE: 10.12.2015	**OBJECTIVES ADDRESSED: D, E**
TARGET COMPLETION DATE: 10.12.2018	
ISSUE: Sand, rocks, and debris naturally build up on river banks near bridges, but can restrict the flow and cause the river to overtop the bridge, road, and surrounding property during storms. To prevent this, the river banks should be cleared upstream and downstream of bridges for approximately 500 feet.	
RECOMMENDATION: Weld County Public Works will put together a list of bridges where the buildup is a concern and prioritize the list. The plan will be reviewed by Public Works and the BOCC to identify projects supported by annual budgets and projects eligible for grant funding.	
ACTION: Improvements include removal of sand and debris where necessary. River channels would not be affected.	
LEAD AGENCY: Weld County Public Works	**EXPECTED COST:** Each project is approximately $250,000 and there are approximately 15 projects.
SUPPORT AGENCIES: Permits are required through the US Army Corps of Engineers.	**POTENTIAL FUNDING SOURCES:** annual budget, DOLA EIAF grants, HMGP

PROGRESS MILESTONES: None at this time.

7 Plan Implementation and Maintenance

Having a plan for monitoring, evaluating, and updating Weld County's mitigation strategy is critical to maintaining its value and success. Ensuring effective implementation of mitigation activities paves the way for continued momentum in the planning process and gives direction for the future. This section explains who will be responsible for maintenance activities and what those responsibilities entail. It also provides a methodology and schedule of maintenance activities including a description of how the public will be involved on a continual basis.

This Chapter discusses how the Weld County Multi-Jurisdictional Hazard Mitigation Strategy will be implemented and how the overall Hazard Mitigation Plan will be evaluated and enhanced over time. This section also discusses how the public and participating stakeholders will continue to be involved in the hazard mitigation planning process. This chapter consists of the following subsections:

- IMPLEMENTATION ACTION PLAN
- PLAN INTEGRATION, EXISTING CAPABILITIES AND RESOURCES
- FUTURE PLAN EVALUATION, MONITORING, UPDATING

7.1 Implementation Action Plan

The 2016 planning process was overseen by the Weld County Office of Emergency Management, in coordination with other County departments.

The Weld County Board of Commissioners has authorized the submission of this Plan to both the Colorado Division of Homeland Security and Emergency Management (DHSEM) and the Federal Emergency Management Agency (FEMA) for their respective reviews and subsequent approvals. Upon state and federal approval, the Weld County Board of Commissioners will act to formally adopt this Plan.

7.1.1 Plan Integration, Existing Capabilities and Resources

Weld County maintains a comprehensive set of emergency management plans, developed in a multi-disciplinary environment where county departments, jurisdictional agencies and representatives, non-profit and community organizations, and the private sector are included in the planning process. This set of plans encompass all phases of emergency management and the work done on the 2016 Weld County Hazard Mitigation Plan will be integrated into these efforts moving forward.

The 2016 Hazard Mitigation Plan (HMP), and especially the hazard and risk assessment within it, was used to inform the Local Emergency Operations Plan (LEOP) and the Recovery Plan (RP). For example, the highest risk hazards and highest priority actions identified in the HMP influence coordinated planning for response in the LEOP. In addition, the social vulnerability analysis from the HMP will directly impact plans for recovery in the RP in terms of resource prioritization and public outreach strategies.

Additionally, when the LEOP and RP are activated, there will be an opportunity to identify mitigation actions and capability gaps that may be addressed in the HMP. By integrating the HMP with the County's comprehensive set of emergency management plans, a strong foundation for resilience has been set through smart emergency preparedness, mitigation, response and recovery, before, during and after an emergency or disaster event.

The capability assessment examines the ability of Weld County to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the County are identified here as a means for evaluating and maintaining effective and appropriate management of the town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines Weld County's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager	X		
Floodplain Administrator	X		
Community Planner	X		
GIS Specialist	X		
Grant Writer			X

In Weld County, grant writing is left to each department. If subject matter experts are needed then the Department Head coordinates that issue.

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the County's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	N
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	Y
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	In process
Participates in the NFIP	Y

The Weld County COOP was currently under review by the BOCC during the development of the 2016 Hazard Mitigation Plan. Adoption of the COOP is expected before the end of 2015. Additionally, the County's Long Term Recovery plan is under development (as of October 2015).

7.1.2 Plan Maintenance and Implementation

Weld County has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the County will continue to encourage public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Weld County	*"Weld County will actively maintain the hazard mitigation plan by coordinating a review of all mitigation actions annually, and will determine needed updates at the January Multi-Agency Coordinating Group meeting each year."* *"Weld County OEM staff will meet with participating jurisdictions that are not able to attend the meeting either in person or by phone to facilitate a complete update. Weld County OEM will also present the plan to the Weld County Commissioners annually for approval."* *At a minimum, annual mitigation-specific public outreach and engagement activities (e.g. town hall meetings, information booths at community events, social media campaigns, etc.) will be spearheaded by the County to facilitate continued public participation in the plan maintenance process over time.*

Weld County will actively maintain the hazard mitigation plan by coordinating an annual review of all mitigation actions included in the 2016 Mitigation Strategy. The County will facilitate the mitigation action check-in process with each participating community at the January Multi-Agency Coordinating Group meeting each year. Weld County OEM staff will meet with participating jurisdictions that are not able to attend the meeting either in person or by phone to facilitate a complete update. Weld County OEM will also present the plan to the Weld County Commissioners annually for approval.

Each participating jurisdiction has identified a process through which it will evaluate, maintain, and update their local mitigation actions. Details about their processes are included in the Community Profiles section of the plan.

The 2016 Plan will be updated by the FEMA approved five year anniversary date, as required by the Disaster Mitigation Act of 2000, or following a disaster event. Future plan updates will account for any new hazard vulnerabilities, special circumstances, or new information that becomes available. During the five-year review process, the following questions will be considered as criteria for assessing the effectiveness of the Weld County Hazard Mitigation Plan.

- Has the nature or magnitude of hazards affecting the County changed?
- Are there new hazards that have the potential to impact the County?
- Do the identified goals and actions address current and expected conditions?
- Have mitigation actions been implemented or completed?
- Has the implementation of identified mitigation actions resulted in expected outcomes?
- Are current resources adequate to implement the plan?
- Should additional local resources be committed to address identified hazards?

Issues that arise during monitoring and evaluation which require changes to the local hazard, risk and vulnerability summary, mitigation strategy, and other components of the plan will be incorporated during future updates.

7.1.3 Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The table below lists the specific integration strategies identified by Weld County based on the mitigation actions listed in this plan.

Table 66. Processes for Integrating Hazard Mitigation into Other Planning Mechanisms

Jurisdiction	Strategy
Weld County	*"Weld County maintains a comprehensive set of emergency management plans, developed in a multi-disciplinary environment where county departments, jurisdictional agencies and representatives, non-profit and community organizations, and the private sector are included in the planning process. This set of plans encompass all phases of emergency management.* *The Hazard Mitigation Plan (HMP), and especially the hazard and risk assessment within it, informs the Local Emergency Operations Plan (LEOP) and the Recovery Plan (RP, currently in draft form). For example, the highest risk hazards and highest priority actions identified in the HMP influence coordinated planning for response in the LEOP. In addition, the social vulnerability analysis in the HMP will directly impact plans for recovery in the RP.* *Likewise, When the LEOP and RP are activated, there is an opportunity to identify mitigation actions and capability gaps that may be addressed in the HMP. Together, the comprehensive set of emergency management plans provide Weld County's foundation for emergency preparedness, mitigation, response and recovery, before, during and after an emergency or disaster event."*

Appendix A – Meeting Agendas & Sign-In Sheets

Michael Baker INTERNATIONAL

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EMERGENCY MANAGEMENT

Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Kickoff Meeting

Where and When?

Weld County Administration, 1150 O Street, Greeley on May 19, 2015
- **OR** -
Weld County Southwest Services Building, 4209 WCR 24 ½ on May 21, 2015

Both meetings are from 6:00 – 7:30 p.m.

Who should attend?
Official representatives from all jurisdictions participating in the Hazard Mitigation Plan and representatives from stakeholder groups. FEMA requires participation for continuing eligibility for disaster and mitigation funding.

Agenda:

1. Welcome and Introductions
2. Hazard Mitigation Planning Overview
3. Jurisdictional Participation Requirements
4. Planning Process / Project Schedule
5. Hazards to Profile
6. 5-year Plan Review Exercise (will collect input at meeting and through a follow-up online survey)
7. Briefly Review Current Mitigation Strategy & Actions

Post-Meeting Action Items:

1. Participating jurisdictions to submit Participation Letter (if not already done).
2. Participating jurisdictions to review the existing Plan's mitigation strategy and prepare to provide any comments and changes during the next planning team meeting.
3. Participating jurisdictions to review the existing Plan's mitigation actions (projects) specific to that jurisdiction and prepare to provide status reports during the next planning team meeting.

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EMERGENCY MANAGEMENT

Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Kickoff Meeting Sign-In Sheet

5-19-15

Name	Organization	Email or Phone
Seth Lybecker	Town of Milliken	Slybecker@millikenco.gov 970-660-5258
CARL HARVEY	LA SALLE	charvey@lasalletown.com 970-284-6931
PETE MORGAN	CITY of GREELEY	Pete.morgan@greeleygov.com
JOHN MICHAELS	WINDSOR	686-7433
Stacy Davis	Firestone St. Vrain Sch.	720. 339. 1476
ANDREW GRENINGER	WCDPHE	304 6470 x2381
Steve Jackson	NUNN	Steve_j80917@Yahoo.com
Michelle Meonard	Co Air National Guard	Michelle.leonard.6@ang.af.mil
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EMERGENCY MANAGEMENT

Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Kickoff Meeting Sign-In Sheet

5-19-15

Name	Organization	Email or Phone
MIKE GARNER	BAKER	MGARNER@MBAKERINTL.COM
Ray Rudisill	Weld OEM	rrudisill@weldgov.com
Kelly Unger	Windsor	Kunger@windsorgov.com
Diana Aungst	Weld Planning CFM	daungst@weldgov.com
Randy Miller	Eaton School Dist	rmiller@eaton.k12.co.us
Willie Williams	Weld Cnty EOC ARES	wiwillie36@gmail.com
Jerry Williams	" dispatcher/Sec	jawillie36@gmail.com

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EMERGENCY MANAGEMENT

Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Kickoff Meeting Sign-In Sheet 5/21/2015

Name	Organization	Email or Phone
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Mike Garner	Baker	mgarner@mbakerintl.com
GARY BARBOUR	TOWN OF FREDERICK	gbarbour@frederickco.gov
Don Rangel	Weld RE1 - School District	rangeld@weld-re1.k12.co.us
David Burns	City of Evans/ ~~Firefighter/Fire Marshal~~	dburns@evanscolorado.gov
BRIAN SKAGGS	CITY OF DACONO	MSKAGGS@CITYOFDACONO.COM
Ray Rudisill	Weld County OEM	rrudisill@weldgov.com
DAN HAMSMITH	TOWN OF HUDSON	dhamsmith@hudsoncolorado.org

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Kickoff Meeting Sign-In Sheet 5/21/2015

Name	Organization	Email or Phone
Bryan Borders	Firestone P.D.	303-901-6868
Carlos Ramirez	Lochbuie P.D	303-[illegible]-2224
Dave Puccetti	IFPD FREDERICK-FIRESTONE	303-833-2742
Dan Dean	Town of Mead	ddean@townofmead.org 9705354477
Stephen Hurlbut	Brighton fire/city	shurlbut@brightonco.gov 3036552316

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Mitigation Strategy and Risk Assessment Review

Where and When?

Weld County Administration (Emergency Operations Center), 1150 O Street, Greeley

Meetings is from 3:00 – 5:00 p.m. on August 26, 2015

Who should attend?
Official representatives from all jurisdictions and districts participating in the Hazard Mitigation Plan and representatives from other organizations and stakeholder groups. FEMA requires participation for continuing eligibility for disaster and mitigation funding.

Agenda:

1. Welcome and Introductions
2. Jurisdictional Participation Requirements
3. Review of 5-Year Plan Review & Risk Factor survey results
4. Review of on-going public survey results
5. Presentation of Risk Assessment Results & Webmap
6. Define the updated Mitigation Strategy's Goals & Objectives
7. Review any status updates for 2009 Mitigation Actions
8. Planning Process / Project Schedule
9. Jurisdictional meetings/outreach tracking
10. Bi-county jurisdiction clarification

Post-Meeting Action Items:

1. Participating jurisdictions to submit Participation Letter (if not already done).
2. Participating jurisdictions to review the 2009 Plan's mitigation actions/projects and provide progress updates.
3. Participating jurisdictions to begin drafting new Mitigation Action Guides for 2016 Plan.

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Meeting #2 Sign-In Sheet

Name	Organization	Email or Phone
Merrie Leach	Weld OEM	mleache weldgov.com
David Burns	Evans Fire	dburns@evansco.gov
DAN HANSMITH	Town of HUDSON	dhansmith@hudsoncolorado.org
NORMAN BROWN	Brighton EOC	Norman.Brown21@Yahoo.com

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Meeting #2 Sign-In Sheet

Name	Organization	Email or Phone
Cary Lambert	Town of Raymer	970-768-3514
GARY BARBOUR	TOWN OF FREDERICK	gbarbour@frederickco.gov 720-382-5701
Melissa Mata	Town of Mead	mmata@townofmead.org
Kelly Unger	Windsor	Kunger@windsorgov.com
John Michaels	Windsor	jmichaels@windsorgov.com
Roy Rudisill	Weld OEM	rrudisill@weldgov.com
David Burns	City of Evans	dburns@evanscolorado.gov
Debra Chumley	Town of Keenesburg	Keenesburgclerk@rtebb.net
Stephanie Hackett	City of Brighton/OEM Brighton Fire	shackett@brightonco.gov

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Meeting #2 Sign-In Sheet

Name	Organization	Email or Phone
Fred Dieth	Town of Erie	FDieth@erieco.gov
Michelle Martin	Weld County	mmartin@co.weld.co.us
Seth Hyberger	Town of Milliken	shyberger@millikenco.gov

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
3rd and Final HMPC Workshops

Where and When?

Weld County Administration (Fort Lupton Training Room), 1150 O Street, Greeley on October 7th, 2015
- **OR** -
Fort Lupton Fire Training Center, 2999 9th Street, Fort Lupton, CO 80621 on October 8th, 2015

Both meetings are from 3:00 – 5:00 p.m.

Who should attend?
Official representatives from **all jurisdictions formally adopting the Hazard Mitigation Plan** and representatives from stakeholder groups. FEMA requires participation for continuing eligibility for disaster and mitigation funding.

Agenda:
1. Welcome and Introductions
2. Jurisdictional Participation – Formal Adoptees
3. Planning Process / Project Schedule
4. HMPC Survey #3 Results – Plan Maintenance and Implementation
5. Mitigation Action Guide (MAG) Working Session
    a. 2004 & 2009 Action Reporting
    b. 2016 Action Finalization
    c. CRS Discussion
    d. Existing Community Plan Review
6. Action Prioritization Exercise

Post-Meeting Action Items:
1. Participating jurisdictions to submit Participation Letter (if not already done).
2. Participating jurisdictions to deliver final 2004 & 2009 MAGs for incorporation into the update 2016 Hazard Mitigation Plan
3. Participating jurisdictions to deliver final 2016 MAGs for incorporation into the update 2016 Hazard Mitigation Plan
4. Comments on Draft Plan which will be posted soon for public and HMPC review.

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Meeting #3 Sign-In Sheet 10/7/15

Name	Organization	Email or Phone
GARY BARBOUR	FREDERICK	gbarbour@frederickco.gov
DAVID GOTTSCHALK	KERSEY	dgottschalk@ci.kersey.co.us
CARL HARVEY	LA SALLE	charvey@lasalletown.com
Mary Heberlee	Pierce	mlheberlee@yahoo.com
Trey Thacker	Platteville	Tthacker@platteville.org
ANDREW GLENDENNING	WELD COUNTY DEPT OF PUBLIC HEALTH	AGLENDENNING@WELDGOV.COM
Cheryl Campbell	Garden City	gardencity@aol.com
Ray Rudisill	Weld County OEM	rrudisill@weldgov.com
Melissa Mata	mead	mmata@townofmead.org
Pete Morgan	Greeley	pete.morgan@greeleygov.com

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Meeting #3 Sign-In Sheet 10/7/15

Name	Organization	Email or Phone
JOHN MICHAELS	TOWN OF WINDSOR	970-686-7433 JMICHAELS@WINDSORGOV.COM

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Meeting #3 Sign-In Sheet 10/6/15

Name	Organization	Email or Phone
PATRICIA GAVELDA	DHSEM/MARS	970-749-8280 Patricia.Gavelda@state.co.us
Debra Chumley	Town of Keenesburg	303-732-4281 KeenesburgClerk@rtelob.net
Don Rangel	Weld RE-1 Dist.	rangeld@weld-re1.k12.co.us
Brian Scott	Firestone PD	bscott@Firestoneco.gov.
FRED DIETZ	TOWN OF ERIE	FDIETZ@ERIECO.GOV.
DAN HANSMITH	TOWN of HUDSON	3/536-9311
Rick Strong	Town of Ault	rstrong@townofault.org
DAVID HUDSON	HUDSON FIRE DEPT	303-536-0161
PHIL TERRANT	FORT LUPTON FIRE	303-857-4603
Dave Burns	City of Evans	dburns@evanscolorado.gov

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Meeting #3 Sign-In Sheet 10/8/15

Name	Organization	Email or Phone
Trudy Peterson	Town of Gilcrest	trudy@townofgilcrest.org
Ken Poncelow	Fort Lupton	kponcelow@fortlupton.org
Seth Lyberger	Town of Milliken	slyberger@milliken.co.
Dave Burns	Evans Fire Protection District	dburns@evanscolorado.gov

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Weld County 2016 Multi-Jurisdictional Hazard Mitigation Plan Update
Meeting #3 Sign-In Sheet 10/8/15

Name	Organization	Email or Phone
Dave Puccetti	Frederick-Firestone Fire Protection Dist	dpuccetti@FFFD.US
Brian Skaggs	Dacono P.D.	MSKAGGS@CITYOFDACONO.COM
Roy Rudisill	Weld County	rrudisill@weldgov.com

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Appendix B – Community Profiles

Community Profiles

The following Community Profiles were produced to provide additional, specific information that is unique to each participating jurisdiction included in this Hazard Mitigation Plan.

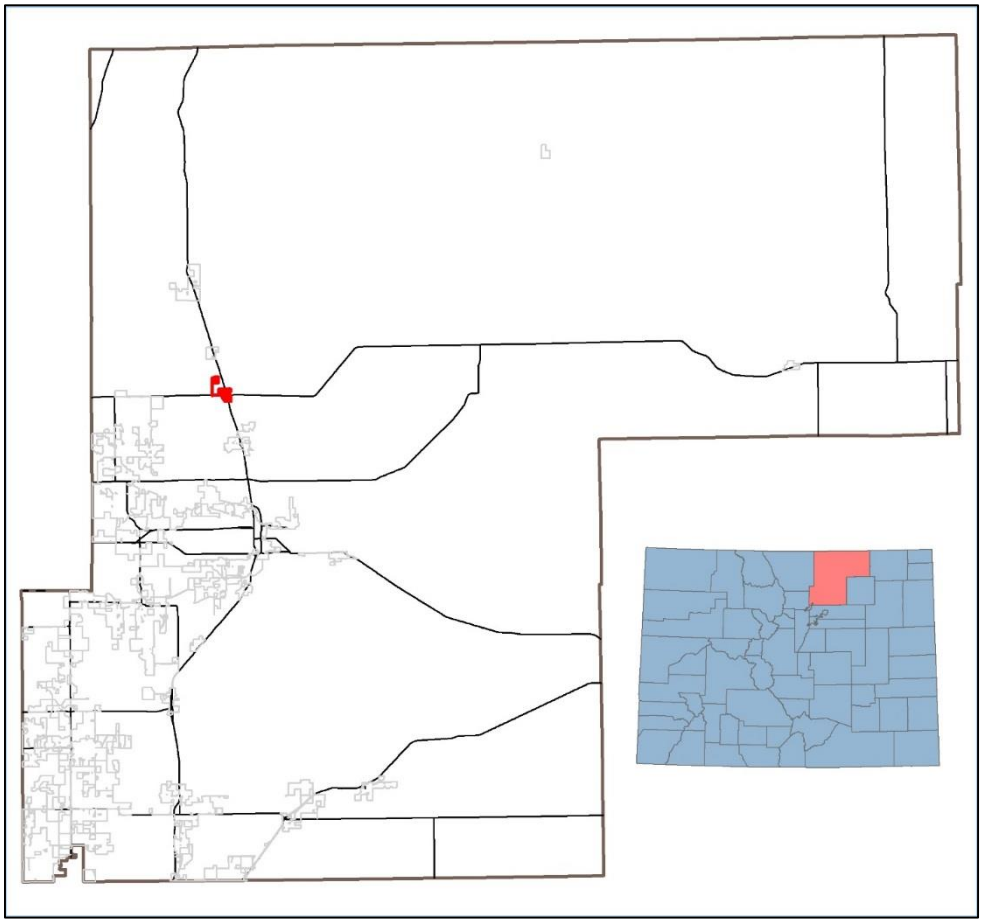
Town of Ault

"Ault will be a vibrant, safe, friendly, attractive small town with thriving businesses, well-tended neighborhoods, excellent parks, good schools and opportunities for everyone. It will be a model for social, economic and environmental sustainability."

– Town of Ault Comprehensive Plan

Community Profile

Ault is located on the intersection of Hwy 85 and Hwy 14, and is well-known for its antique shops, Fall Festival, and International Food Fest. It is also known as the "Gateway to the Pawnee Grasslands." Today, Ault is an important crossroads for transporting goods and services but is no longer heavily reliant on its agricultural roots. Instead, the town has developed a variety of businesses and services such as banking, insurance, retail, and the Highland School District headquarters amongst many others. In recent years, Ault has transformed into a bedroom community for residents working in Cheyenne, Fort Collins and Greeley, all of which are less than 45 minutes from town. Future regional growth will impact many facets of the community and present residents with the challenge of addressing the impacts of growth while preserving the unique attributes that make Ault special.



The table below summarizes key demographic and development related characteristics of the Town of Ault.

Town of Ault Statistics		
	Town of Ault	Colorado
Population, 2014	1,603	5,355,866
Population, % change April 1, 2010 to July 1, 2014	5.3%	6.5%
% Population under 5 years, 2010	7.3%	6.8%
% Population under 19 years, 2010	24.4%	27.1%
% Population 65 years and over, 2010	11.7%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	13.2%	16.8%
Homeownership Rate	64.6%	65.4%
Persons Per Household	2.63	2.53
Persons below poverty level, %, 2009-2013	15.2%	13.2%
Median Household Income, 2009- 2013	$48,654	$58,433

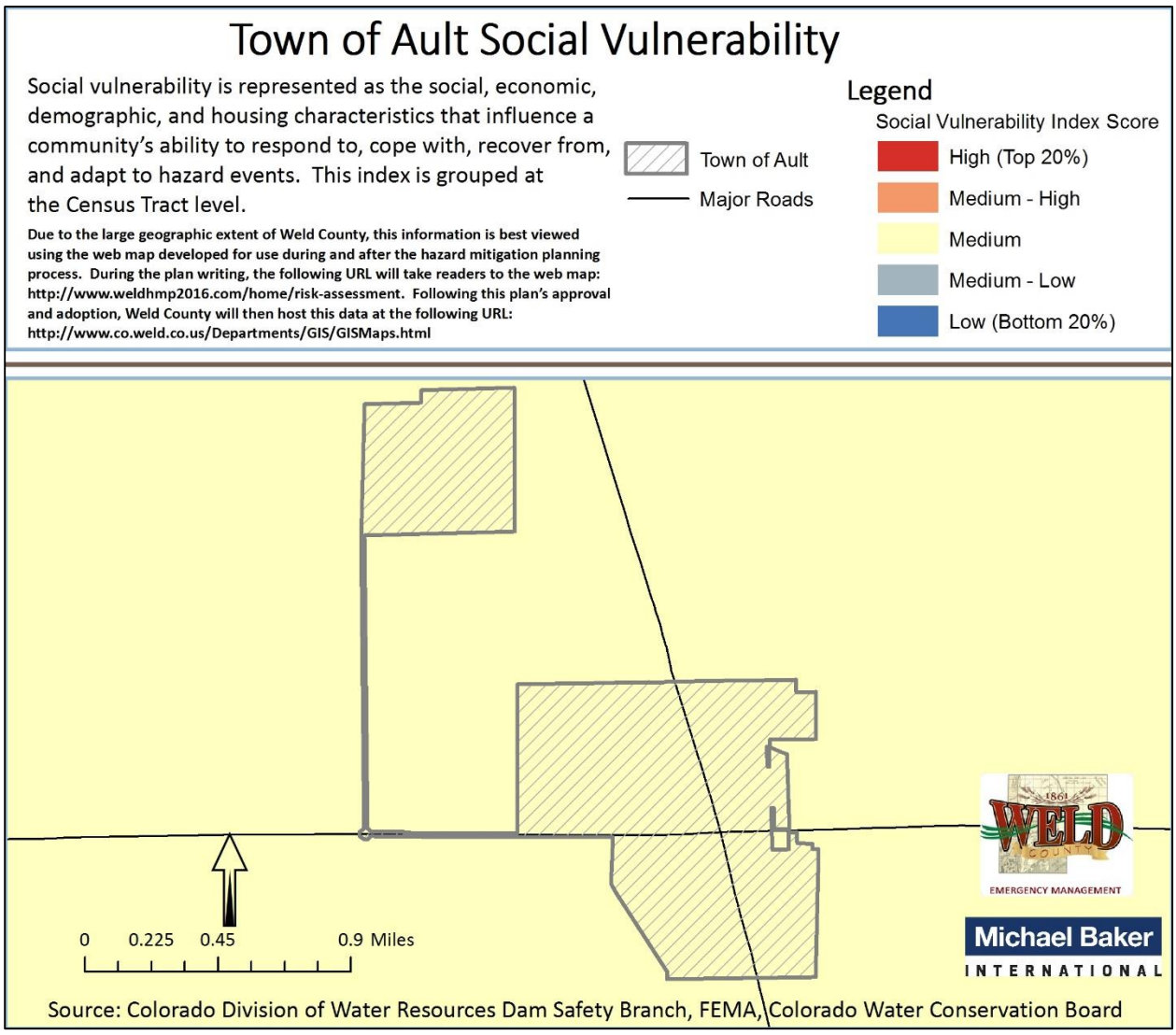
Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Severe Storm	0.9	0.6	0.8	0.2	0.1	2.600
HAZMAT	0.6	0.6	0.8	0.4	0.2	2.600
Straight-Line Winds & Tornadoes	0.6	0.6	0.8	0.3	0.2	2.500
Extreme Temperatures	0.9	0.3	0.6	0.1	0.4	2.300
Drought	0.6	0.3	0.4	0.1	0.4	1.800
Public Health Hazards	0.6	0.3	0.4	0.2	0.2	1.700
Prairie Fire	0.6	0.3	0.4	0.2	0.1	1.600
Land Subsidence	0.6	0.3	0.4	0.2	0.1	1.600
Flood	0.3	0.3	0.2	0.3	0.2	1.300
Earthquake	0.3	0.3	0.2	0.1	0.1	1.000
HIGH RISK (2.5 or higher): Severe Storm, HAZMAT, Straight-Line Winds and Tornadoes						
MODERATE RISK HAZARD (2.0 - 2.4): Extreme Temperatures						
Low Risk (1.9 or lower): Drought; Public Health Hazards, Prairie Fire; Land Subsidence; Flood; Earthquake						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Ault, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Ault.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Ault's social vulnerability map shows social vulnerability within the community.

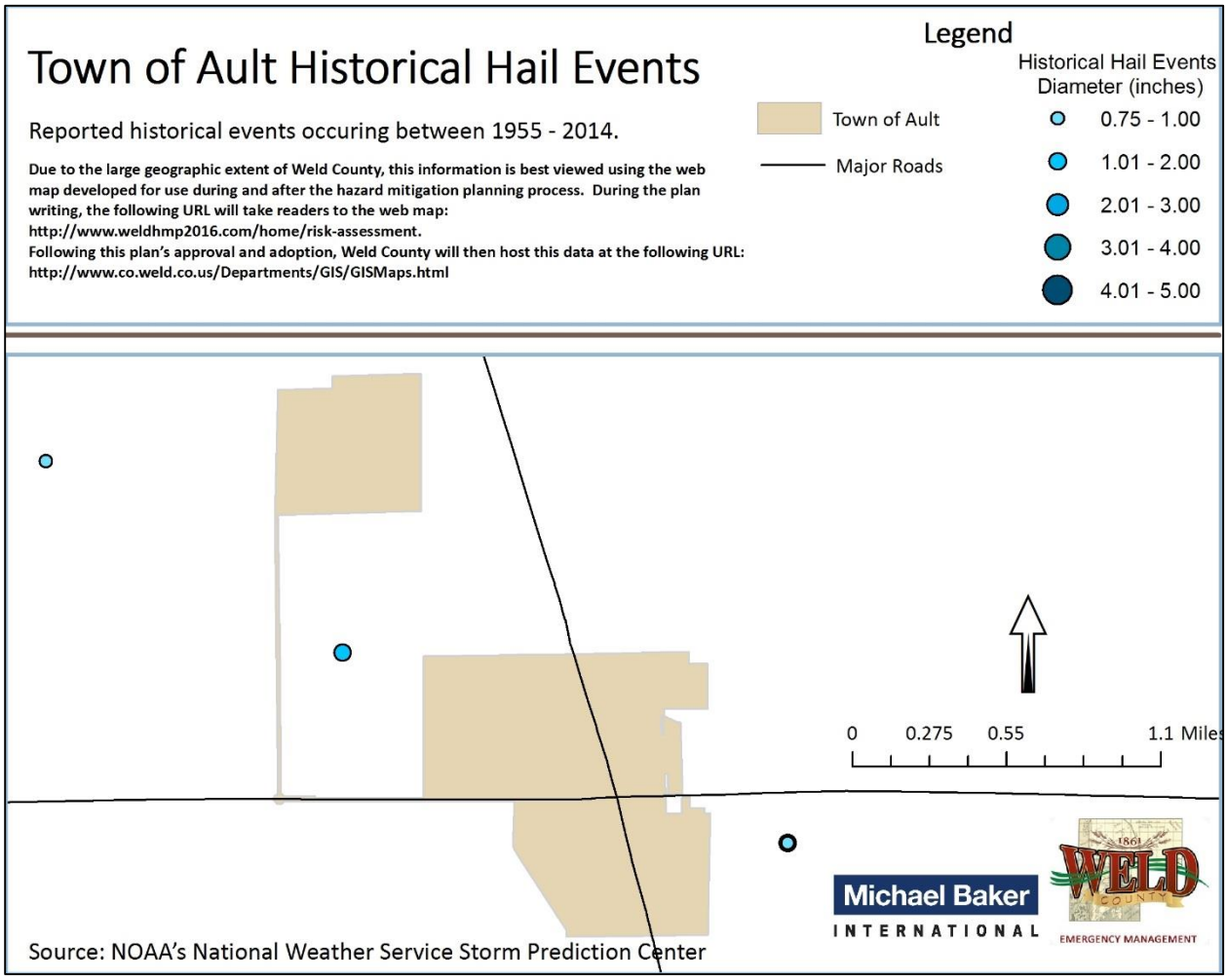


Ault is characterized by medium levels of social vulnerability throughout. A closer look at the individual social vulnerability indicators within the city will give local emergency managers, planners, and stakeholders an even clearer picture of which social vulnerability factors have the largest negative effect on the community and its resiliency over time.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the Town of Ault. There were no hail events recorded within the city limits; however, several hail events occurred less than one mile from the town limits. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the best available data, no injuries, deaths, property damage, or crop damage have occurred within the Town of Ault caused by Lightning. Although there is no historic data showing hazardous impacts on the town, there is a great potential for Lightning to occur at any given time.

Winter Storm

According to NOAA's Storm Events Database, the Town of Ault has experienced 54 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in

central WWeld County. There were no deaths, injuries or damage to crops reported for any of these storms. The Town of Ault is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the Town of Ault can be considered at risk from severe storms. This includes 1,603 people, or 100% of the town's population and all buildings and infrastructure within the town. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

Severe storms affect the entire planning area of the Town of Ault including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of Ault. It is likely that lightning and hail will also be experienced in the area due to such storms.

HAZMAT

Based on data supplied by the Pipeline and Hazardous Materials Safety Administration's (PHMSA) Incident Reports Database there have been 4 reported HAZMAT incidents within the Town of Ault between 1972 and 2015.

Inventory Exposed

US 85 runs through the Town of Ault and is a designated nuclear and hazardous materials transportation routes. All structures, natural resources, and people located within one mile of these transportation routes are exposed to the impacts of a potential HAZMAT event. Structures, people, and natural resources located outside of a one mile buffer of these routes are also at risk of exposure.

Assets and people that are located within one mile of an industrial or commercial fixed site are also at risk of exposure to the impacts of a HAZMAT release.

Potential Losses

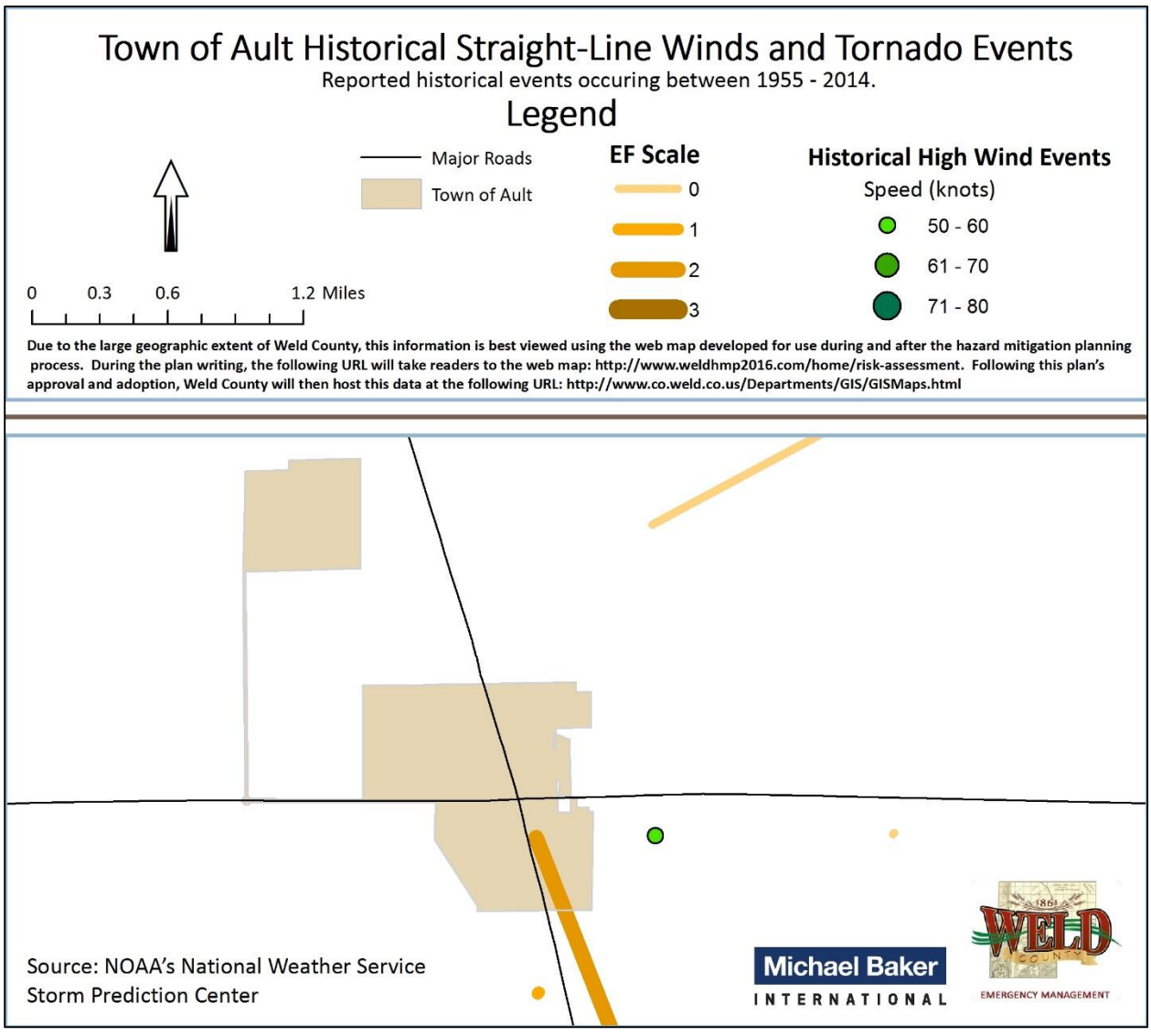
HAZMAT related events occur throughout Weld County every year. The intensity and magnitude of these incidents depend on weather conditions, the location of the event, the time of day, and the process by which the materials are released. *Was it raining when the event happened? Were the hazardous materials being transported by rail when they were released or were they at a fixed facility? Did the spill happen during rush hour traffic or in the middle of the night?* All of these considerations matter when determining the risk and potential damages associated with a HAZMAT incident.

HAZMAT events have the potential to threaten lives and disrupt business activity. Moreover, HAZMAT incidents can cause serious environmental contamination to air, ground, and water sources.

Straight-Line Winds and Tornadoes

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Ault due to tornadoes. There is record of 1 tornado reported within the town limits between on July 10, 1955. This incident caused $3,000 worth of property loss. There have been tornadoes reported very close to the borders of the town limits. Tornadoes will remain a highly likely occurrence for the Town of Ault.

According to the best available data, no injuries, deaths, property or crop damages have been recorded within the Town of Ault due to straight-line winds. Straight-line winds remain a highly likely occurrence for the Town of Ault.



Inventory Exposed

All assets located in the Town of Ault can be considered at risk from straight-line winds and tornadoes. This includes 1,603 people, or 100% of the town's population, and all buildings and structures within the town. Most structures, including the town's critical facilities, should be able to withstand and provide

adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $47,452,860. Potential losses could be substantial.

Capabilities Assessment

The capability assessment examines the ability of the Town of Ault to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager	X		
Floodplain Administrator			X
Community Planner			X
GIS Specialist			X
Grant Writer		X	

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	N
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y

A Continuity of Operations Plan (COOP)	IDK
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. Town of Ault has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of Ault has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Ault	*"We will review the plan on an annual basis with the Town Board."* *"We will engage the public through the Town website."*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Ault did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Ault based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Ault	"*We will update ordinances and zoning to reflect the mitigation priorities in this Plan. We will also integrate out local mitigation actions into Town capital improvements."*

Mitigation Action Guides

The following Mitigation Action Guide presents a status updates on Ault's mitigation actions included in the 2009 Plan.

Ault: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Ault	**GOALS ADDRESSED: 1,2,3,4**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP Ault will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to floodprone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continue our compliance with the NFIP requirements	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets and staff
PROGRESS MILESTONES: Ault is not participating in the CRS program. However, we are a member of the NFIP and adopted the model ordinance in August of 2014 as required by the State. Ault enforces the floodplain regulations in accordance with FEMA's requirements.	

The following Mitigation Action Guide presents Ault's new mitigation actions that were developed for the 2016 Plan.

Weld County (Including Ault): Storm Ready	
PRIORITY: High	**HAZARDS ADDRESSED: Severe Weather**
LOCATION: Weld County-wide	**GOALS ADDRESSED: 1,2,3**
RECOMMENDATION DATE: October 2015	**OBJECTIVES ADDRESSED: A,B,E**
TARGET COMPLETION DATE: Four classes in the spring March-May 2016	
ISSUE: One of the goals for the Northeast region is to have all 11 counties participate in Storm Ready. Weld County has been a participant in the past, and the intent is to maintain Storm Ready status	
RECOMMENDATION: As a Storm Ready County, we hold several Weather Spotter Classes. These classes are taught by NOAA and participants can become a spotter and report information to NOAA or the WCRCC.	
ACTION: Apply and maintain 'Storm Ready" status with NOAA.	

LEAD AGENCY: Weld County OEM in conjunction with appropriate County/Town Departments with municipalities participating in this plan (Ault, Dacono, Evans, Firestone, Fort Lupton, Frederick, Garden City, Gilcrest, Greeley, Grover, Hudson, Johnstown, Keenesburg, Kersey, LaSalle, Mead, Milliken, New Raymer, Pierce, Platteville, Severance, and Windsor), and school districts (Weld County RE-4, RE-6 and RE-8, Platte Valley Schools).	**EXPECTED COST:** Staff Time and funds for meeting for drinks and goodies. This will come from the OEM budget
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** OEM Budget and local business sponsor's

Letter of Intent to Participate

LETTER OF INTENT TO PARTICIPATE
Town of Ault

August 26, 2015

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Raymer is submitting this letter of intent to confirm that Town of Raymer has agreed to participate in the Weld County's] Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Town of Raymer agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

Town of Raymer understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Cary Lambert, commit the Town of Raymer to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

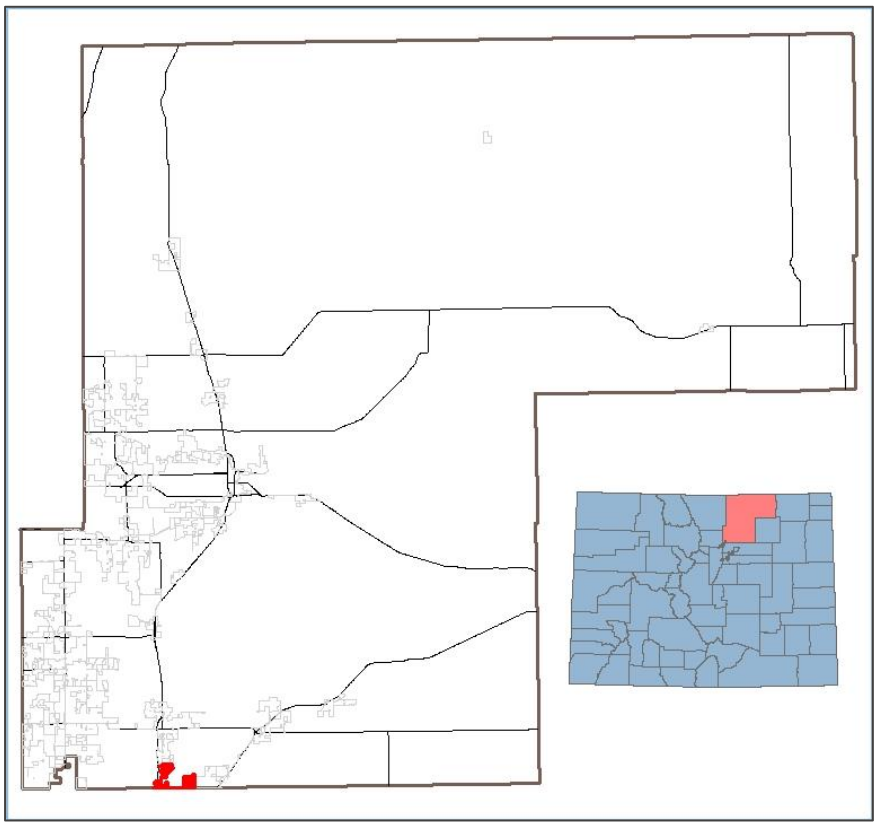
Executed this 26th day of August, 2015 _____

EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

City of Brighton

The City of Brighton is located 20 miles north of downtown Denver and has a land area of 19.98 square miles. Incorporated in 1887, the city sits along the banks of the South Platte River. The closing of Denver's Stapleton Airport in the early 1990s and the opening of the Denver International Airport led to many changes for the City of Brighton. Rapid and numerous annexations were necessary to accommodate the increase in population driven by increased accessibility. Once a small town with agricultural roots, the City of Brighton is now one of the fastest growing cities in Colorado.



The following are the overall goals that the City of Brighton established in their Comprehensive Plan: *Brighton 2020: A Vision for Managing Change and Promoting Excellence*. These goals are the foundation and guide to the public and private sector as decisions are made that "effect the future quality of life of existing and future residents and the natural and build environment in which they live, learn, work, and play." In the context of the Weld County Hazard Mitigation Plan and the City's local hazard mitigation program, the achievement of the following goals will depend largely upon the city's ability to successfully implement its hazard mitigation strategies and reduce risk to people and property from hazards.

- Preserve and enhance Brighton's quality of life
- Preserve and enhance Brighton's small town identity
- Promote and develop Brighton as a sustainable community
- Promote and protect Brighton's "Free-Standing" community
- Maintain Brighton's farming character
- Promote Brighton's local history
- Promote community focal points

- Become an "inclusive" community
- Encourage interaction among residents

The large majority of Brighton's long-term planning goals and visions depend on fostering a safe, hazard resilient community.

Community Profile

The table below summarizes key demographic and development related characteristics of the City of Brighton.

City of Brighton Statistics		
	City of Brighton	Colorado
Population, 2014	36,765	5,355,866
Population, % change April 1, 2010 to July 1, 2014	8.8%	6.5%
% Population under 5 years, 2010	8.6%	6.8%
% Population under 18 years, 2010	29.9%	24.4%
% Population 65 years and over, 2010	8.7%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	27.6%	16.8%
Homeownership Rate	68.8%	65.4%
Persons Per Household	3.13	2.53
Persons below poverty level, %, 2009-2013	8.2%	13.2%
Median Household Income, 2009- 2013	$62,097	$58,433

Source: US Census Bureau

Hazard Identification and Risk Assessment

The City of Brighton is situated in both Adams and Weld Counties. For the purpose of this plan, spatially analyzed hazard risks have been assessed for the areas of the city that lie specifically within Weld County.

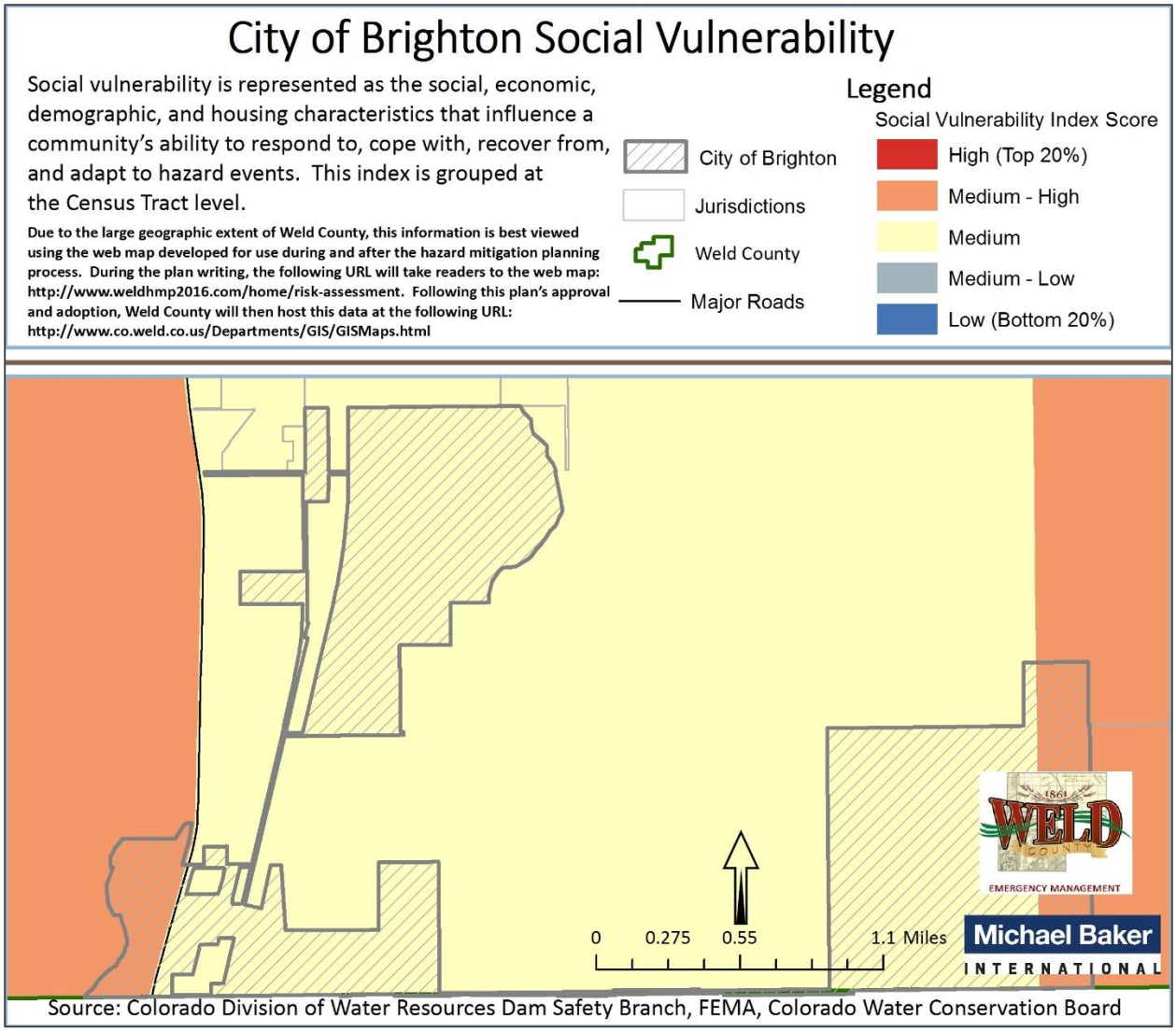
NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Public Health Hazards	0.90	0.90	0.80	0.30	0.40	3.30
Straight-Line Winds & Tornadoes	0.90	0.90	0.80	0.40	0.10	3.10
HAZMAT	1.20	0.90	0.40	0.40	0.20	3.10
Extreme Temperatures	0.90	0.60	0.80	0.40	0.40	3.10
Severe Storm	1.20	0.60	0.80	0.30	0.10	3.00
Prairie Fire	0.60	0.60	0.60	0.40	0.30	2.50
Flood	0.60	0.60	0.40	0.40	0.40	2.40
Drought	0.60	0.30	0.80	0.10	0.40	2.20

Land Subsidence	0.60	0.30	0.20	0.40	0.10	1.60
Earthquake	0.30	0.30	0.20	0.40	0.10	1.30
HIGH RISK (2.5 or higher): Public Health Hazards; Straight-Line Winds & Tornadoes; HAZMAT; Extreme Temperatures; Severe Storm; Prairie Fire						
MODERATE RISK HAZARD (2.0 - 2.4): Flood; Drought						
Low Risk (1.9 or lower): Land Subsidence; Earthquake						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the City of Brighton, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to City of Brighton.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The City of Brighton's social vulnerability map shows social vulnerability within the community.



Brighton is characterized by a mix of medium to medium-high levels of social vulnerability. A deeper-dive into the individual social vulnerability indicators within the city will give local emergency managers, planners, and stakeholders an even clearer picture of which social vulnerability factors have the largest negative effect on the community and its resiliency. It is important that the city continue to monitor social vulnerability levels over time as demographics and economics change in the area.

Public Health Hazards

Public health hazards, including epidemics and pandemics, have the potential to cause serious illness and death, especially among those who have compromised immune systems due to age or underlying medical conditions. During the 2015 planning process, pandemic flu was identified as the key public health hazard in the county.

Inventory Exposed

Due to the regional nature of public health hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of public health hazards. This includes

places with high numbers of elderly residents, young children, low income families, and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to public health hazards. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, young children, and a high poverty rate can plan accordingly to provide appropriate services and mitigation assistance during public health hazards outbreaks.

Populations Vulnerable to Public Health Hazards			
	Age: 65 and Over (%)	**Age: 5 and under (%)**	**Persons Below Poverty Level (%)**
Colorado	10.9	6.8	12.9
City of Brighton	8.7	8.6	8.2

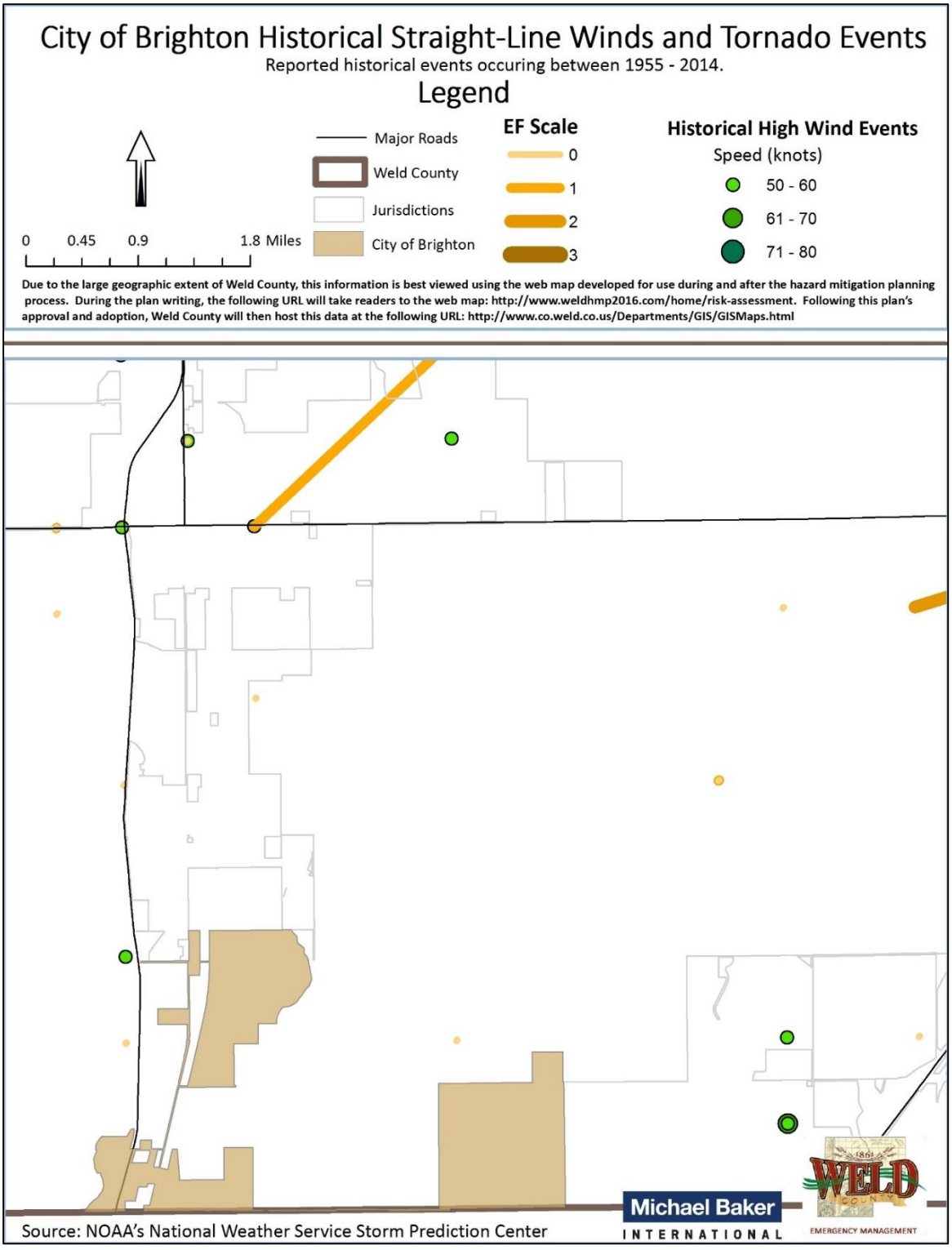
The City of Brighton has a lower percentage of elderly residents than does the state of Colorado. This is also true for the percentage of people living below poverty level in the town. A larger percentage of Brighton residents are under the age of 5 than the general population of Colorado. Based on these statistics, Brighton residents (in general) do not appear to be acutely vulnerable to the impacts of public health hazards. That said, future mitigation efforts related to public health hazards should focus on reaching those residents who are elderly, young children, live in poverty, or are homeless.

Potential Losses

Because there is no defined geographic boundary for public health hazards, all of the people and infrastructure within the City of Brighton are exposed to public health hazards. Those with elevated risk and potential loss are the homeless, infirm, elderly, young and low income families. Given the lack of historical data in the City of Brighton resulting from public health hazards, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the City of Brighton due to public health hazards are currently considered unquantifiable.

Straight-Line Winds & Tornadoes

According to the best available data, no injuries, deaths, property damage, or crop damages have been recorded within the City of Brighton due to high wind events or tornadoes. However, there have been tornadoes reported very close to both the eastern and western borders of the city limits.



Inventory Exposed

All assets located in the City of Brighton can be considered at risk from severe wind and tornadoes. This includes 36,765 people, or 100% of the city's population and all buildings and structures within the City. Most structures, including the city's critical facilities, should be able to withstand and provide adequate

protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

Potential Loses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $128,302,206. Potential losses could be substantial.

HAZMAT

Based on data provided by Pipeline and Hazardous Materials Safety Administration's (PHMSA) Incident Reports Database there have been no HAZMAT incidents reported in the City of Brighton between 1972 and 2015. I-76 and Highway 85 are two major hazardous and nuclear materials transportation routes that run through and adjacent to the City. Further planning and research is necessary to identify the volume and frequency of hazardous materials movement along these transit corridors along with the location of fixed facilities.

Inventory Exposed

We can't accurately predict when or where a HAZMAT incident may occur. Therefore, for the purpose of this plan, all structures, natural resources, and people located within one mile of the designated hazardous and nuclear materials transportation routes are exposed to the impacts of a potential HAZMAT event. Structures, people, and natural resources located outside of a one mile buffer of these routes are also at risk of exposure.

Assets and people that are located within one mile of any industrial or commercial fixed sites are also at risk of exposure to the impacts of a HAZMAT release.

Potential Losses

HAZMAT related events occur throughout Weld County every year. The intensity and magnitude of these incidents depend on weather conditions, the location of the event, the time of day, and the process by which the materials are released. *Was it raining when the event happened? Were the hazardous materials being transported by rail when they were released or were they at a fixed facility? Did the spill happen during rush hour traffic or in the middle of the night?* All of these considerations matter when determining the risk and potential damages associated with a HAZMAT incident.

HAZMAT events have the potential to threaten lives and disrupt business activity. Moreover, HAZMAT incidents can cause serious environmental contamination to air, ground, and water sources.

Extreme Temperatures

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Brighton due to extreme temperatures. There are two reports of extreme cold temperatures in central and southern Weld County on December 16-17, 1996. There is a great potential for extreme temperature events to occur at any given time.

Inventory Exposed

Due to the regional nature of extreme temperatures hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of extreme temperatures. This includes places with high numbers of elderly residents, low income families and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to extreme temperatures. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, a high poverty rate and/or large numbers of rental properties can plan accordingly to provide appropriate services and mitigation assistance during extreme temperature events.

Populations Vulnerable to Extreme Temperatures			
	Age: 65 and Over (%)	**Persons Below Poverty Level (%)**	**Renter-occupied housing units (%)**
Colorado	10.9	12.9	34.5
City of Brighton	8.7	8.2	31.2

The City of Brighton has a lower percentage of elderly residents than does the state of Colorado. This is also true for the percentage of people living below poverty level in the city. A slight larger percentage of Brighton residents own their homes than the general population of Colorado. Based on these statistics, Brighton residents (in general) do not appear to be acutely vulnerable to the impacts of extreme temperatures. That said, future mitigation efforts related to extreme temperature should focus on reaching those residents who are elderly, live in poverty or are homeless, or are renters.

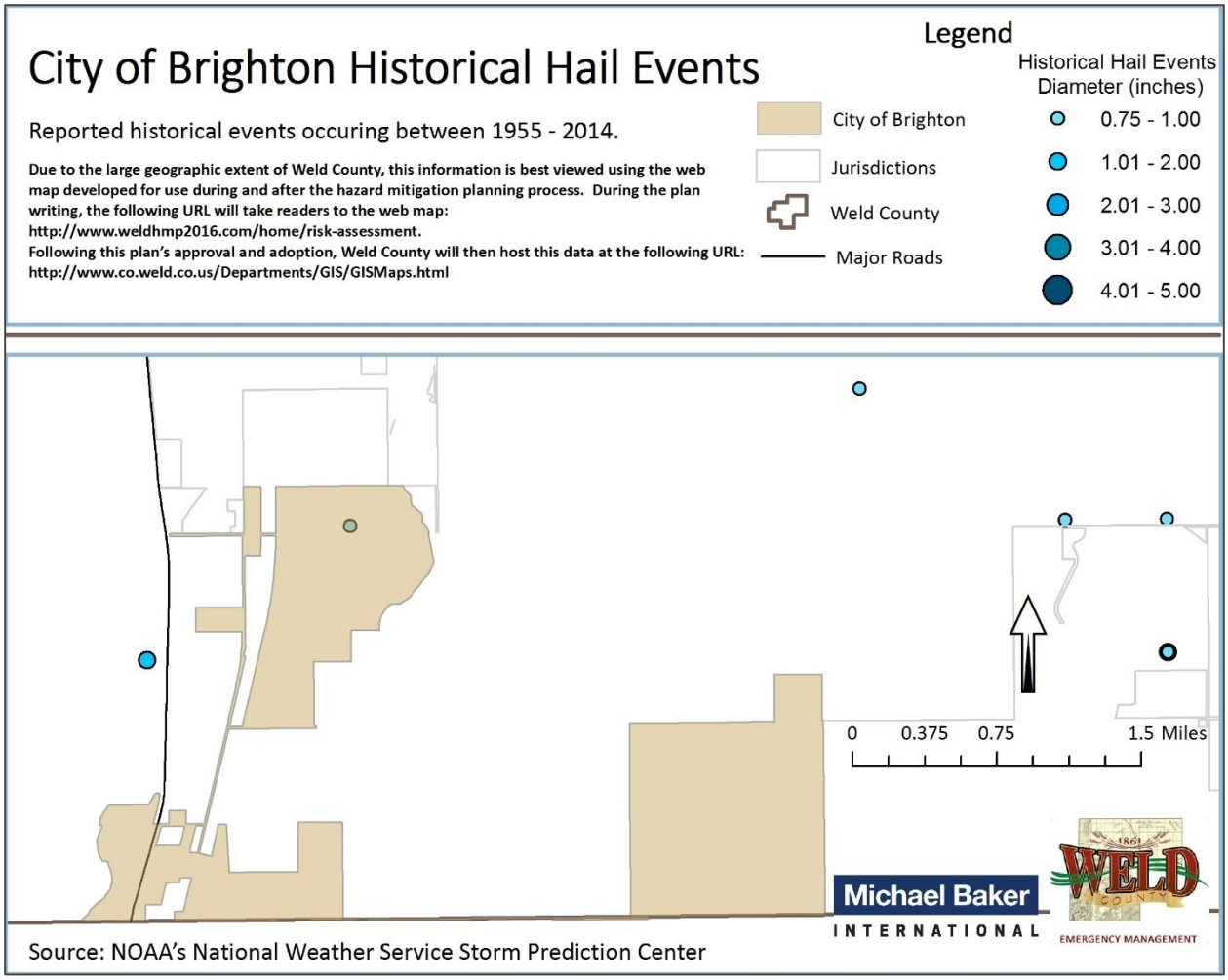
Potential losses

Because there is no defined geographic boundary for extreme temperature hazards, all of the people and infrastructure within the City of Brighton are exposed to extreme temperatures. Those with elevated risk and potential loss are the homeless, infirm, elderly, and low income families. Given the lack of historical data and limited likelihood of structural losses in the City of Brighton resulting from extreme heat or cold, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the City of Brighton due to extreme temperatures are currently considered unquantifiable.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the City of Brighton. There was one hail event recorded within the city limits as well as several hail events that occurred less than one mile from the city limits, none of which reported injuries, deaths, property damage, or crop damage. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the best available data, no injuries, deaths, property damage, or crop damage have occurred within the City of Brighton caused by Lightning. Although there is no historic data showing hazardous impacts on the city, there is a great potential for Lightning to occur at any given time.

Winter Storm

According to NOAA's Storm Events Database, the City of Brighton has experienced 25 Winter Storms since 1996. There were no deaths, injuries or damage to crops reported for any of these storms. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. The City of Brighton is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the City of Brighton can be considered at risk from severe storms. This includes 36,765 people, or 100% of the town's population and all buildings and infrastructure within the city. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail

but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

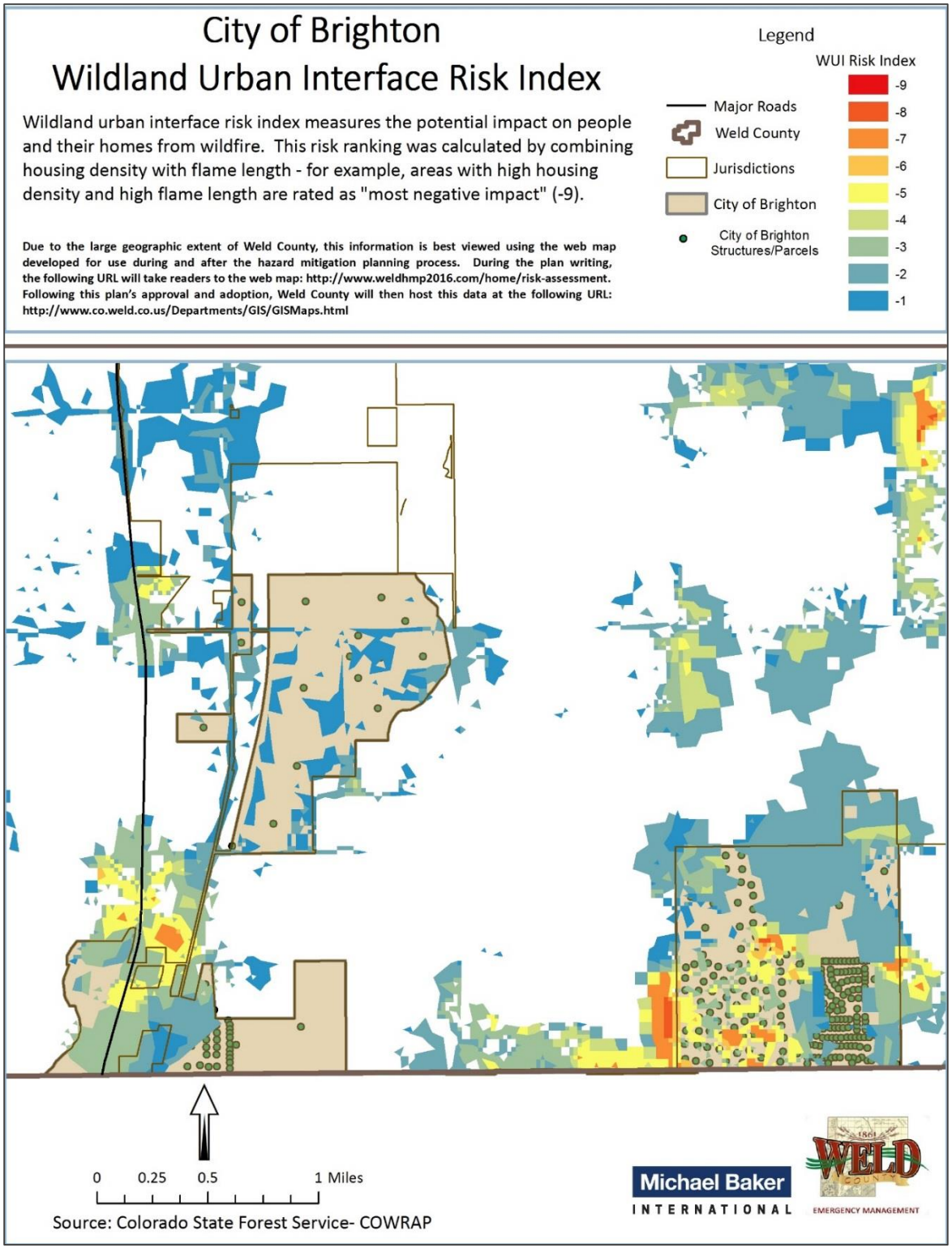
Potential Losses

Severe storms affect the entire planning area of the City of Brighton including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the City of Brighton. It is likely that lightning and hail will also be experienced in the area due to such storms.

Prairie Fire

There are a number of areas in the northeastern region of the city that are within the medium to highest level on the WUI Risk Index Scale. This means that the potential impact on people and homes from a Prairie Fire in those areas is medium to high in relationship to the rest of Weld County. This level of risk is derived by combining housing density with predicted flame length.



Inventory Exposed

Fires can extensively impact the economy of an affected area, including the agricultural, recreation and tourism industries, water resources, and the critical facilities upon which the City of Brighton depends. There are no areas of high wildfire threat according to the WUI Risk Index. There are areas of medium

threat. There are no identified critical facilities located in areas with the *moderate* wildfire threat total. The appraisal value of the structures within these *moderate* threat areas is approximately $5,616,745.

Potential Losses

Currently, there is no method for estimating wildfire loss. In most cases, the emergency management community equates potential losses to assets exposed to wildfire as a method of quantifying and comparing potential losses across communities. The exposure data provided in the previous section (Inventory Assets Exposed) provides the clearest picture of potential losses to wildfire in the City of Brighton.

Capabilities Assessment

The capability assessment examines the ability of the City of Brighton to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the City's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the City's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager	X		
Floodplain Administrator			X
Community Planner	X		
GIS Specialist	X		
Grant Writer			x

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the City's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	N
Local building codes	Y
A Comprehensive Plan / Master Plan	Y
A Capital Improvements Plan	Y

A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	Y
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The City of Brighton has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The City of Brighton has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the city will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
City of Brighton	*"Our mitigation actions will be reviewed by Emergency Management annually, and by City Council and or Fire BOD as needed."* *"Mitigation actions, activities and information will be integrated into existing public education programs and shared via website and or social media as necessary."*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The City of Brighton did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategy identified by the City of Brighton based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
City of Brighton	*"We will integrate hazard Mitigation actions into our existing public education/community training programs to continually increase awareness about local hazards and potential consequences."*

Mitigation Action Guides

The City of Brighton did have mitigation actions included in the 2010 DRCOG Hazard Mitigation Plan, included below.

Action	Project Need and Location	Responsible Agencies L- Lead Agency S – Support Agency	Status & Notes
Continued National Flood Insurance Program (NFIP) Participation	**Multi-Jurisdiction Action** In coordination with the UDFCD, continue to participate in the NFIP by implementing and improving upon effective floodplain and stormwater management practices.	Project Lead not identified	In Progress / Ongoing - majority of jurisdictions continue to participate in the NFIP, discussions regarding additional jurisdictional participation ongoing.
Coordinate with local water providers to continually identify and promote water conservation measures, including but not limited to, incentive programs, water efficient appliances, xeriscaping and the use of recycled water where feasible.	**Multi-Jurisdiction Action**	Project Lead not identified	No Longer Applicable / Remove - It was determined that this action is being addressed by various water districts serving the County.
Monitor proceedings of the Colorado Water Availability Task Force. When necessary, support water providers in the implementation of conservation measures	**Multi-Jurisdiction Action**	Project Lead not identified	In Progress / Ongoing - OEM will continue to monitor and support as necessary.
Provide the DRCOG HMP to other departments for possible integration into various planning efforts	**Multi-Jurisdiction Action**	Emergency Manager	In Progress / Ongoing - OEM will continue to involve the Public Works and Planning Departments in all future Hazard Mitigation Planning activities.

Jurisdiction or Organization: City of Brighton Preparedness and Mitigation Guides

PRIORITY: MEDIUM	**HAZARDS ADDRESSED: All**

LOCATION: City of Brighton and Brighton Fire Rescue District	**GOALS ADDRESSED: 2, 4**
RECOMMENDATION DATE: 10/20/2015	**OBJECTIVES ADDRESSED:**
TARGET COMPLETION DATE: 12/31/2016	2.2.2; 4.1.1.2
ISSUE: Residents need general information about local hazards, preparedness and response activities	
RECOMMENDATION: Hazard Mitigation and Preparedness Guides have been developed to focus on education of local hazards, and must continue to be distributed to residents within the City of Brighton and Brighton Fire Rescue District.	
ACTION: Continue to distribute existing mitigation guides to residents within both the City of Brighton and the Brighton Fire Rescue District	
LEAD AGENCY: City of Brighton, Brighton Fire Rescue District	**EXPECTED COST: The Guides have already been purchased, remaining cost is the staff time necessary to distribute guides to residents**
SUPPORT AGENCIES: Brighton CERT, 27J School District	**POTENTIAL FUNDING SOURCES:**N/A.
PROGRESS MILESTONES: Guides developed and printed Guides have been distributed throughout 2012-2015 Guides have been packaged up for distribution to the 27J school locations on 11/14/15. Brighton OEM will continue working with the School District to schedule and deliver guides to make available to each student in the 27J school district in Brighton.	

City of Brighton: Weld Outfall	
PRIORITY: MEDIUM	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 3**
RECOMMENDATION DATE: 12/4/2010	**OBJECTIVES ADDRESSED:**
TARGET COMPLETION DATE: 12/31/2030	3.2.2.
ISSUE: The far northern portion of the City needs drainage improvements to convey storm flows to the South Platte River.	
RECOMMENDATION: Design and construct an outfall system to convey flows to South Platte River.	
ACTION: Complete engineering civil drawings and construct the outfall system.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: $20,000,000**
SUPPORT AGENCIES: N/A	**POTENTIAL FUNDING SOURCES:** Funding will come from Stormwater Impact fees. There is a potential for grant money as it becomes available.

PROGRESS MILESTONES: This outfall system was looked at in the 2006 Outfall System Plan and is being re-evaluated in the current master drainage plan.

City of Brighton: Robin Place & N 6th Ave Flood Mitigation	
PRIORITY: MEDIUM	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 3**
RECOMMENDATION DATE: 12/4/2010	**OBJECTIVES ADDRESSED:**
TARGET COMPLETION DATE: completed	3.2.2.
ISSUE: This project has been completed. The City has re-directed flows away from this house and to a larger conveyance system. No issues have been reported from the homeowner in the recent years. This project can be removed from the list.	
RECOMMENDATION: City has redirected flows	
ACTION: The City has re-directed flows away from this house and to a larger conveyance system.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: N/A**
SUPPORT AGENCIES: N/A	**POTENTIAL FUNDING SOURCES:** N/A
PROGRESS MILESTONES: Complete	

City of Brighton: 33 Sunset Drive Flood Mitigation	
PRIORITY: MEDIUM	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 3**
RECOMMENDATION DATE: 12/4/2010	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: completed	3.2.2.
ISSUE: This address experienced flooding at sidewalk and driveway frequently after significant storm events	
RECOMMENDATION: Install inlet to alleviate flooding	

ACTION: The City has installed 2 inlet at this location to alleviate flooding issues. An overflow pipe has been provided for any flows not intercepted by the inlets. No issues have been reported from the homeowner in the recent years. This item can be removed.	
LEAD AGENCY: City of Brighton Utilities and Streets	**EXPECTED COST: N/A**
SUPPORT AGENCIES: N/A	**POTENTIAL FUNDING SOURCES:** N/A
PROGRESS MILESTONES: Project completed	

City of Brighton: North Outfall/Hughes Station Apartments Drainage Improvement Project Phase I Flood Mitigation	
PRIORITY: MEDIUM	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 3**
RECOMMENDATION DATE: 12/4/2010	**OBJECTIVES ADDRESSED:**
TARGET COMPLETION DATE: completed	3.2.2.
ISSUE: Identified need to redirect run off flows generated on Highway 85 into Hughes' detention pond causing the pond to overflow and flood the private parking lot and nearby roadways.	
RECOMMENDATION: Redirect flows away from the detention pond.	
ACTION: The City redirected flows from Highway 85. Flows have been directed away from the detention pond and to the City's North Outfall-Denver Alignment.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: N/A**
SUPPORT AGENCIES: N/A	**POTENTIAL FUNDING SOURCES:** N/A
PROGRESS MILESTONES: Completed.	

City of Brighton: North Outfall/Hughes Station Apartment Drainage Improvement Project Phase 2 Flood Mitigation	
PRIORITY: MEDIUM	**HAZARDS ADDRESSED: Flood**

LOCATION: City of Brighton	**GOALS ADDRESSED: 3**
RECOMMENDATION DATE: 12/4/2010	**OBJECTIVES ADDRESSED:**
TARGET COMPLETION DATE: 12/31/2030	3.2.2.
ISSUE: The far northern portion of the City needs drainage improvements to convey storm flows to the South Platte River.	
RECOMMENDATION: Design and construct an outfall system to convey flows to South Platte River.	
ACTION: A portion of this project has been complete. An inlet has been added at the intersection of Denver and Main. The City has built the outfall and constructed a 78" conveyance pipe from the outfall with the South Platte River to approximately the intersection of Denver and Main. Additional MAGs have been created to outline the phases of the project that still need to be completed.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: $20,000,000**
SUPPORT AGENCIES: N/A	**POTENTIAL FUNDING SOURCES:** Funding will come from Stormwater Impact fees. There is a potential for grant money as it becomes available.
PROGRESS MILESTONES: This outfall system was looked at in the 2006 Outfall System Plan and is being re-evaluated in the current master drainage plan.	

City of Brighton: Telluride & Bridge St. Flood Mitigation	
PRIORITY: MEDIUM	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 3**
RECOMMENDATION DATE: 12/4/2010	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: TBD 2016	3.2.2.
ISSUE: The storm drain inlet box located at the SE corner of Telluride and Bridge into the Pheasant Ridge Pond. When the pond is full, the inlet acts as a spillway, flooding nearby streets, and causing damages to vehicles	
RECOMMENDATION: A private developer has agreed to fix this issue as a condition of future development in the area. It should occur in the next year. This can be removed from the list.	
ACTION: A private developer has agreed to fix this issue as a condition of future development in the area. It should occur in the next year. This can be removed from the list.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: N/A**

SUPPORT AGENCIES: N/A	**POTENTIAL FUNDING SOURCES:** Funding will come from private developer as part of an agreement regarding future developments.
PROGRESS MILESTONES: Project will be completed by developer in 2016.	

The following Mitigation Action Guide presents Brighton's new mitigation action that was developed for the 2016 Plan.

CITY OF BRIGHTON/BRIGHTON FIRE RESCUE DISTRICT: Action Item #1: Integrate mitigation/preparedness planning into existing public education programs around the city to enhance resiliency of the community around all hazard vulnerabilities.	
PRIORITY: High	**HAZARDS ADDRESSED: Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat**
LOCATION: City of Brighton and Brighton Fire Rescue District	**GOALS ADDRESSED: 1,2,3**
RECOMMENDATION DATE: 10/20/2015	**OBJECTIVES ADDRESSED: A,B,E**
TARGET COMPLETION DATE: 10/20/2016	Ongoing programs
ISSUE: Residents must be aware of local hazards and the mitigation/preparedness actions they can take to assist in protecting themselves and their families from the adverse effects and to enhance community resiliency.	
RECOMMENDATION: Continued and additional community education and training to specifically address local hazards, containing detailed recommendations around potential community action items, which are crucial to continue to reinforce the need to take personal and individual action to mitigate risk related to local hazards.	
ACTION: Add information about local hazards and mitigation strategies into existing citizen centered trainings and/or developed hazard and response specific training for citizens as needed to provide information to residents about mitigation/preparedness options in their community.	
LEAD AGENCY: City of Brighton/Brighton Fire Rescue District's Office of Emergency Management	**EXPECTED COST:** $5,000. Additional printing and staff time to deliver
SUPPORT AGENCIES: Brighton PD, Brighton CERT, Weld County OEM, Adams County OEM, North Central Region.	**POTENTIAL FUNDING SOURCES:** HSGP, EMPG, local budgets

PROGRESS MILESTONES: An All Hazards Emergency Operations Plan (EOP) was developed and adopted by the City of Brighton and the Brighton Fire Rescue District in 2015. As part of our all hazards EOP, a Hazard/Risk analysis was conducted to identify the risks to which the City of Brighton and the Brighton Fire Rescue District are most vulnerable, public education about these top hazards are key to preparing our residents to better address and adapt to these hazards. Integration of preparedness and mitigation actions into public education programs which are directly related to these key hazards are essential. The City of Brighton is currently concluding the 2015 annual CERT class, of which local hazard identification and response is a part of. In looking forward to 2016 and beyond, education about local hazards and mitigation strategies will be available at city sponsored events, within classes offered to the public (winter weather safety, individual preparedness etc.) and within presentations which are requested by community members tailored specifically to a local group or organization.

Jurisdiction or Organization: City of Brighton Expansion of Outdoor Warning System to portions of unincorporated Adams and Weld Counties	
PRIORITY: HIGH	**HAZARDS ADDRESSED: Tornado/All Hazards**
LOCATION: Todd Creek, Great Rock and Vestas locations	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 10/20/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 12/31/2016	
ISSUE: Several areas within the Brighton Fire Rescue District and the north area (Weld County) of the City of Brighton are without outdoor warning sirens.	
RECOMMENDATION: Installation of additional warning sirens in the locations lacking coverage to warn residents of potential hazards.	
ACTION: Prioritize locations and use available funds to complete installations of outdoor warning sirens	
LEAD AGENCY: City of Brighton, Brighton Fire Rescue District	**EXPECTED COST: approx. 45K for each unit**
SUPPORT AGENCIES: Brighton IT Dept., Adams County Communications Dept. (AdCom911)	**POTENTIAL FUNDING SOURCES:** The units needed at Todd Creek and Great Rock locations are being funded, in part, by 4145 HMGP funds. The unit needed to cover the Vestas location may be available to move from a different location pending the completion of a shared use agreement with Verizon regarding and existing unit.
PROGRESS MILESTONES: For sirens at Great Rock and Todd Creek: RFP for project out on Nov 20th, 2015; Close date scheduled as December 15th 2015. Anticipated completion date of April , 2015 For vestas location (Weld County):	

City of Brighton is currently working with Verizon to complete an agreement to use one of our existing poles and for them to purchase a duplicate unit

Jurisdiction or Organization: City of Brighton Emergency Services Support Generator	
PRIORITY: HIGH	**HAZARDS ADDRESSED: All**
LOCATION: City of Brighton Police Department Administration (3401 E. Bromley Lane Brighton , CO 80601)	**GOALS ADDRESSED: 2**
RECOMMENDATION DATE: 10/20/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 06/31/2017	
ISSUE: Currently, the city maintains only a small generator at this location, capable only of supporting minimal emergency lighting, the security of detention cells, and limited communication systems. The current generator cannot support the emergency coordination functions which take place at this location.	
RECOMMENDATION: The wiring and installation of a 500KVA generator and a 1200amp transfer switch would allow for a reliable back up power source at a single critical city facility. This generator would support key city staff and services at this location and would allow for the relocation of staff and continuity of critical services. In addition, emergency support related services and functions are coordinated from this location. Critical emergency support functions- operation of the Emergency Operations Center (EOC), location of the Policy Group meeting area and information center, the Joint Information Center (JIC) and local law enforcement operations are designated to take place at this location.	
ACTION: Install a generator and associated wiring at the Brighton Police Department in an effort to support emergency functions during a short or long term power outage.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: total cost of generator and wiring of PD building estimated $200,000**
SUPPORT AGENCIES: Brighton Fire Rescue District	**POTENTIAL FUNDING SOURCES:** **HMGP funding, City of Brighton Capital Improvements budget**
PROGRESS MILESTONES: Develop and publish an RFP Construction to wire the building (in coordination with PD and United Power) to include locating, digging, accessing and splitting existing cabling Install transfer switch and complete wiring Complete installation of generator and initiate testing	

City of Brighton: North Outfall Phase II	
PRIORITY: HIGH	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 12/4/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 12/31/2018	
ISSUE: The core residential area of Brighton must have an upgraded outfall system.	
RECOMMENDATION: Design and construct a larger outfall system to convey flows to South Platte River. Add additional inlets and piping network to more efficiently collect storm runoff.	
ACTION: Complete engineering civil drawings and construct the outfall system.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: $2,400,000**
SUPPORT AGENCIES: Urban Drainage and Flood Control District	**POTENTIAL FUNDING SOURCES:** Funding will come from Stormwater Impact fees and from UDFCD. There is a potential for HMGP funding as it becomes available.
PROGRESS MILESTONES: The City, along with UDFCD, completed the first phase of this project in previous years. An engineering firm is currently completing plans for this phase and providing thirty-percent plans for the future phase(s).	

City of Brighton: North Outfall Phase III	
PRIORITY: HIGH	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 12/4/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 12/31/2020	
ISSUE: The core residential area of Brighton must have an upgraded outfall system.	
RECOMMENDATION: Design and construct a larger outfall system to convey flows to South Platte River. Add additional inlets and piping network to more efficiently collect storm runoff.	
ACTION: Complete engineering civil drawings and construct the outfall system.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: $4,800,000**
SUPPORT AGENCIES: Urban Drainage and Flood Control District	**POTENTIAL FUNDING SOURCES:** Funding will come from Storm water Impact fees and from UDFCD. There is a potential for grant money as it becomes available.

PROGRESS MILESTONES: The City, along with UDFCD, completed the first phase of this project in previous years. An engineering firm is currently completing plans for this phase and providing thirty-percent plans for the future phase(s).

City of Brighton: Master Drainage Plan	
PRIORITY: HIGH	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 5/4/2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 12/31/2016	
ISSUE: Comprehensive master planning efforts are needed to provide guidance to the City.	
RECOMMENDATION: The City needs to hire an engineering consulting firm to complete a comprehensive master drainage plan.	
ACTION: Hire a consulting firm.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: $250,000**
SUPPORT AGENCIES: Urban Drainage and Flood Control District	**POTENTIAL FUNDING SOURCES:** Funding will come from already available stormwater funding.
PROGRESS MILESTONES: The City, along with UDFCD, has hired an engineering consulting firm to complete the master drainage plan and to continually update this plan as necessary.	

City of Brighton: Second and Egbert Drainage Improvements	
PRIORITY: HIGH	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 12/4/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 12/31/2019	
ISSUE: An undersized drainage pipe and lack of inlet do not provide appropriate drainage at this intersection.	
RECOMMENDATION: Design and construct drainage infrastructure to alleviate flooding at this intersection.	
ACTION: Complete engineering civil drawings and construct the infrastructure.	

LEAD AGENCY: City of Brighton	**EXPECTED COST: $4,800,000**
SUPPORT AGENCIES: N/A	**POTENTIAL FUNDING SOURCES:** Funding will come from storm water funds.
PROGRESS MILESTONES: The City has included this as an area to look closer at within the master drainage plan.	

City of Brighton: Third Creek and Brighton Road	
PRIORITY: HIGH	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 3**
RECOMMENDATION DATE: 12/4/2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 12/31/2019	3.2.2.
ISSUE: The Third Creek Crossing under Brighton Road has become silted and is not adequately sized to pass the 100-year flows.	
RECOMMENDATION: Design and construct a 100-year crossing under Brighton Road.	
ACTION: Complete engineering civil drawings and construct the crossing.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: $350,000**
SUPPORT AGENCIES: Urban Drainage and Flood Control District	**POTENTIAL FUNDING SOURCES:** Funding will come from Stormwater Impact fees and from UDFCD. There is a potential for grant money as it becomes available.
PROGRESS MILESTONES: The City has included this as an area to look closer at during the master drainage plan formation. The City is currently participating with UDFCD and other jurisdictions to complete a Third Creek master drainage plan and flood hazard area delineation study.	

City of Brighton: 11th and Bridge Improvements	
PRIORITY: HIGH	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 12/4/2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 12/31/2017	
ISSUE: This intersection frequently floods after minor and major storm systems.	

RECOMMENDATION: Have the engineering team creating the City's master drainage plan look for the cause of the issues at this location.	
ACTION: Complete any necessary improvements recommended by the engineering firm.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: Unknown**
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Funding will come from Stormwater fees.
PROGRESS MILESTONES: The City will have the engineering team completing the master drainage plan look at this area closely.	

City of Brighton: South Brighton Outfall	
PRIORITY: HIGH	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Brighton	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 12/4/2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 12/31/2025	
ISSUE: The far southern portion of the City needs drainage improvements to convey storm flows to the South Platte River.	
RECOMMENDATION: Design and construct an outfall system to convey flows to South Platte River.	
ACTION: Complete engineering civil drawings and construct the outfall system.	
LEAD AGENCY: City of Brighton	**EXPECTED COST: $20,000,000**
SUPPORT AGENCIES: Urban Drainage and Flood Control District	**POTENTIAL FUNDING SOURCES:** Funding will come from Stormwater Impact fees and from UDFCD. There is a potential for grant money as it becomes available.
PROGRESS MILESTONES: This outfall system was looked at in the 2006 Outfall System Plan and is being re-evaluated in the current master drainage plan.	

Letter of Intent to Participate

City of Brighton
500 South 4th Avenue
Brighton, CO 80601
303-655-2000 Office
www.brightonco.gov

August 26, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County's Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the City of Brighton is submitting this letter of intent to confirm that the City of Brighton has agreed to participate in Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, City of Brighton agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The City of Brighton understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

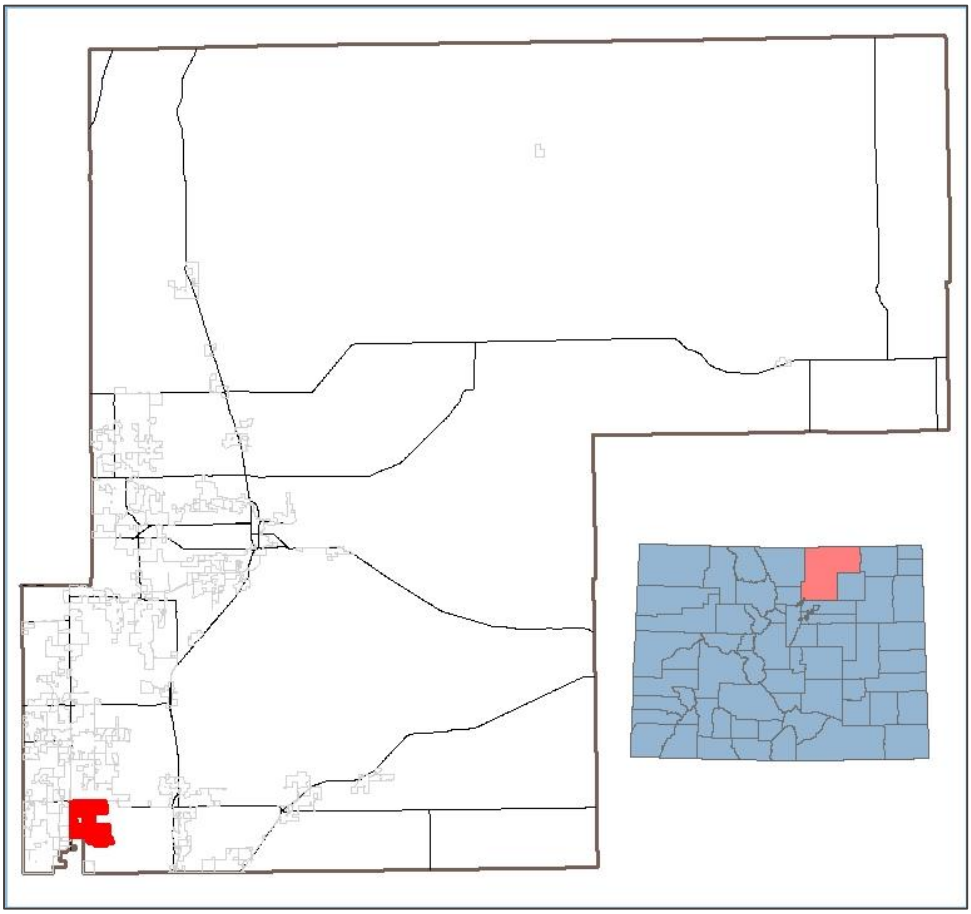
Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Stephanie Hackett commit the City of Brighton's Office of Emergency Management to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 27th day of August, 2014

Stephanie Hackett
Emergency Management Coordinator
City of Brighton

City of Dacono

The City of Dacono is located in southwest Weld County. Dacono is centrally located with easy access to both the Denver metropolitan area and Northern Colorado communities. Dacono is also part of the Greeley/Weld MSA. Located in the heart of the Front Range, the city cultivates a small town atmosphere with panoramic views of the Rocky Mountains.



At an elevation of 5,017 feet above sea level, there are no steep slopes in any portion of the Planning area. Dacono enjoys all four seasons. The combination of high elevation and mid latitude interior continent geography results in a cool, dry climate and residents engage in outdoor recreation all year round.

The following five vision statements are the guiding elements for development and re-development in the City of Dacono over the next 20 years. These visions were established in the City of Dacono Comprehensive Land Use Plan 2005 and are the community's answer to the following question: *What kind of community do we want Dacono to be?*

- VISION 1: Our future development will be concentrated within a growth boundary, be actively managed, served by adequate public facilities and will encourage economic vitality
- VISION 2: Our community will strive to balance future land uses and ensure economic self-sustainability
- VISION 3: Our communities will be livable, walkable, safe and distinctive
- VISION 4: Our environmental resources will be protected and when used, used wisely

- VISION 5: Our citizens will take part in the decisions and actions that affect them

These visions are the guiding principles for the variety of decisions that are made every week concerning "roads, sewers, parks and new developments."[21] These visions were used to guide the development of mitigation strategies at the city level.

Community Profile

The City of Dacono is located in southwestern Weld County, about 10 miles north of the Denver metropolitan area. The "Old Town" area of Dacono is located two miles east of I-25 and south of Highway 52. The city encompasses nearly 8.2 square miles, with a future growth boundary of 22 square miles. The table below summarizes key demographic and development related characteristics of the City of Dacono.

The table below summarizes key demographic and development related characteristics of the City of Dacono.

City of Dacono Statistics		
	City of Dacono	Colorado
Population, 2015	4,583	5,355,866
2000-2010 Population Change, %	36.9%	16.9%
% Population under 5 years, 2010	9.2%	6.8%
% Population under 18 years, 2010	28.9%	24.4%
% Population 65 years and over, 2010	9.1%	10.7%
Homeownership Rate	71.4%	65.4%
Persons Per Household	2.85	2.53
Persons below poverty level, %, 2013	6.0%	9.3%
Median Household Income, 2015	$48,078	$58,433

Source: US Census Bureau (Census 2010); Esri forecasts (2015 Esri)

The city's current population is estimates at 4,583 people. The city's Comprehensive Plan projects a final build-out population of 56,600 people by the year 2025. Like other municipalities located along the Colorado Front Range, Dacono is faced with the challenge of meeting increasing water demands associated with projected population growth. Currently, the city relies on the Colorado Big Thompson project for all of its water.

Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Severe Storm	1.2	0.9	0.8	0.1	0.3	3.300
Straight-Line Winds & Tornadoes	0.9	0.9	0.8	0.4	0.1	3.100
Flood	0.9	0.6	0.6	0.4	0.4	2.900

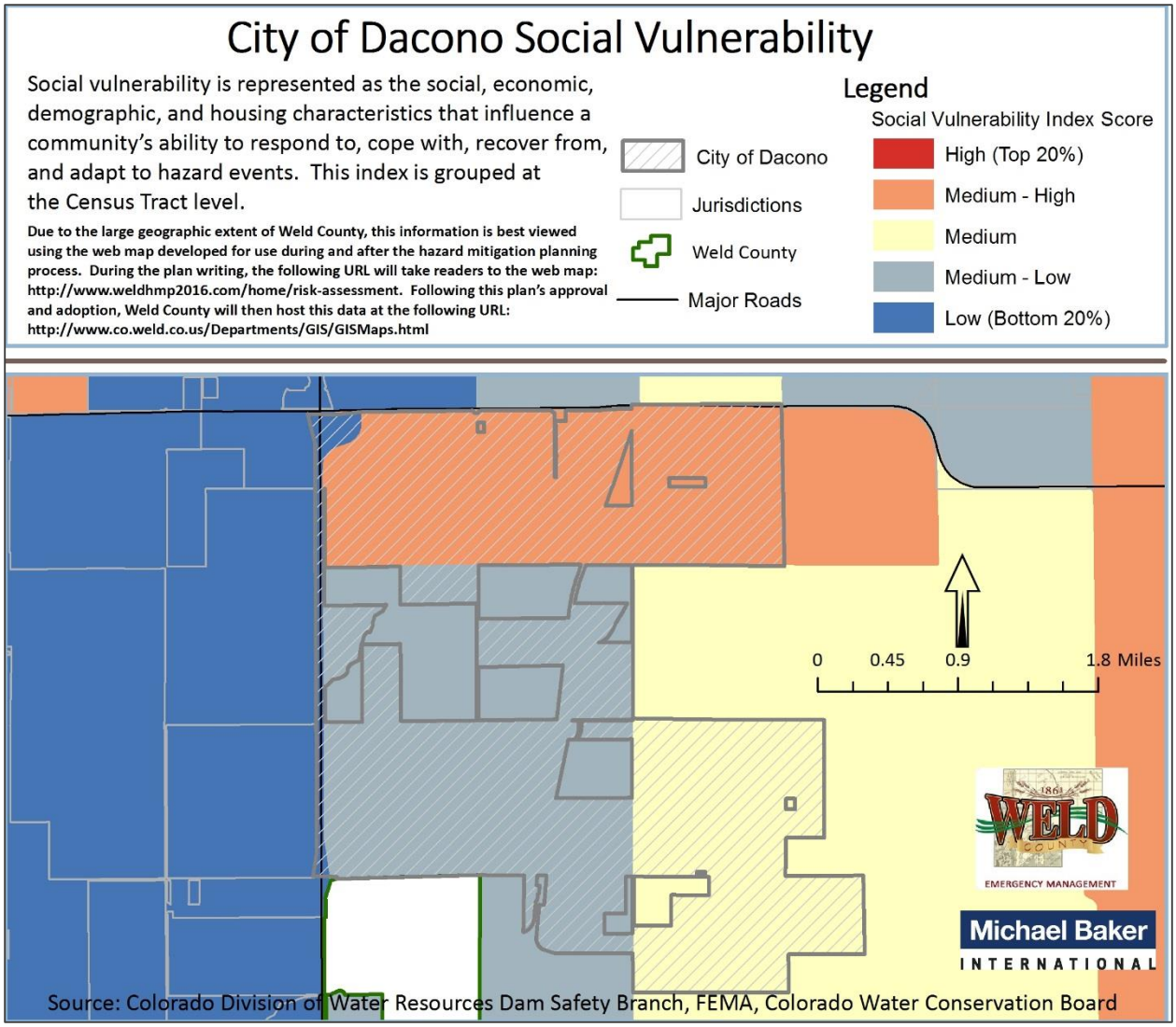
[21] City of Dacono Comprehensive Land Use Plan 2005

Public Health Hazards	0.9	0.6	0.6	0.4	0.4	2.900
Extreme Temperatures	0.9	0.3	0.8	0.1	0.4	2.500
Drought	0.9	0.3	0.8	0.1	0.4	2.500
HAZMAT	0.9	0.6	0.2	0.4	0.3	2.400
Land Subsidence	0.9	0.6	0.4	0.4	0.1	2.400
Prairie Fire	0.9	0.3	0.2	0.4	0.1	1.900
Earthquake	0.3	0.3	0.2	0.4	0.1	1.300
HIGH RISK (2.5 or higher): Severe Storm; Stright-Line Winds and Tornadoes; Flood; Public Health Hazards; Extreme Temperatures; Drought						
MODERATE RISK HAZARD (2.0 - 2.4): HAZMAT; Land Subsidence						
Low Risk (1.9 or lower): Prairie Fire; Earthquake						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the City of Dacono, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the City of Dacono.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The City of Dacono's social vulnerability map shows social vulnerability within the community.

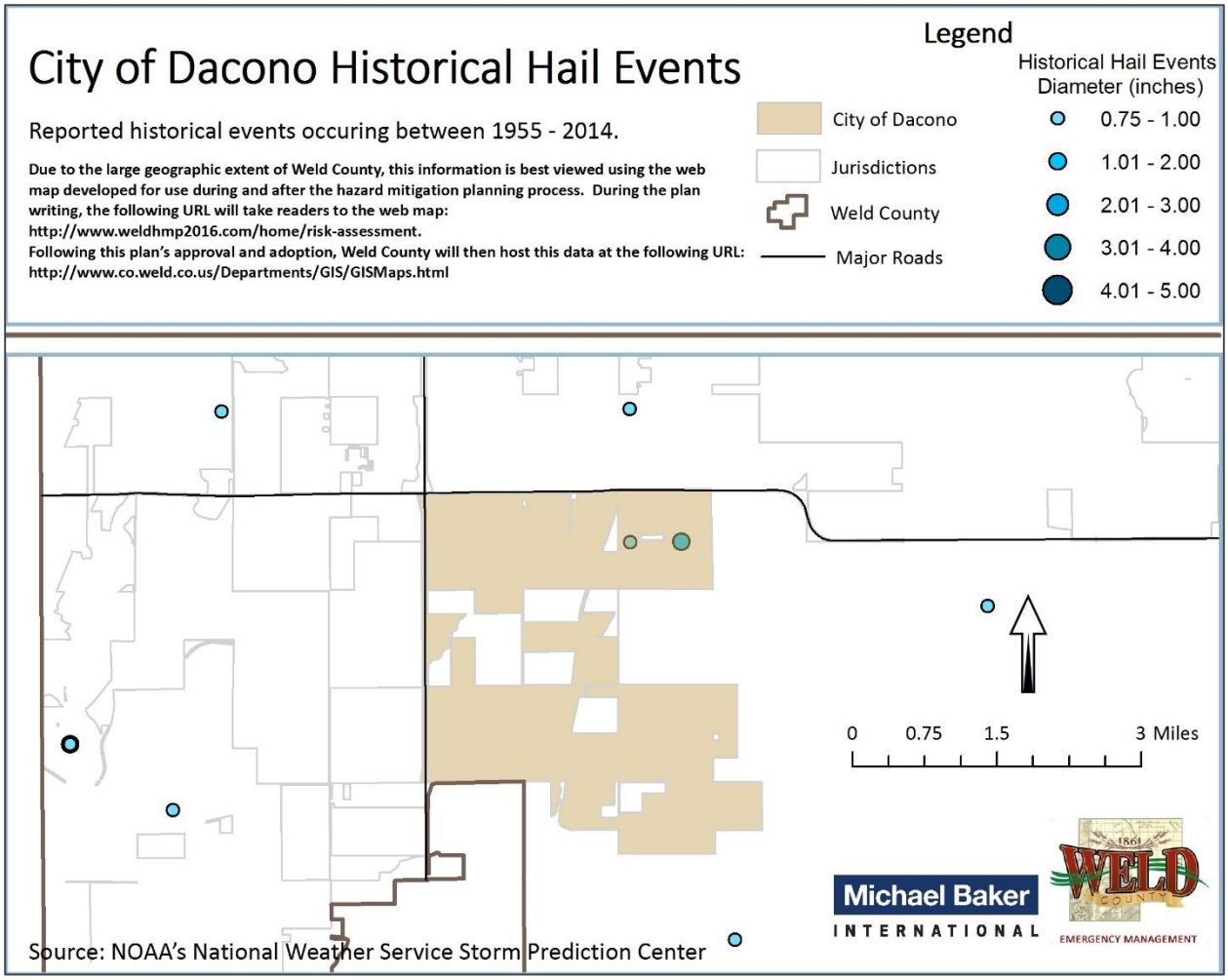


Dacono is characterized by a mix of medium-low, medium, and medium-high levels of social vulnerability. The northern area of the city has higher levels of social vulnerability to disasters than the rest of the city. A closer look at the individual social vulnerability indicators within the city will give local emergency managers, planners, and stakeholders an even clearer picture of which social vulnerability factors have the largest negative effect on the community and it resiliency over time.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the City of Dacono. There were three hail events recorded within the city limits as well as several hail events that occurred less than one mile from the city limits. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the best available data, no injuries, deaths, property damage, or crop damage have occurred within the City of Dacono caused by Lightning. Although there is no historic data showing hazardous impacts on the town, there is a great potential for Lightning to occur at any given time.

Winter Storm

According to the NOAA's Storm Events Database, the City of Dacono has experienced 25 Winter Storms since 1996. There were no deaths, injuries or damage to crops reported for any of these storms. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. The City of Dacono is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the City of Dacono can be considered at risk from severe storms. This includes 4,583 people, or 100% of the city's population and all buildings and infrastructure within the city. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the city's critical facilities, should be able to provide adequate protection from hail

but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

Severe storms affect the entire planning area of the City of Dacono including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the City of Dacono. It is likely that lightning and hail will also be experienced in the area due to such storms.

Straight-Line Winds & Tornadoes

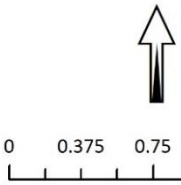
According to the best available data no deaths or crop damages have been recorded within the City of Dacono due to tornadoes. There have been 4 tornadoes reported within the city limits between 1985 and 2008. On July 26, 1985 a tornado caused 3 injuries and $4,000 in property damage. On June 16, 1997 a tornado caused some property damage. On May 22, 2008 one person was injured as a result of a tornado. There have also been tornadoes reported very close to the borders of the city limits. Tornadoes will remain a highly likely occurrence for the City of Dacono.

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Dacono due to straight-line winds. Straight-line winds will remain a highly likely occurrence for the City of Dacono.

City of Dacono Historical Straight-Line Winds and Tornado Events

Reported historical events occuring between 1955 - 2014.

Legend

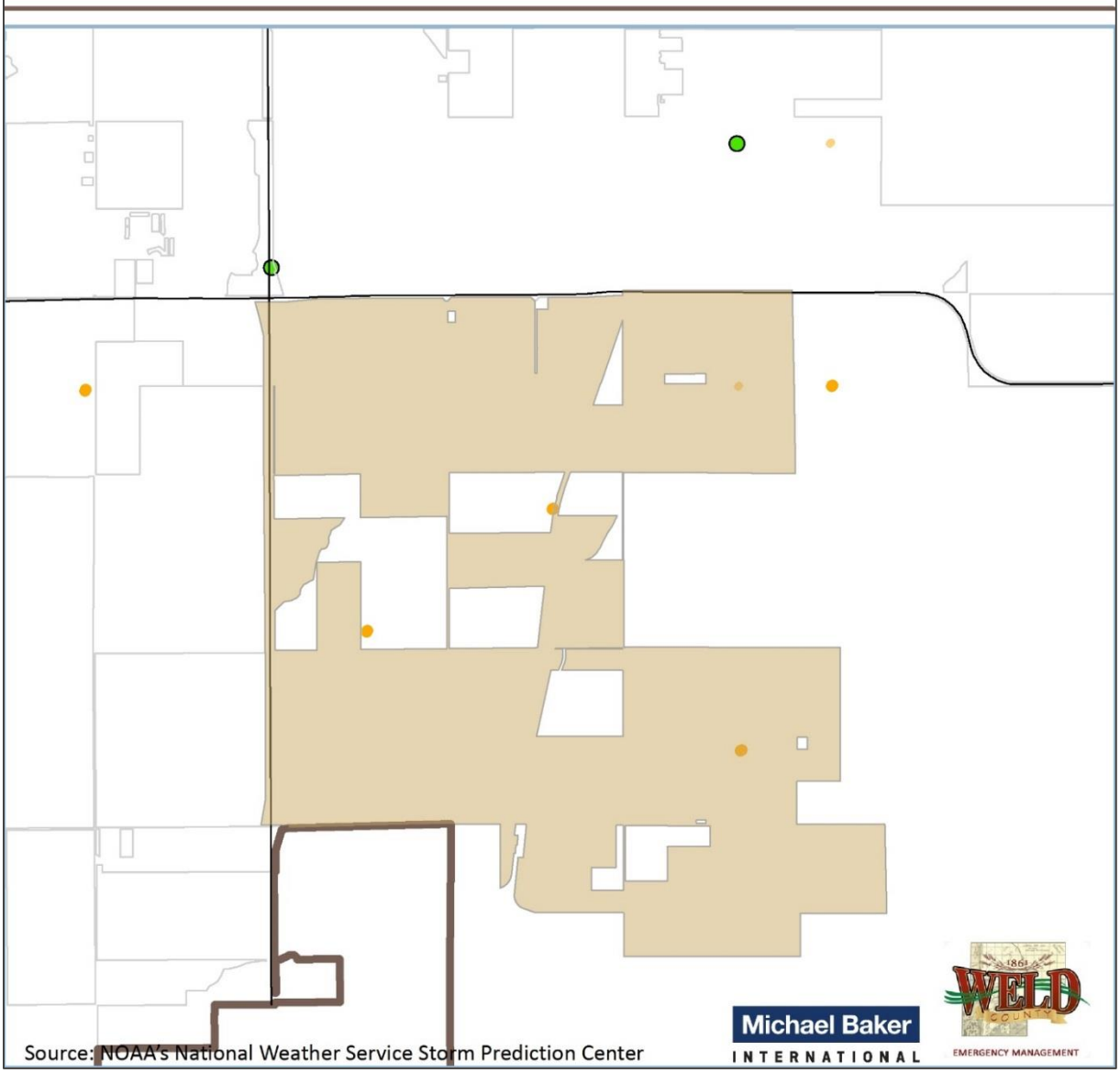


Major Roads
Weld County
Jurisdictions
City of Dacono

EF Scale
0
1
2
3

Historical High Wind Events
Speed (knots)
50 - 60
61 - 70
71 - 80

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html



EMERGENCY MANAGEMENT

Michael Baker
INTERNATIONAL

Inventory Exposed

All assets located in the City of Dacono can be considered at risk from straight-line winds and tornadoes. This includes 4,583people, or 100% of the city's population and all buildings and structures within the city. Most structures, including the city's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

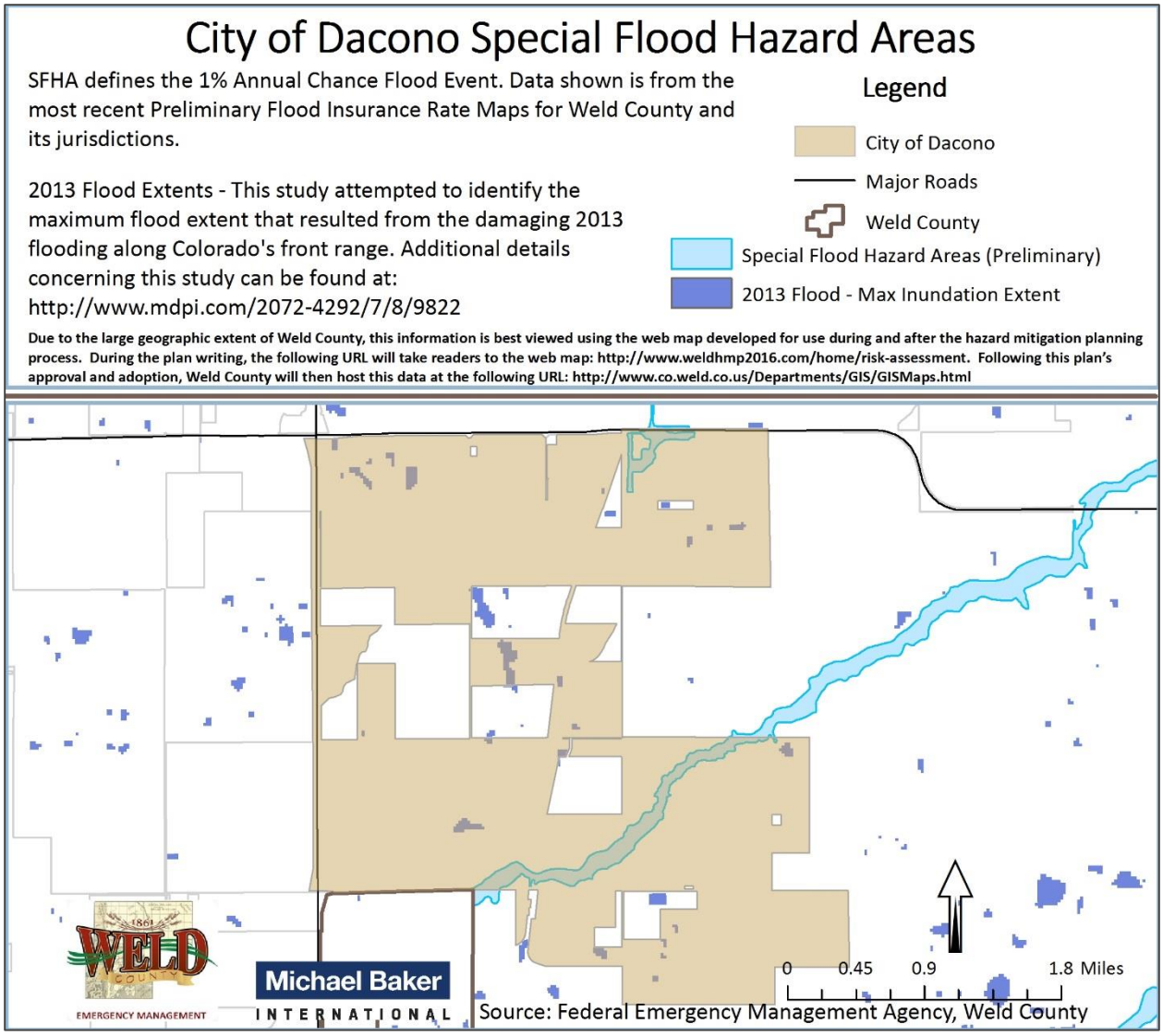
Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $129,418,385. Potential losses could be substantial.

Flood

Consistent with the information highlighted in the 2005 Dacono Comprehensive Plan, the City's planning area is impacted by the Little Dry Creek floodplain. Little Dry Creek flows diagonally across the Planning Area and eventually drains into the South Platte River. Small ponds are scattered through the City, along with several irrigation ditches (Standley Ditch, Godding Hollow Ditch, and Lower Boulder Ditch).

According to the best available data there have been no reported injuries or deaths in the City of Dacono caused by flooding. Due to Little Dry Creek, however, there is a possibility for a flood event to occur at any given time. Currently, the City's Future Land Use Map illustrates that development along Little Dry Creek should be set back at least 25 feet from the top of ditch banks and from the mean high water line of natural and man-made waterbodies to maintain natural buffers. Additionally, new development is precluded within the floodplain.



Inventory Exposed

The following map shows the flooding threat to critical facilities and structures in the City of Dacono by layering identified special flood hazard areas (SFHA) with the locations of community-defined critical facilities. Critical facilities are essential to the health and welfare of the whole population and are especially important both during and after hazard events. Critical structures or areas that overlap or touch the SFHA are considered "flood prone."

1% Annual Flood Scenario Loss Est. - Critical Facilities

Loss estimations are derived from Hazus-HM 2.2 flood scenario involving the 1% Annual Chance Flood Event (100-Year Flood). Total economic losses include: building repair costs, contents, business inventory, costs of relocation, capital-related, wage, and rental losses. Critical facilities as defined by the Weld County OEM. Point locations are sometimes approximate and not the actual building location.

Legend

Major Roads

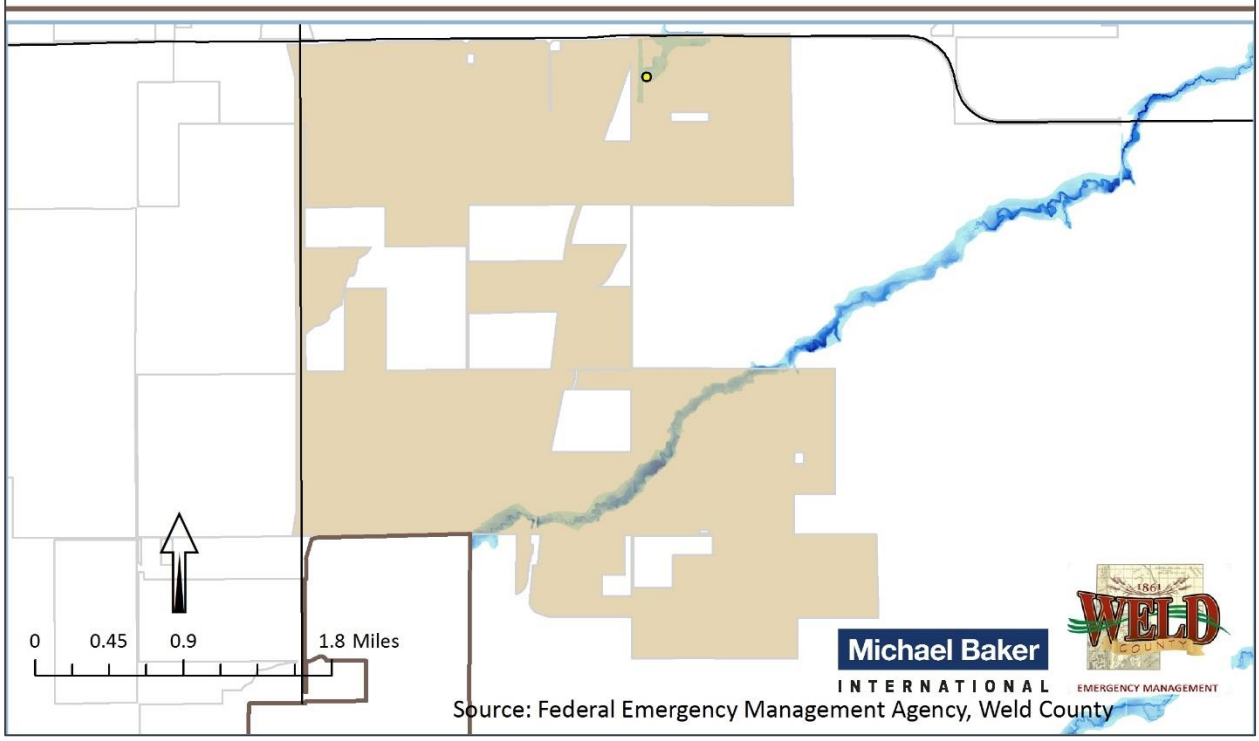
Weld County

City of Dacono

1% Depth Grid (Feet)
High : 57.856
Low : 0

Total Economic Loss (Count)
$100 - $10,000 (1)
$10,001 - $50,000 (0)
$50,001 - $100,000 (0)
$100,001 - $250,000 (0)
$250,001 - $600,000 (0)

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

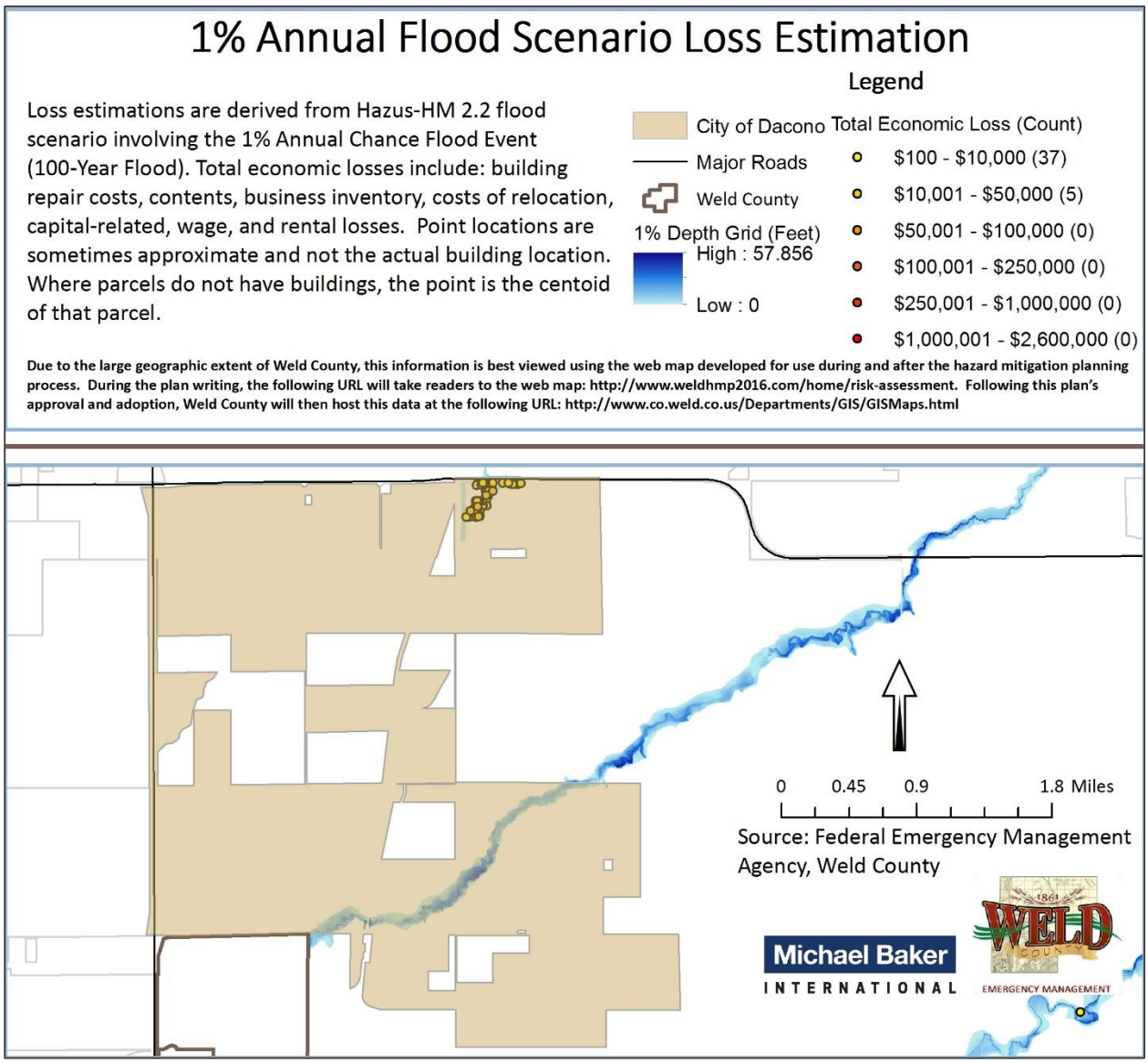


Source: Federal Emergency Management Agency, Weld County

The critical facility and structure exposure analysis estimates that there is 1 critical facility in the City of Dacono that is flood prone (not including the total miles of flood prone infrastructure). The appraised value of these exposed critical facility is approximately $48,993. The estimated building loss is over $880 and content loss over $290.

Potential Losses

Hazus estimates for the City of Dacono that for a 100-year flood event, approximately 42 buildings will experience flood damage. The total economic loss estimated for the 100-year flood is over $172,770. The estimated building loss is $137,833, content loss $33,977, and inventory loss $960.



Public Health Hazard

Public health hazards, including epidemics and pandemics, have the potential to cause serious illness and death, especially among those who have compromised immune systems due to age or underlying medical conditions. During the 2015 planning process, pandemic flu was identified as the key public health hazard in the county.

Inventory Exposed

Due to the regional nature of public health hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of public health hazards. This includes places with high numbers of elderly residents, young children, low income families, and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to public health hazards. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, young children, and a high poverty rate can plan accordingly to provide appropriate services and mitigation assistance during public health hazards outbreaks.

Populations Vulnerable to Public Health Hazards			
	Age: 65 and Over (%)	**Age: 5 and under (%)**	**Persons Below Poverty Level (%)**
Colorado	10.9	6.8	12.9
City of Dacono	9.1	9.2	6.0

The City of Dacono has a lower percentage of elderly residents than does the state of Colorado. This is also true for the percentage of people living below poverty level in the town. A larger percentage of Dacono residents are under the age of 5 than the general population of Colorado. Based on these statistics, Dacono residents (in general) do not appear to be acutely vulnerable to the impacts of public health hazards. That said, future mitigation efforts related to public health hazards should focus on reaching those residents who are elderly, young children, live in poverty, or are homeless.

Potential Losses

Because there is no defined geographic boundary for public health hazards, all of the people and infrastructure within the City of Dacono are exposed to public health hazards. Those with elevated risk and potential loss are the homeless, infirm, elderly, young and low income families. Given the lack of historical data in the City of Dacono resulting from public health hazards, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the City of Dacono due to public health hazards are currently considered unquantifiable.

Extreme Temperatures

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Dacono due to extreme temperatures. There are two reports of extreme cold temperatures in central and southern Weld County on December 16th and 17th, 1996. There is a great potential for extreme temperature events to occur within the region at any given time.

Inventory Exposed

Due to the regional nature of extreme temperatures hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of extreme temperatures. This includes places with high numbers of elderly residents, low income families and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to extreme temperatures. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly

residents, a high poverty rate and/or large numbers of rental properties can plan accordingly to provide appropriate services and mitigation assistance during extreme temperature events.

Populations Vulnerable to Extreme Temperatures			
	Age: 65 and Over (%)	**Persons Below Poverty Level (%)**	**Renter-occupied housing units (%)**
Colorado	10.9	12.9	34.5
City of Dacono	9.1	6.0	18.6

The City of Dacono has a lower percentage of elderly residents than does the state of Colorado. This is also true for the percentage of people living below poverty level in the city. A much larger percentage of Dacono residents own their homes than the general population of Colorado. Based on these statistics, Dacono residents (in general) do not appear to be acutely vulnerable to the impacts of extreme temperatures. That said, future mitigation efforts related to extreme temperature should focus on reaching those residents who are elderly, live in poverty or are homeless, or are renters.

Potential Losses

Because there is no defined geographic boundary for extreme temperature hazards, all of the people and infrastructure within the City of Dacono are exposed to extreme temperatures. Those with elevated risk and potential loss are the homeless, infirm, elderly, and low income families. Given the lack of historical data and limited likelihood of structural losses in the City of Dacono resulting from extreme heat or cold, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the City of Dacono due to extreme temperatures are currently considered unquantifiable.

Drought

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Dacono due to drought. There are four reports of drought in southern Weld County. The four reports all occurred in April of 2002 and March of 2011. There is a great potential for a drought event to occur at any given time.

Inventory Exposed

Drought will have little to no direct impact on critical facilities or structures in the City of Dacono. Should a drought affect the water available for public water systems or individual wells, the availability of clean drinking water could be compromised. This situation would require emergency actions and could possibly overwhelm local capacities and financial resources

Potential Losses

Although it is unlikely that drought conditions will affect existing buildings, infrastructure, and critical infrastructure, economic livelihoods in the City of Dacono could be negatively impacted due to crop loss, water shortages, and wildfires as a result of drought. Possible losses/impacts to critical facilities include the loss of critical function due to low water supplies.

As Dacono continues to grow, it will consider water-saving mitigation activities that will decrease local vulnerability to drought

Capabilities Assessment

The capability assessment examines the ability of the City of Dacono to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the City's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the City's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager	X		
Floodplain Administrator	X		
Community Planner	X		
GIS Specialist		X	
Grant Writer	X		
The Chief of Police is the designated Emergency Manager. None of the above positions are stand alone, they are all performed by either a full time employee with a different title or a contract company.			

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the city's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	IDK
Local building codes	Y
A Comprehensive Plan / Master Plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even

without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The City of Dacono has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

The City of Dacono has had previous experience receiving, administering, and applying for grants for planning-related activities or projects. These include:

- A grant for original Comprehensive Plan development
- An infrastructure grant through the Energy Impact Grants
- Funding from FEMA and the State of Colorado for post flood costs to repair and clean up.

Plan Maintenance and Implementation

The City of Dacono has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
City of Dacono	*The hazard mitigation plan and actions are reviewed by staff and the city administration on an ongoing basis.* *As part of the plan maintenance process, the City of Dacono will continue to engage the public in the process of identifying hazard risks and prioritizing mitigation actions.*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The City of Dacono did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the City of Dacono based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
City of Dacono	*"To consider hazard mitigation actions into the City's Capital Improvement Plan and building codes."*

Mitigation Action Guides

The following Mitigation Action Guides present status updates on each of Dacono's mitigation actions included in the 2009 Plan.

Dacono: Participate in Storm Ready	
PRIORITY: High	**HAZARDS ADDRESSED: Severe Weather**
LOCATION: City of Dacono	**GOALS ADDRESSED: 1,2,3**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: A,B,C,E**
TARGET COMPLETION DATE: Ongoing; Four classes in the spring March-May 2016	
ISSUE: One of the goals for the Northeast region is to have all 11 counties' participate in Storm Ready. Weld County has been a participant in the past, and the intent is to maintain Storm Ready status	
RECOMMENDATION: As a Storm Ready County, we hold several Weather Spotter Classes. These classes are taught by NOAA and participants can become a spotter and report information to NOAA or the WCRCC.	
ACTION: Apply and maintain 'Storm Ready" status with NOAA.	
LEAD AGENCY: Weld County OEM in conjunction with appropriate County/Town Departments with municipalities participating in this plan (Ault, Dacono, Evans, Firestone, Fort Lupton, Frederick, Garden City, Gilcrest, Greeley, Grover, Hudson, Johnstown, Keenesburg, Kersey, LaSalle, Mead, Milliken, New Raymer, Pierce, Platteville, Severance, and Windsor), and school districts (Weld County RE-4, RE-6 and RE-8, Platte Valley Schools).	**EXPECTED COST:** Staff Time and funds for meeting for drinks and goodies. This will come from the OEM budget
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** OEM Budget and local business sponsor's
PROGRESS MILESTONES: Duplication of county action. Last four years Weld has offered one weather spotter training.	

Dacono: Continued Compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED: Flooding**
LOCATION: City of Dacono	**GOALS ADDRESSED: 1,2,3**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: D,E**
TARGET COMPLETION DATE: Ongoing	

ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood-prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continue local compliance with NFIP requirements and standards	
LEAD AGENCY: Local Floodplain Management officials	**EXPECTED COST:** Staff Time; can be accomplished with existing annual budget
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: Dacono has maintained CRS compliance standards. Dacono continues to promote wise use of floodplains. The City adopted the State of Colorado Water Conservation Board model ordinance and is compliant with the State Floodplain Rules. We also adopted an update to the ordinance to reflect the new Weld County FIRM maps. No further action is required by the City.	

The following Mitigation Action Guides present each of Dacono's new mitigation actions that were developed for the 2016 Plan.

Dacono: Design and Construction of Colorado Blvd. Bridge	
PRIORITY: High (#1)	**HAZARDS ADDRESSED: Flood**
LOCATION: Colorado Blvd (WCR 13)	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 10/19/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 12/31/2020	
ISSUE: Based on previous experience with flooding on Colorado Boulevard, the particular area of road that intersects with the Little Dry Creek water-way, a bridge needs to be constructed to mitigate the impact of water flowing over that section of Colorado Blvd often requiring the road be closed.	
RECOMMENDATION: Bridging Colorado Blvd at Little Dry Creek	
ACTION: Design and Construction of Colorado Blvd. Bridge	
LEAD AGENCY: City of Dacono Public Works	**EXPECTED COST:** $2 Million; Staffing would include city staff and administration throughout the entire process
SUPPORT AGENCIES: Weld County, Army Corps of Engineers	**POTENTIAL FUNDING SOURCES:** Dacono City Budget; Grants (State and Federal)
PROGRESS MILESTONES: Design Completion, Impact Reports, permitting, RFQ, RFP, bidding, construction, reclamation and completion.	

Dacono: Grandview Street and York Street Flood Mitigation	
PRIORITY: High (#2)	**HAZARDS ADDRESSED: Flood**
LOCATION: Grandview (Weld County Road 12) at York Street (Weld County Road 11)	**GOALS ADDRESSED: 2, 4**
RECOMMENDATION DATE: 10/19/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 12/31/2020	
ISSUE: In the event of sustained moderate or heavy rain, this intersection experiences flooding.	
RECOMMENDATION: Installation of box culverts	
ACTION: Engineering design and construction	
LEAD AGENCY: City of Dacono Public Works	**EXPECTED COST:** Unknown
SUPPORT AGENCIES: Weld County	**POTENTIAL FUNDING SOURCES:** Dacono city budget; State and Federal grants
PROGRESS MILESTONES: Engineering design and construction, RFP, bidding, construction, reclamation, completion.	

Letter of Intent to Participate

LETTER OF INTENT TO PARTICIPATE

August 25, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the City of Dacono is submitting this letter of intent to confirm that the City of Dacono has agreed to participate in Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the City of Dacono agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The City of Dacono understands that it must engage in the following planning process, as more fully described in FEMA's Local Mitigation Planning Handbook dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;

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EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Mayor Charles Sigman, commit the City of Dacono to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 25th day of August, 2014

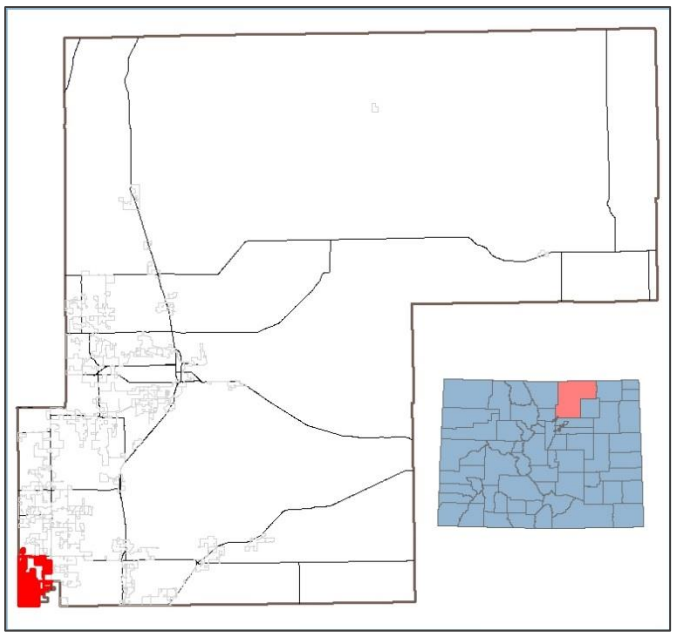
Charles Sigman
Mayor

512 Cherry Street, Dacono, Colorado 80514 ♦ (303) 833-2317 (303) 833-5528 fax ♦ www.cityofdacono.com

Town of Erie

"Erie is a community which recognizes the importance of conserving and enhancing its historic small town character, the roots from which it grew, preserving the natural environment in which it resides; a caring community which offers its residents an environment in which to seek a high quality of life; a balanced community with a diverse range of housing, employment, educational, shopping, and recreational opportunities; and a vital community which provides financial and social support for quality of life programs." – Community Vision Statement, 2005 Town of Erie Comprehensive Plan

Incorporated in 1874, the Town of Erie is situated at the center of Colorado's major economic and population hubs. Located in both Boulder and Weld Counties, Erie lies just west of I-25 and spans 48 square miles, extending from the north side of State Highway 52 and south to State Highway 7.



Through its comprehensive planning process, the Town has established a set of Guiding Principles as pillars for the community's development over the next 20 years. The following principles describe local aspirations and set the direction for development and policy decisions, while building on the Vision established for the community.

- A coordinated and efficient pattern of growth
- Quality design and development
- Overall economic vitality
- Downtown vitality
- A comprehensive, integrated transportation system
- Stewardship of the natural environment
- Trails, parks and recreation opportunities
- A Protected Lands program
- Balanced land use mix
- Stable, cohesive neighborhoods offering a variety of housing types

- Provide infrastructure and public services efficiently and equitably

A number of these Guiding Principles reinforce the hazard mitigation and risk reduction goals outlined in this plan. For example, the stewardship of the natural environment in floodplains and high risk areas is a mitigation strategy that has mutual benefits for risk reduction and for the vision for a community with a high quality of life. The Town of Erie used the Vision statement and Guiding Principles from their Comprehensive Plan to frame the discussion about their local mitigation strategy.

Community Profile

The following profile illustrates population, housing, and employment trends for the Town of Erie. The data used in this profile was derived from the 2010 US Census of Population, Denver Regional Council of Governments (DRCOG) regional data, and Colorado Department of Local Affairs (DOLA) demographic data.

The table below summarizes key demographic and development related characteristics of the Town of Erie.

Town of Erie Statistics		
	Town of Erie	Colorado
Population, 2014	20,493	5,355,866
Population, % change April 1, 2010 to July 1, 2014	13.0%	6.5%
% Population under 5 years, 2010	9.6%	6.8%
% Population under 18 years, 2010	31.3%	24.4%
% Population 65 years and over, 2010	5.7%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	10.0%	16.8%
Homeownership Rate	82.6%	65.4%
Persons Per Household	2.92	2.53
Persons below poverty level, %, 2009-2013	4.1%	13.2%
Median Household Income, 2009- 2013	$103,796	$58,433

Source: US Census Bureau

Hazard Identification and Risk Assessment

The Town of Erie is situated in both Boulder and Weld Counties. For the purpose of this plan, spatially analyzed hazard risks have been only assessed for the areas of Erie that lie specifically within Weld County.

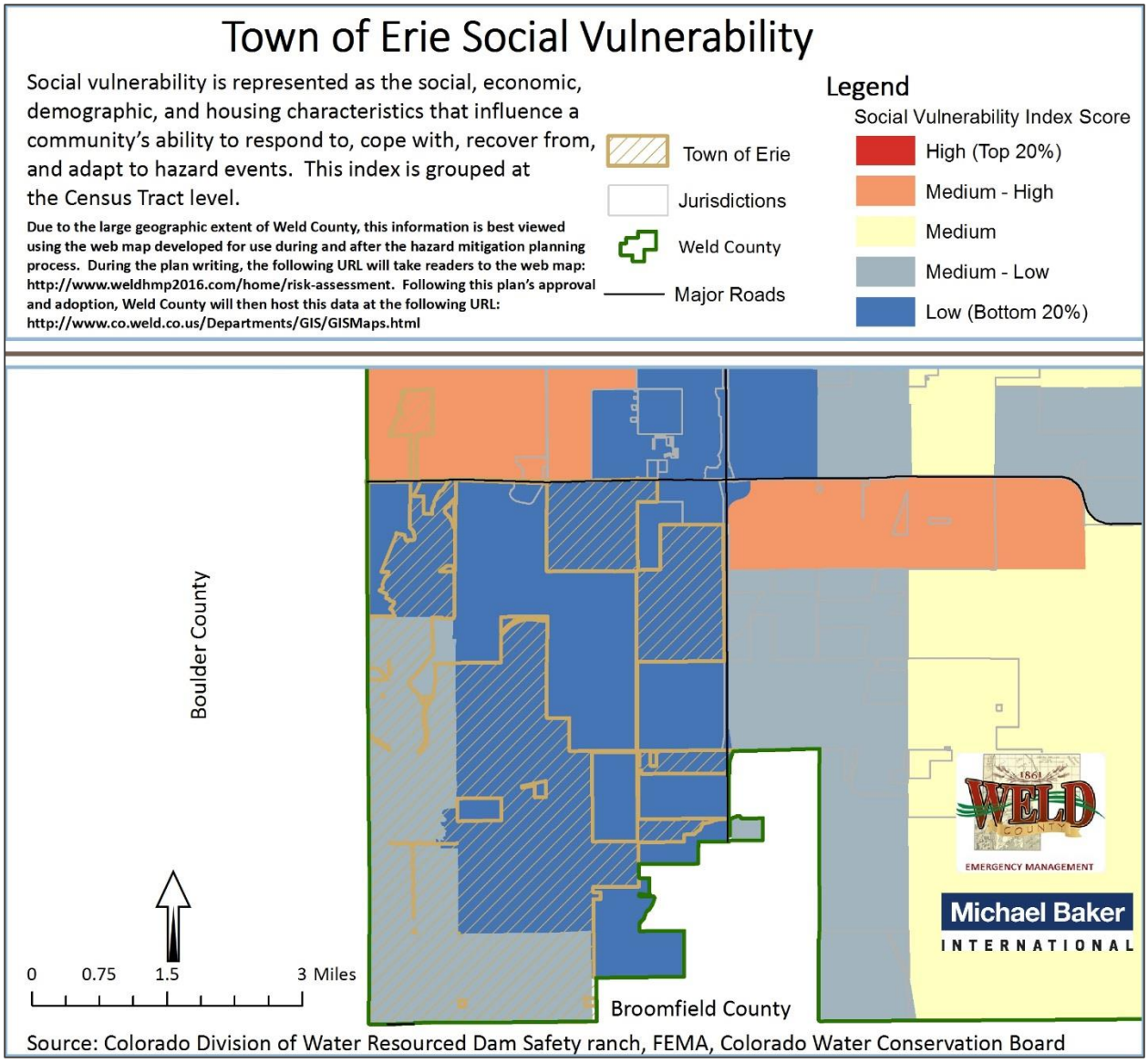
NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Flood	1.2	0.6	0.8	0.1	0.4	3.100
HAZMAT	0.9	0.6	0.8	0.4	0.3	3.000
Severe Storm	0.9	0.6	0.8	0.2	0.3	2.800
Extreme Temperatures	0.9	0.6	0.8	0.1	0.4	2.800

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Drought	0.9	0.6	0.8	0.1	0.4	2.800
Earthquake	0.3	1.2	0.8	0.4	0.1	2.800
Land Subsidence	0.9	0.6	0.4	0.4	0.4	2.700
Straight-Line Winds & Tornadoes	0.6	0.6	0.8	0.4	0.1	2.500
Prairie Fire	1.2	0.3	0.4	0.4	0.2	2.500
Public Health Hazards	0.3	0.9	0.8	0.1	0.4	2.500
HIGH RISK (2.5 or higher): Flood; HAZMAT; Severe Storm; Extreme Temperatures; Drought; Earthquake; Land Subsidence; Straight-line Winds and Tornadoes; Prairie Fire; Public Health Hazards						
MODERATE RISK HAZARD (2.0 - 2.4)						
Low Risk (1.9 or lower)						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Erie, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to Town of Erie.

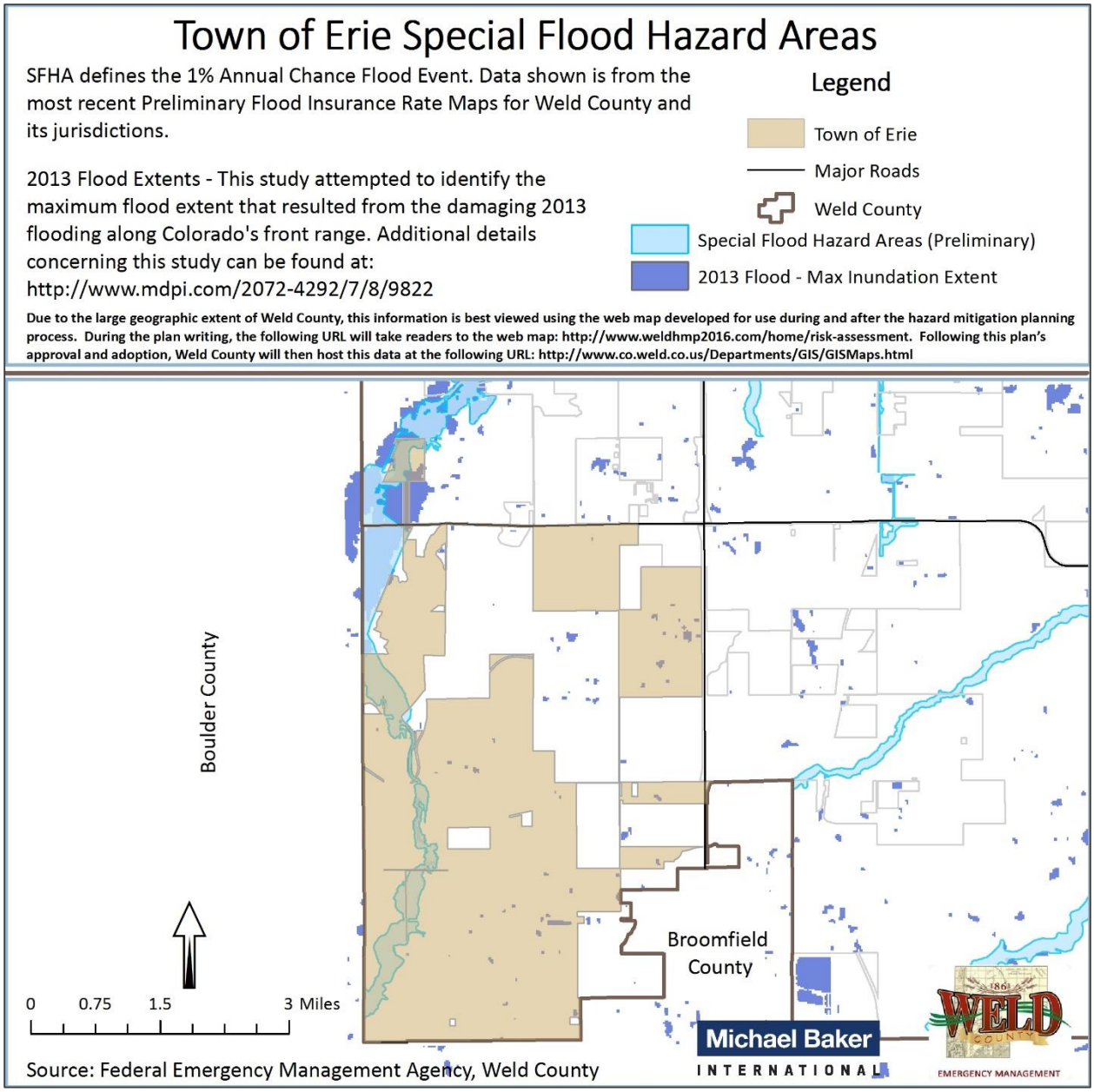
The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Erie's social vulnerability map shows social vulnerability within the community.



Erie is characterized by a mix of low to medium-high levels of social vulnerability. The majority of the Town is in the bottom 20% of social vulnerability in the county. Over time, monitoring social vulnerability levels and performing close analysis of the individual social vulnerability indicators within the community will give local emergency managers, planners, and stakeholders an even clearer picture of which social vulnerability factors have the largest negative effect on the town and it resiliency.

Flood

According to the best available data there have been no reported injuries or deaths in the Town of Erie caused by flooding. Based on the flooding event of 2013, there is a great potential for flood events to occur at any given time.



Inventory Exposed

There is record of one flood occurring within the town limits on July 27, 1997. The flood was categorized as a flash flood.

The flood event in September of 2013 greatly impacted the town. During and after the flood and severe weather incidents, the Town utilized its social media and website to keep the public informed and provided essential public health and safety instructions. After the 2013 floods Town of Erie Department of Public Works staff worked with FEMA, the State of Colorado, and other Federal agencies and managed the process of submitting and seeking reimbursement for nearly 40 projects totaling more than $1.3 million.

The critical facility and structure exposure analysis estimates that there is 1 critical facility and 104 structures in the Town of Erie that are flood prone (not including the total miles of flood prone infrastructure). Critical facilities are essential to the health and welfare of the whole population and are especially important both during and after hazard events. Critical structures or areas that overlap or touch the SFHA are considered "flood prone." The appraised value of these exposed structures is approximately $34.9 million dollars.

Potential losses

Hazus estimates for the Town of Erie that for a 100-year flood event, approximately 104 buildings will experience flood damage. The total economic loss estimated for the 100-year flood is over $1,746,600. Currently, there is 1 critical facility located within the floodplain in the Town of Erie. Hazus does not report an economic loss on this critical facility caused by flood damage.

The total building losses for the 100-year flood event are estimated to be over $1,371,390. Building content losses are estimated to be over $223,870. Inventory losses are estimated to be over $151,330.

The map below shows the flooding threat to structures in the Town of Erie by layering identified special flood hazard areas (SFHA) with the locations of community-defined structures.

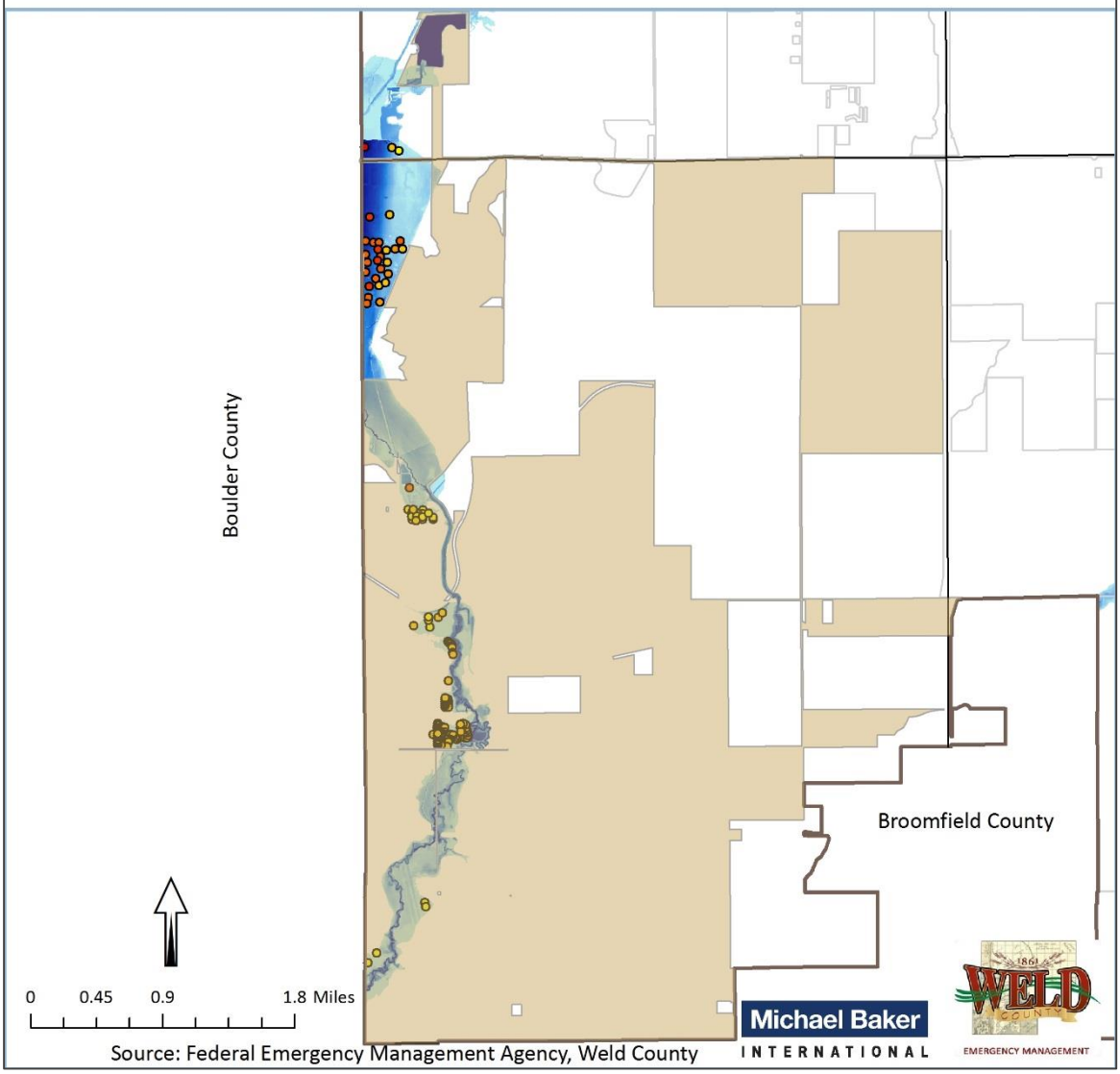
1% Annual Flood Scenario Loss Estimation

Loss estimations are derived from Hazus-HM 2.2 flood scenario involving the 1% Annual Chance Flood Event (100-Year Flood). Total economic losses include: building repair costs, contents, business inventory, costs of relocation, capital-related, wage, and rental losses. Point locations are sometimes approximate and not the actual building location. Where parcels do not have buildings, the point is the centoid of that parcel.

Legend

- Town of Erie
- Major Roads
- Weld County
- 1% Depth Grid (Feet)
  - High : 57.856
  - Low : 0
- Total Economic Loss (Count)
  - $100 - $10,000 (37)
  - $10,001 - $50,000 (5)
  - $50,001 - $100,000 (0)
  - $100,001 - $250,000 (0)
  - $250,001 - $1,000,000 (0)
  - $1,000,001 - $2,600,000 (0)

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html



Source: Federal Emergency Management Agency, Weld County

HAZMAT

Based on data supplied by the Pipeline and Hazardous Materials Safety Administration's (PHMSA) Incident Reports Database there have been no reported HAZMAT incidents within the town limits between 1972 and 2015.

Inventory Exposed

Two designated nuclear and hazardous materials transportation routes run adjacent the Town of Erie (I-25 and Highway 52). All structures, natural resources, and people located within one mile of these transportation routes are exposed to the impacts of a potential HAZMAT event. Structures, people, and natural resources located outside of a one mile buffer of these routes are also at risk of exposure.

Assets and people that are located within one mile of an industrial or commercial fixed site are also at risk of exposure to the impacts of a HAZMAT release.

Potential losses

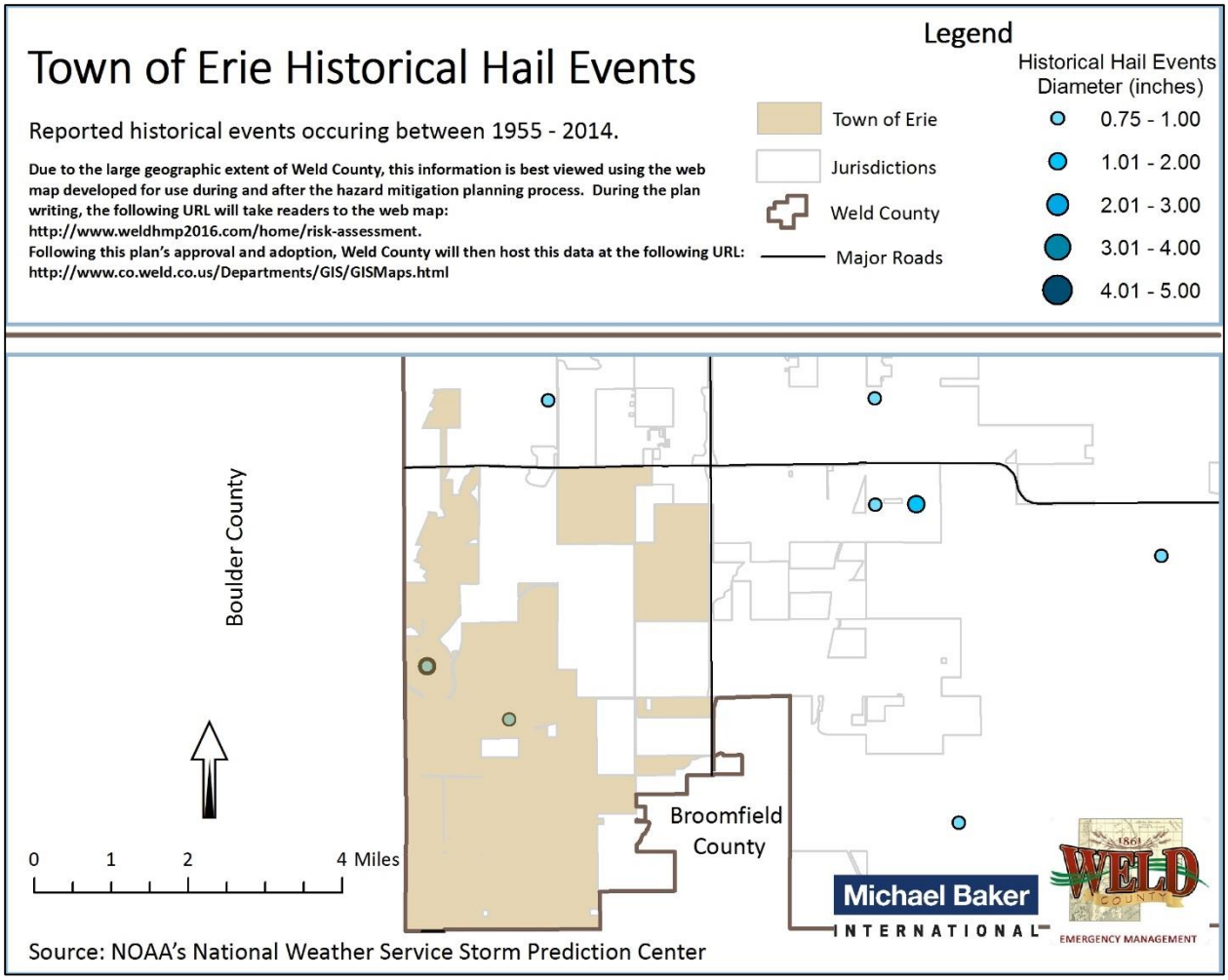
HAZMAT related events occur throughout Weld County every year. The intensity and magnitude of these incidents depend on weather conditions, the location of the event, the time of day, and the process by which the materials are released. *Was it raining when the event happened? Were the hazardous materials being transported by rail when they were released or were they at a fixed facility? Did the spill happen during rush hour traffic or in the middle of the night?* All of these considerations matter when determining the risk and potential damages associated with a HAZMAT incident.

HAZMAT events have the potential to threaten lives and disrupt business activity. Moreover, HAZMAT incidents can cause serious environmental contamination to air, ground, and water sources.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the Town of Erie. There have been 5 recorded hail events within the town limits as well as several events less than one mile from the town limits. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the Town of Erie from lightning. There is a great potential for Lightning to occur at any given time within the Town of Erie.

Winter Storm

According to the best available data, the Town of Erie has experienced 25 Winter Storms since 1996.[22] On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. There were no deaths, injuries or damage to crops reported for any of these storms. The Town of Erie is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the Town of Erie can be considered at risk from severe storms. This includes 20,493 people, or 100% of the Town's population and all buildings and infrastructure within the town. Damages

[22] NOAA's National Climatic Data Center, Storm Events Database

primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail but the structures could suffer broken windows and dented exteriors. Facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential losses

Severe storms affect the entire planning area of the Town of Erie including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of Erie. It is likely that lightning and hail will also be experienced in the area due to such storms.

Extreme Temperatures

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Erie due to extreme temperatures. There are two reports of extreme cold temperatures in central and southern Weld County on December 16th and 17th, 1996. There is a great potential for extreme temperature events to occur within the region at any given time.

Inventory Exposed

Due to the regional nature of extreme temperatures hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of extreme temperatures. This includes places with high numbers of elderly residents, low income families and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to extreme temperatures. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, a high poverty rate and/or large numbers of rental properties can plan accordingly to provide appropriate services and mitigation assistance during extreme temperature events.

Populations Vulnerable to Extreme Temperatures			
	Age: 65 and Over (%)	**Persons Below Poverty Level (%)**	**Renter-occupied housing units (%)**
Colorado	10.9	12.9	34.5
Town of Erie	5.7	4.1	17.4

The Town of Erie has a lower percentage of elderly residents than does the state of Colorado. This is also true for the percentage of people living below poverty level in the town. A much larger percentage of Erie residents own their homes than the general population of Colorado. Based on these statistics, Erie residents (in general) do not appear to be acutely vulnerable to the impacts of extreme temperatures. That said, future mitigation efforts related to extreme temperature should focus on reaching those residents who are elderly, live in poverty or are homeless, or are renters.

Potential losses

Because there is no defined geographic boundary for extreme temperature hazards, all of the people and infrastructure within the Town of Erie are exposed to extreme temperatures. Those with elevated risk and potential loss are the homeless, infirm, elderly, and low income families. Given the lack of historical data and limited likelihood of structural losses in the Town of Erie resulting from extreme heat or cold, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the Town of Erie due to extreme temperatures are currently considered unquantifiable.

Drought

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Erie due to drought. There are four reports of drought in southern Weld County. The four drought events all occurred in April of 2002 and March of 2011. There is a great potential for a drought event to occur at any given time.

Due to the nature of drought, all jurisdictions within Weld County are expected to be impacted under drought conditions. Agricultural communities are expected to bear the brunt of drought effects in the county.

Inventory Exposed

Drought will have little to no direct impact on critical facilities or structures in the Town of Erie. Should a drought affect the water available for public water systems or individual wells, the availability of clean drinking water could be compromised. This situation would require emergency actions and could possibly overwhelm local capacities and financial resources.

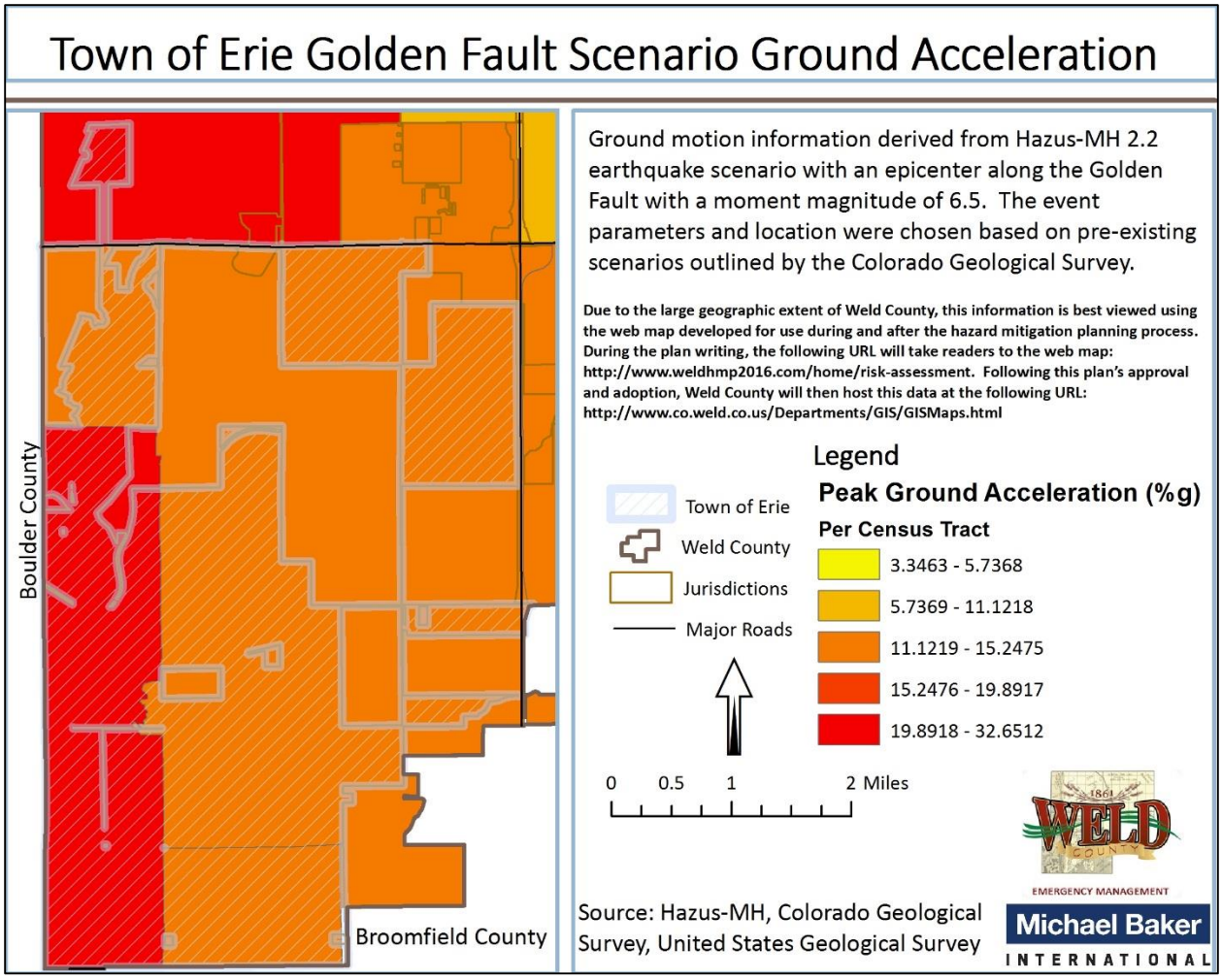
Potential losses

Although it is unlikely that drought conditions will affect existing buildings, infrastructure, and critical infrastructure, economic livelihoods in the Town of Erie could be negatively impacted due to crop loss, water shortages, and wildfires as a result of drought. Possible losses/impacts to critical facilities include the loss of critical function due to low water supplies.

As Erie continues to grow, it will consider water-saving mitigation activities that will decrease local vulnerability to drought.

Earthquake

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Erie due to earthquakes. Although there is no historic data showing hazardous impacts on the town, there is a great potential for earthquake events to occur at any given time.



Inventory Exposed

According to the Hazus inventory, there are an estimated 5,226 buildings in the Town of Erie with a total building replacement value (excluding contents) of $981,531,250.

Town of Erie

Golden Fault Scenario Loss Estimation

Loss estimations are derived from Hazus-MH 2.2 earthquake scenario with an epicenter along the Golden Fault with a moment magnitude of 6.5. Total economic losses include: building repair costs, contents, business inventory, costs of relocation, capital-related, wage, and rental losses. Point locations are sometimes approximate and not the actual building location. Where parcels do not have builldings, the point is the centroid of that parcel.

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html

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Potential losses

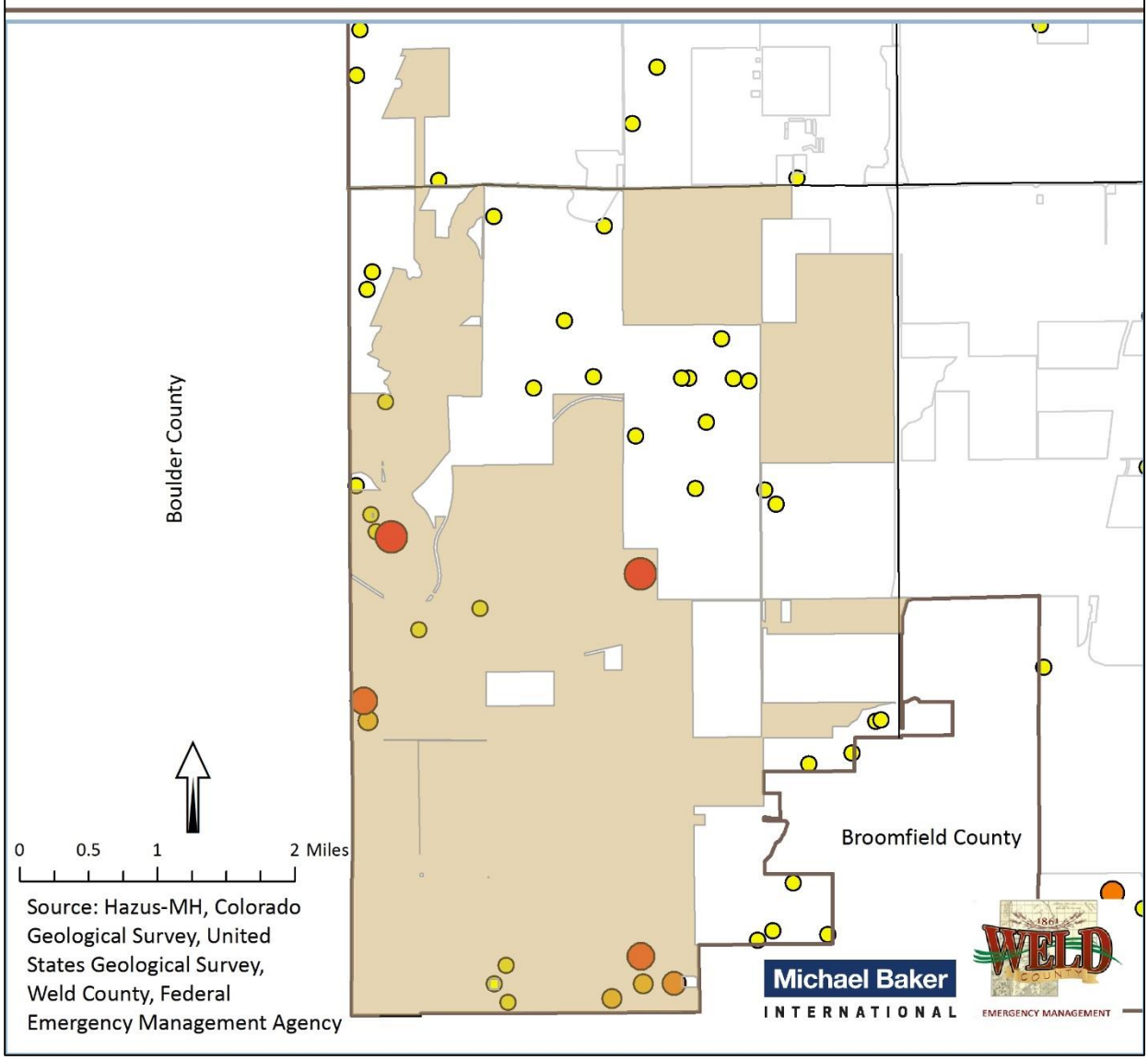
For the Golden Fault earthquake scenario, the total losses were estimated to be $1,746,600. Spatially, a majority of the worst loss areas were located in the southern and western, urban portion of the town. Generally, these are areas which are more densely/highly populated and more closely located to the Golden epicenter. Hazus estimates 15 critical facilities with a total loss of $6,438,957. Of the 15 critical facilities, 12 will be over 50% functional on the first day of the event.

Town of Erie

Golden Fault Scenario Loss Estimation - Critical Facilities

Loss estimations are derived from Hazus-MH 2.2 earthquake scenario with an epicenter along the Golden Fault with a moment magnitude of 6.5. Total economic losses include: building repair costs, contents, business inventory, costs of relocation, capital-related, wage, and rental losses. Critical facilities as defined by the Weld County OEM. Point locations are sometimes approximate and not the actual building location.

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html



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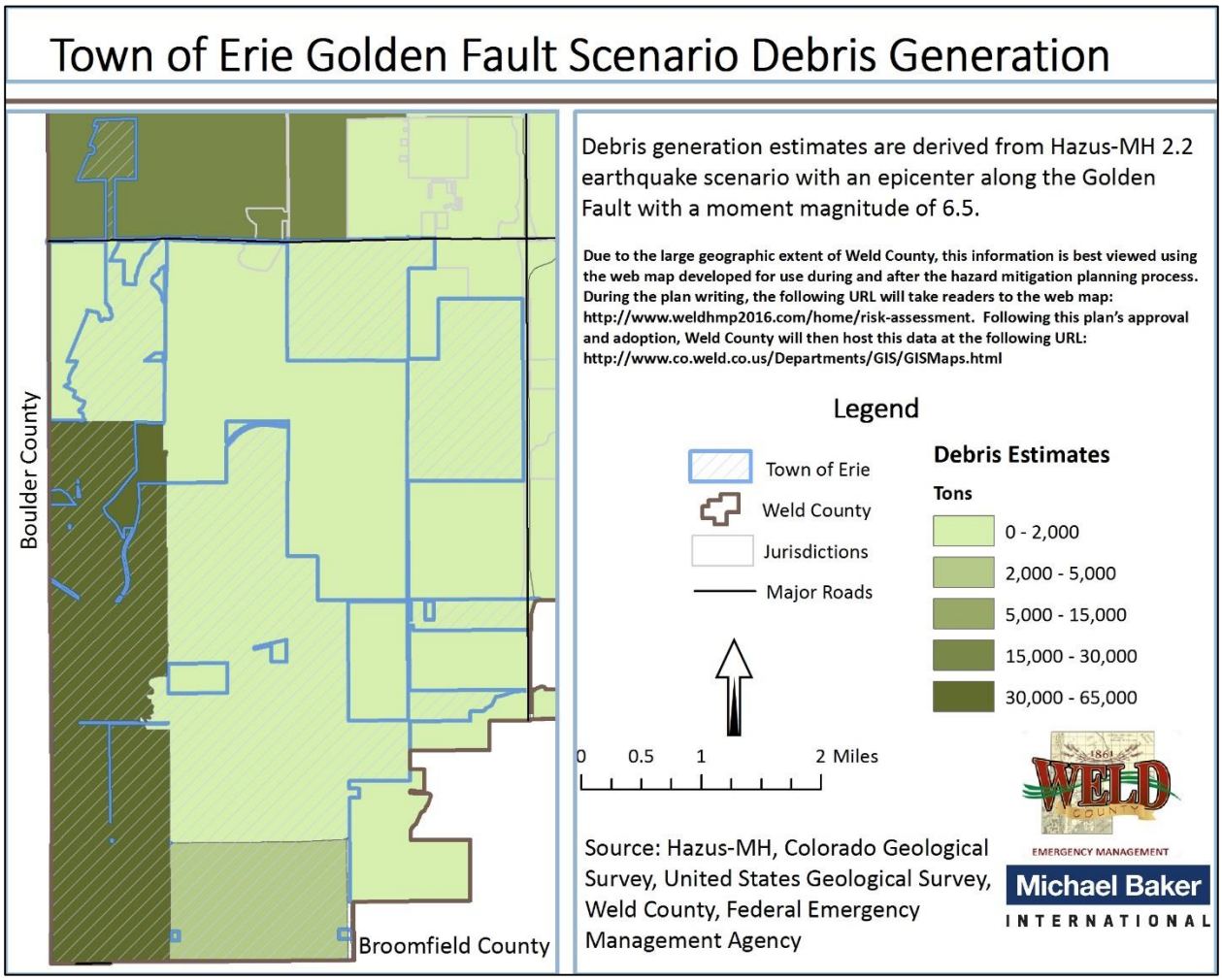
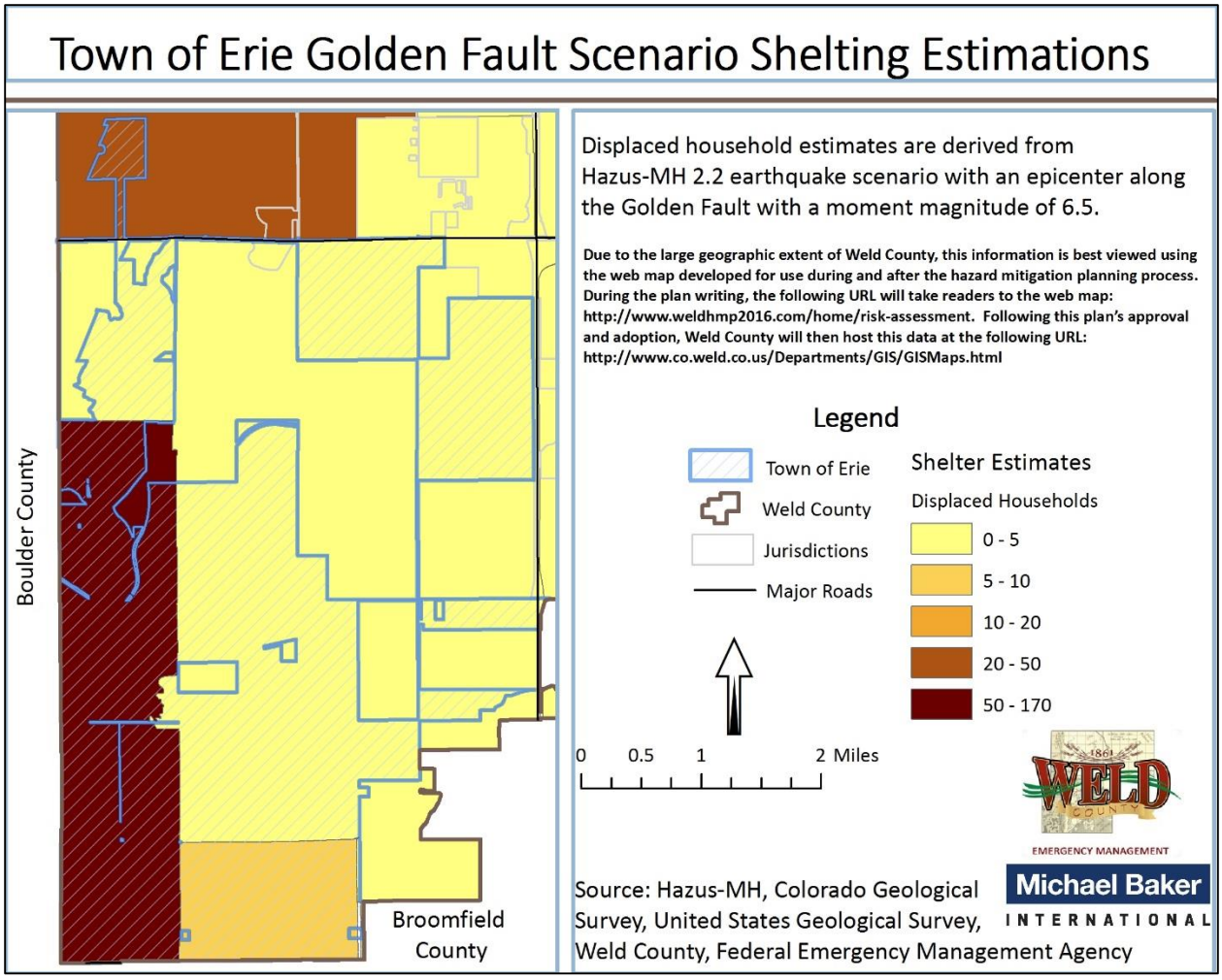
The Golden Fault scenario estimates that a total of 85 tons of debris will be generated from that 6.5 magnitude event. Of the total amount, brick and wood make up 30% of the total, with the remainder of the debris being reinforced concrete and steel. When the debris tonnage is converted to an estimated number of truckloads, it will require 4 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.



The Golden Fault model estimates that 204 households will be displaced in the Town of Erie due to an earthquake and 116 people will seek temporary shelter in public shelters.



Land Subsidence

The Colorado Geological Survey has developed a collection of Case Histories related to historical land subsidence events in Colorado. Two out of five of CGS's Case Histories are located in Erie, Co. Summaries of the two subsidence events in Erie have been included below (provided by Colorado Geological Society).

Case History: 2009, Jay Road, Erie, CO

In January 2009 a large subsidence hole was reported at a residence near the corner of a horse barn. The property owners reported the hole "opened up overnight" and a fence and gate had been destroyed by the event. The hole measured roughly 25 feet by 25 feet by 15 feet deep and was filled with water. Because of the nature of the opening and the proximity to livestock and human activities, the event was considered a subsidence emergency and was backfilled by the Abandoned Mine Lands program.

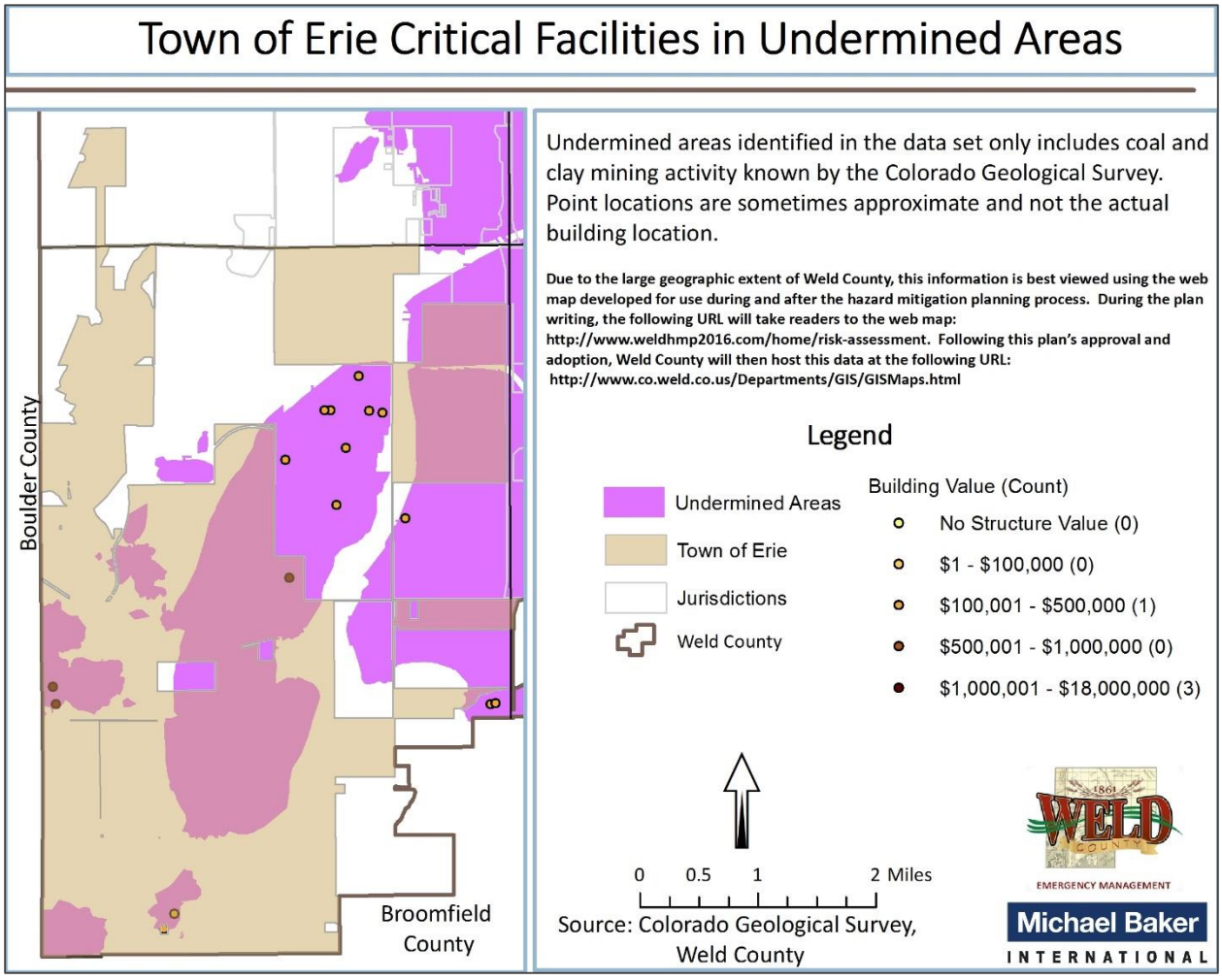
Case History: 2008, Erie, CO

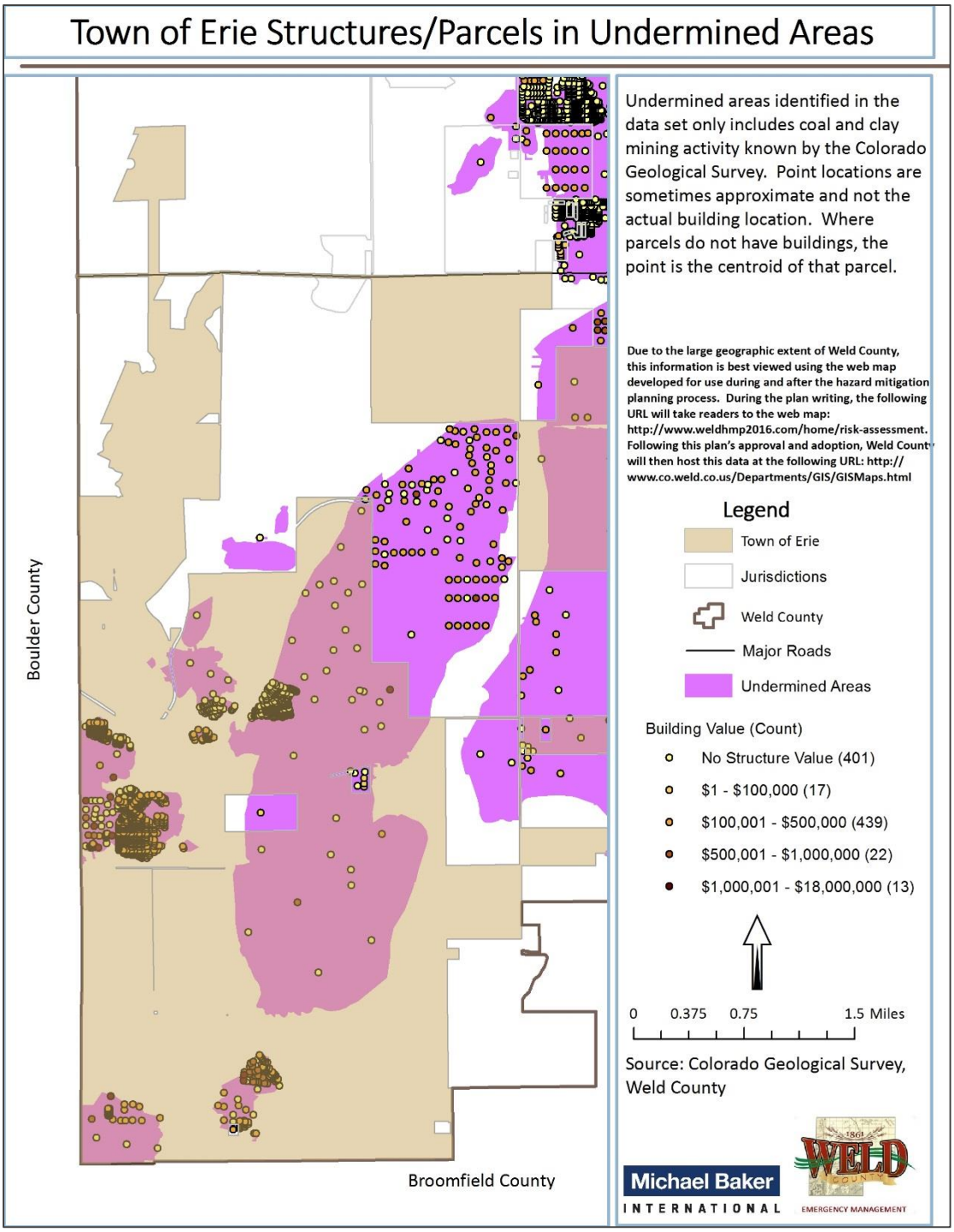
In December of 2008, a large subsidence hole in a field west of Erie was reported. The hole was about 50 feet in diameter and 35 feet deep. The field where the hole appeared was under consideration for annexation by the Town of Erie for future residential development. However, a geophysical investigation conducted three months prior to the event did not show any evidence of voids in the area. In fact, the hole was located outside of the mined area shown on the mine map. During the mitigation process, a

secondary subsidence pit of smaller dimensions was found directly west of the original hole. Both holes were backfilled by the Abandoned Mine Lands program.

Inventory Exposed

A structure may be at risk to the impacts of land subsidence if it is located over or close to an undermined area. The maps below identify the locations within the Town of Erie that have elevated potential for subsidence due to historical mining activity and development activity.





Potential losses

The following table summarizes the potential losses associated with potential land subsidence events in the Town of Erie County. Structures and parcels within high risk areas, as well as critical facilities, have been identified and their collective value quantified.

	Count	Total Assessor Value
Structure/Parcels	892	$159,337,763
Critical Facilities	4	$25,036,045

The risk analysis indicates that Erie has relatively high exposure to land subsidence, primarily because of the location of historically undermined areas in relation to urban development and population growth. Not only have there been previous land subsidence events reported in the county, CGS data of at-risk areas shows a number of areas of historical undermining in the county, many of which intersect with critical facilities, largely populated areas, and future development areas.

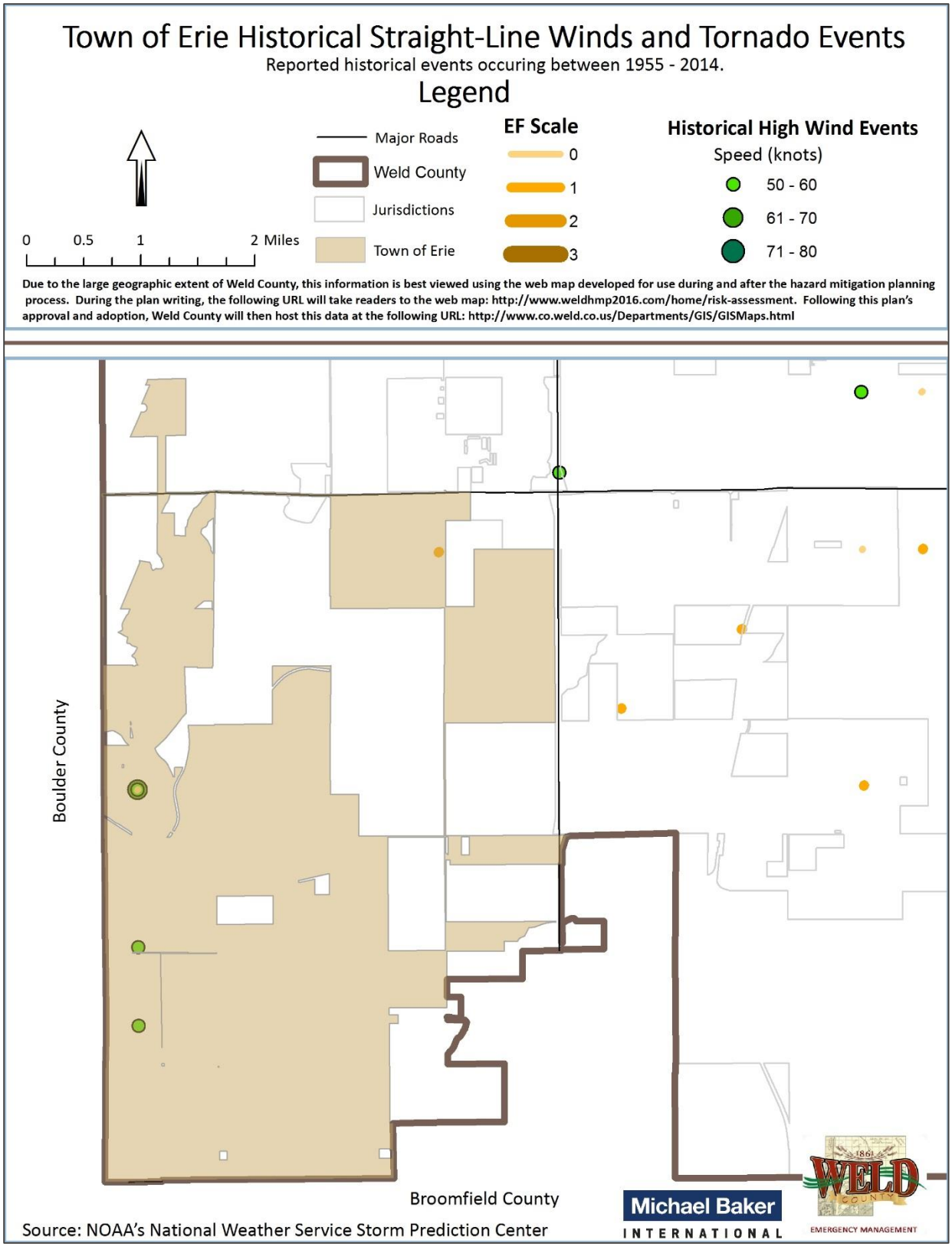
Straight-Line Winds and Tornado

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Erie due to tornadoes. There have been three tornadoes reported within the town limits between 1976 and 2013. A tornado occurred on July 12, 1979 and caused $4,000 worth of property loss. There have been tornadoes reported close to the borders of the Town limits. Tornadoes will remain a highly likely occurrence for the Town of Erie.

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Erie due to straight-line winds. There have been 6 reports of high wind events within the town limits between 1987 and 2014.

Tornadoes touched down in multiple areas across Colorado on Saturday, August 3, 2013 including Erie, according to the National Weather Service. The Boulder Office of Emergency Management alerted the public to a tornado warning around 7 P.M. Major damages were inflicted on the Town's Boulder Valley Velodrome, which is only the 2nd such facility in the state and whose construction was close to being completed.

Straight-line winds remain a highly likely occurrence for the Town of Erie.



Inventory Exposed

All assets located in the Town of Erie can be considered at risk from straight-line winds and tornadoes. This includes 20,493 people, or 100% of the town's population, and all buildings and structures within the town. Most structures, including the town's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

Potential losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $981,531,250. Potential losses could be substantial.

Prairie Fire

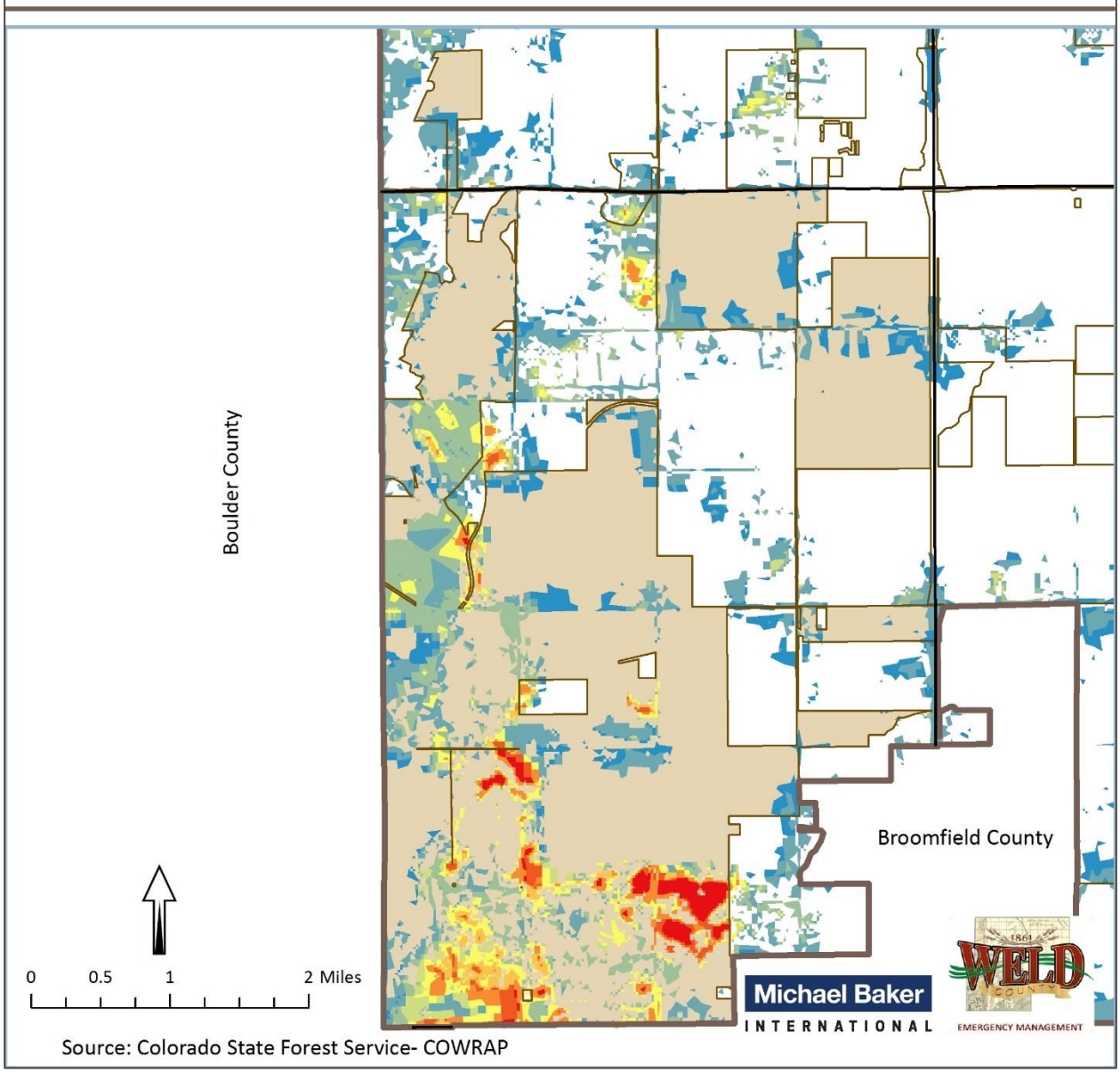
On July 1st through July 7th, 1994, the Town of Erie experienced a prairie fire. There is no data available for injuries, deaths, or damages. Although there is no historic data showing hazardous impacts on the town, there is a great potential for prairie fire events to occur at any given time.

There are a number of areas in the southeastern and south central region of the town that are within the medium to highest level on the WUI Risk Index Scale. This means that the potential impact on people and homes from a prairie fire in those areas is medium to high in relationship to the rest of Weld County. This level of risk is derived by combining housing density with predicted flame length.

Town of Erie
Wildland Urban Interface Risk Index

Wildland urban interface risk index measures the potential impact on people and their homes from wildfire. This risk ranking was calculated by combining housing density with flame length - for example, areas with high housing density and high flame length are rated as "most negative impact" (-9).

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html



Inventory Exposed

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Fires can extensively impact the economy of an affected area, including the agricultural, recreation and tourism industries, water resources, and the critical facilities upon which the Town of Erie depends. There are 652 identified structures located in areas with the *highest* wildfire threat total. The appraisal value of the assets within these high threat areas is approximately $ 136,245,819. When considering assets located in areas of *moderate* wildfire threat there are 395 structures identified. The appraised value of these assets is approximately $ 81,520,219. There are no critical facilities in the highest wildfire threat areas. There is one critical facility located in an area with the moderate wildfire threat. The appraised value of this facility is $312,720.

Potential losses

Currently, there is no method for estimating wildfire loss. In most cases, the emergency management community equates potential losses to assets exposed to wildfire as a method of quantifying and comparing potential losses across communities. The exposure data provided in the previous section (Inventory Assets Exposed) provides the clearest picture of potential losses to wildfire in the Town of Erie.

Public Health Hazards

Public health hazards, including epidemics and pandemics, have the potential to cause serious illness and death, especially among those who have compromised immune systems due to age or underlying medical conditions. During the 2015 planning process, pandemic flu was identified as the key public health hazard in the county.

Inventory Exposed

Due to the regional nature of public health hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of public health hazards. This includes places with high numbers of elderly residents, young children, low income families, and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to public health hazards. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, young children, and a high poverty rate can plan accordingly to provide appropriate services and mitigation assistance during public health hazards outbreaks.

Populations Vulnerable to Public Health Hazards			
	Age: 65 and Over (%)	**Age: 5 and under (%)**	**Persons Below Poverty Level (%)**
Colorado	10.9	6.8	12.9
Town of Erie	5.7	9.6	4.1

The Town of Erie has a lower percentage of elderly residents than does the state of Colorado. This is also true for the percentage of people living below poverty level in the town. A larger percentage of Erie residents are under the age of 5 than the general population of Colorado. Based on these statistics, Erie residents (in general) do not appear to be acutely vulnerable to the impacts of public health hazards. That said, future mitigation efforts related to public health hazards should focus on reaching those residents who are elderly, young children, live in poverty, or are homeless.

Potential Losses

Because there is no defined geographic boundary for public health hazards, all of the people and infrastructure within the Town of Erie are exposed to public health hazards. Those with elevated risk and potential loss are the homeless, infirm, elderly, young and low income families. Given the lack of historical data in the Town of Erie resulting from public health hazards, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the Town of Erie due to public health hazards are currently considered unquantifiable.

Capabilities Assessment

The capability assessment examines the ability of the Town of Erie to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager		X	
Floodplain Administrator		X	
Community Planner	X		
GIS Specialist	X		
Grant Writer		X	
Chief of Police serves as the Emergency Manager, Civil Engineer III serves as the Floodplain Administrator, and all departments share grant writing responsibilities.			

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the Town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	Y
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	N

An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Erie has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

The Town of Erie has had previous experience receiving, administering, and applying for grants for mitigation and planning-related activities or projects. These include grants from:

- FEMA, UASI, UDFCD, FAA, and DOLA

Plan Maintenance and Implementation

The Town of Erie has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Erie	*The Town of Erie will follow Boulder County's schedule for plan monitoring, revision, and maintenance. Mitigation Actions will be monitored and administered by appropriate Town Departments (i.e. Administration, Police and Public Works).* *The Town of Erie is participating in Hazard Mitigation Plans with both Boulder and Weld County. Plans will be made public (online) when they are brought forward for Board approval. Any changes to these plans requiring Board approval would also be made public.*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Erie did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Erie based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Erie	*"We will update our Capital Improvement Plans to integrate our mitigation actions."*

Mitigation Action Guides

The Town of Erie previously participated in the Boulder County Hazard Mitigation Plan which was inclusive of the Weld County portion of Erie. However, Erie did not participate in the 2009 Northeast Colorado Regional Hazard Mitigation Plan. The following table reports on those past Actions.

Mitigation actions **by Agency**	Responsible Office	Achieved	In progress	Date	Priority Then	Priority Now
Town of Erie						
Implement Emergency email and txt messaging notification system in ERIE	Town of Erie - Administration	Y			High	NA
Continue to implement sound floodplain management practices as communities participating in the NFIP	Town of Erie - DPW	Y	Y		High	High
Install additional Outdoor Warning Sirens at new MVFR stations to be built starting 2015.	- Town of Erie - MVFR	N	N	1/2015		High
Emergency Generator for Town Hall	Town of Erie - DPW	N	N	1/2015		High
Coal Creek Trail Improvements	Town of Erie - DPW	N	Y	1/2015		Medium
Boulder Creek Trail Improvements	Town of Erie - DPW	N	N	1/2015		Medium

The following Mitigation Action Guides present each of the community's new mitigation actions that were developed for the 2016 Plan.

Erie: Install Emergency Generator	
PRIORITY: High	**HAZARDS ADDRESSED: Severe Storms**
LOCATION: Town of Erie	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 2017	
ISSUE: Erie Town Hall is located at 645 Holbrook Street in Historic Downtown Erie. The building is a renovated, turn of the century school house. Though updated in 1998-1999, the building lacks a sufficient emergency generator to supply electrical power to all offices including Town Administration and the Erie Police Department.	
RECOMMENDATION: Improve continuity of operations. Minimize loss of life, public safety.	
ACTION: Install emergency generator	
LEAD AGENCY: Town of Erie Administration – Fred Diehl, 303-926-2764	**EXPECTED COST:** $75,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Pre-Hazard Mitigation Grants
PROGRESS MILESTONES:	

Erie: Install Outdoor Warning Sirens

PRIORITY: High	**HAZARDS ADDRESSED: Severe Storms, Flooding**
LOCATION: Town of Erie	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 2015	**OBJECTIVES ADDRESSED: A, E**
TARGET COMPLETION DATE: 2017	
ISSUE: The Town of Erie and Mountain View Fire Rescue (MVFR) have partnered to provide an outdoor warning notification siren for MVFR's Station 6, located at Erie Parkway and Bonanza Drive in the Grandview neighborhood of Erie. The siren matches others currently in operation throughout Boulder County and augments the siren located on 111th Street in Lafayette, which services southwestern Erie. Coordination and testing of the county-wide network of outdoor sirens is managed by the Boulder Office of Emergency Management (BOEM). MVFR will be constructing two new fire stations within Erie in the near future. Expansion of Erie's outdoor warning system within our growing community is essential to efforts to minimize loss of life during severe weather events.	
RECOMMENDATION: Install an early warning system to minimize loss of life and increase public safety.	
ACTION: Install Outdoor Warning Sirens	
LEAD AGENCY: Town of Erie Administration – Fred Diehl, 303-926-2764	**EXPECTED COST:** $50,000 X 2 = $100,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Pre-Hazard Mitigation Grants
PROGRESS MILESTONES:	

Erie: Boulder Creek Improvements	
PRIORITY: Medium	**HAZARDS ADDRESSED: Flooding**
LOCATION: Town of Erie	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 2017	
ISSUE: The Town of Erie Department of Public Works has started design of protection of the banks eroded during the September 2013 flood and add a diversion structure on Boulder Creek by the North Water Reclamation Facility. Once design work is completed, the Town would seek various funding sources for construction of improvements along this portion of Boulder Creek.	
RECOMMENDATION: Restore proper channel flow / flood prevention. Minimize loss of life, public safety and improve water quality.	
ACTION: Boulder Creek Improvements	
LEAD AGENCY: Town of Erie Department of Public Works – Gary Behlen, 303-926-2871.	**EXPECTED COST:** $250,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Pre-Hazard Mitigation Grants, 319 Funding

PROGRESS MILESTONES:

Erie: Coal Creek Improvements	
PRIORITY: Medium	**HAZARDS ADDRESSED: Flooding**
LOCATION: Town of Erie	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 2017	
ISSUE: The Town of Erie Department of Public Works has started design of improvements to two sections of Coal Creek; one from Vista Ridge Parkway south to the Concrete Box Culvert, and the other section near the irrigation reservoir east of Erie Commons. Once design work is completed, priority areas will be defined so the project can be phased and funding allocated. The Town would seek various funding sources for construction of improvements along both sections of Coal Creek.	
RECOMMENDATION: Restore proper channel flow / flood prevention. Minimize loss of life, public safety and improve water quality.	
ACTION: Boulder Creek Improvements	
LEAD AGENCY: Town of Erie Department of Public Works – Gary Behlen, 303-926-2871.	**EXPECTED COST:** $2,500,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Pre-Hazard Mitigation Grants, 319 Funding
PROGRESS MILESTONES:	

Letter of Intent to Participate

Fred Diehl
Town of Erie,
Assistant to the
Town Administrator
645 Holbrook
P.O. Box 750
Erie, Colorado 80516

November 20, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Erie is submitting this letter of intent to confirm that the Town of Erie has agreed to participate in the Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Erie agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town of Erie understands that it must engage in the following planning process, as more fully described in FEMA's Local Mitigation Planning Handbook dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Fred Diehl Assistant to the Town Administrator, commit the Town of Erie to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 20th day of November, 2014.

Sincerely,

Fred Diehl
Assistant to the Town Administrator

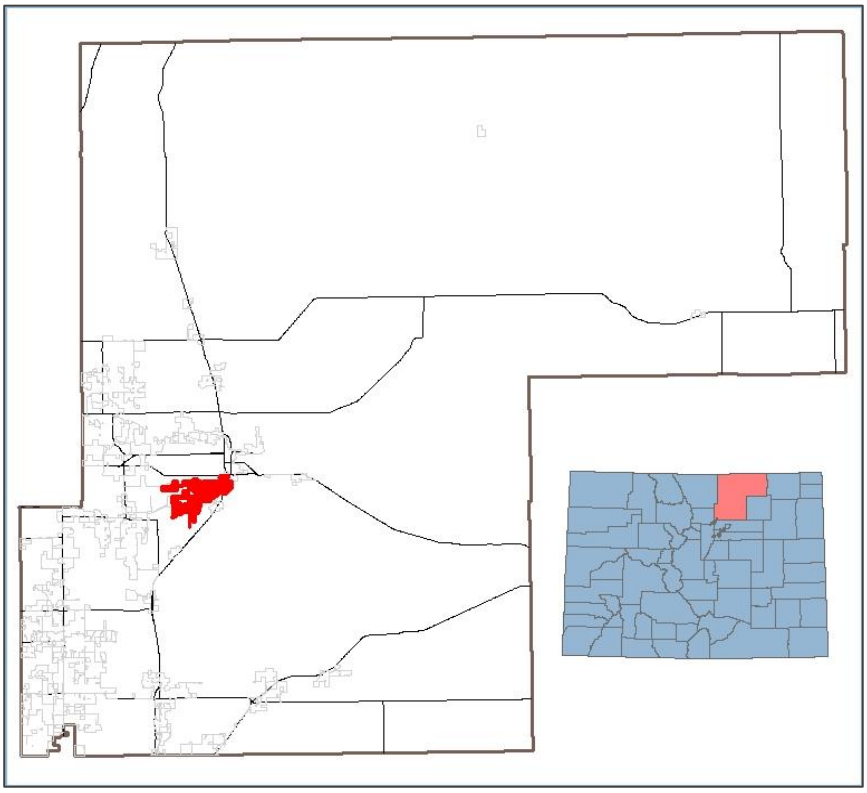
645 Holbrook • P.O. Box 750 • Erie, Colorado, 80516 • Phone (303) 926-2700 • Fax (303) 926-2705

EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

City of Evans

The City of Evans, incorporated in 1869, is located in northern Colorado at the crossroads of US Highway 85 and US Highway 34. Once the County seat of Weld County, Evans is the second most populated municipality in the County. The City of Evans is growing rapidly, and the population nearly doubled between 2000 and 2010.



In 2010, the City established a basic policy direction through the development of a Comprehensive Plan. The following four categories represent the fundamental principles necessary to guide growth and development in Evans over the next 20 years:

1. Orderly, Efficient Growth Pattern and Adequate Public Facilities, Including an Efficient Transportation System
2. Open Space, Parks, Trails, and Recreation
3. Economic Development Opportunities
   Stable, Cohesive Neighborhoods and Improved Community Identity

Community Profile

The table below summarizes key demographic and development related characteristics of the City of Evans.

City of Evans Statistics		
	City of Evans	Colorado
Population, 2014	20,473	5,355,866
Population, % change April 1, 2010 to July 1, 2014	10.4%	6.5%
% Population under 5 years, 2010	9.5%	6.8%

% Population under 18 years, 2010	31.5%	24.4%
% Population 65 years and over, 2010	6.1%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	26.6%	16.8%
Homeownership Rate	58.5%	65.4%
Persons Per Household	3.05	2.53
Persons below poverty level, %, 2009-2013	19.6%	13.2%
Median Household Income, 2009- 2013	$46,847	$58,433

Source: US Census Bureau

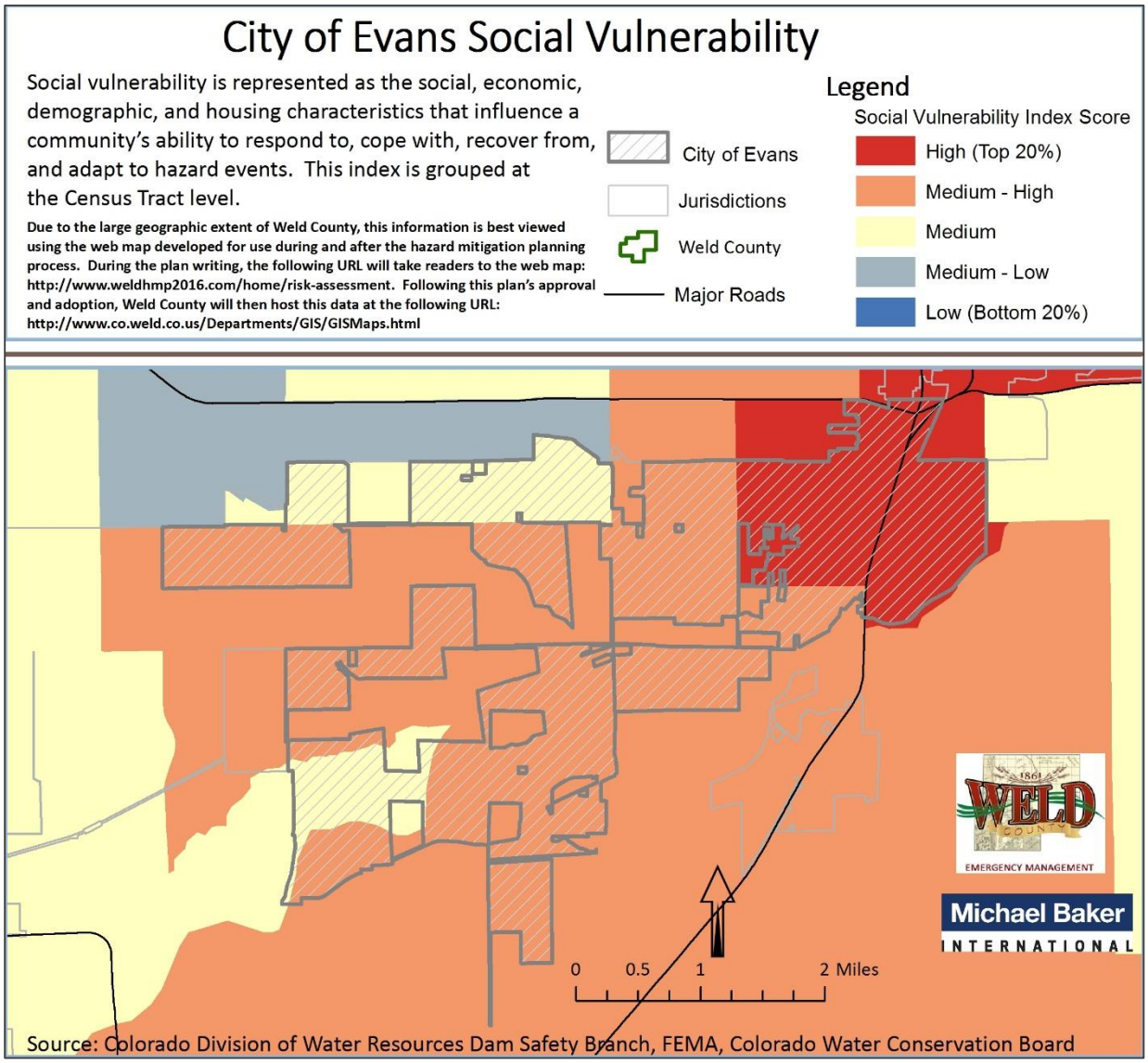
Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Flood	1.2	0.6	0.8	0.1	0.4	3.100
HAZMAT	0.9	0.6	0.8	0.4	0.3	3.000
Severe Storm	0.9	0.6	0.8	0.2	0.3	2.800
Extreme Temperatures	0.9	0.6	0.8	0.1	0.4	2.800
Drought	0.9	0.6	0.8	0.1	0.4	2.800
Earthquake	0.3	1.2	0.8	0.4	0.1	2.800
Land Subsidence	0.9	0.6	0.4	0.4	0.4	2.700
Straight-Line Winds & Tornadoes	0.6	0.6	0.8	0.4	0.1	2.500
Prairie Fire	1.2	0.3	0.4	0.4	0.2	2.500
Public Health Hazards	0.3	0.9	0.8	0.1	0.4	2.500
HIGH RISK (2.5 or higher): Flood; HAZMAT; Sevrere Storm; Extreme Temperatures; Drought; Earthquake; Land Subsidence; Straight-Line Winds & Tornadoes; Prairie Fire; Public Health Hazards						
MODERATE RISK HAZARD (2.0 - 2.4)						
Low Risk (1.9 or lower)						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the City of Evans, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the City of Evans.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The City of Evan's social vulnerability map shows social vulnerability within the community.

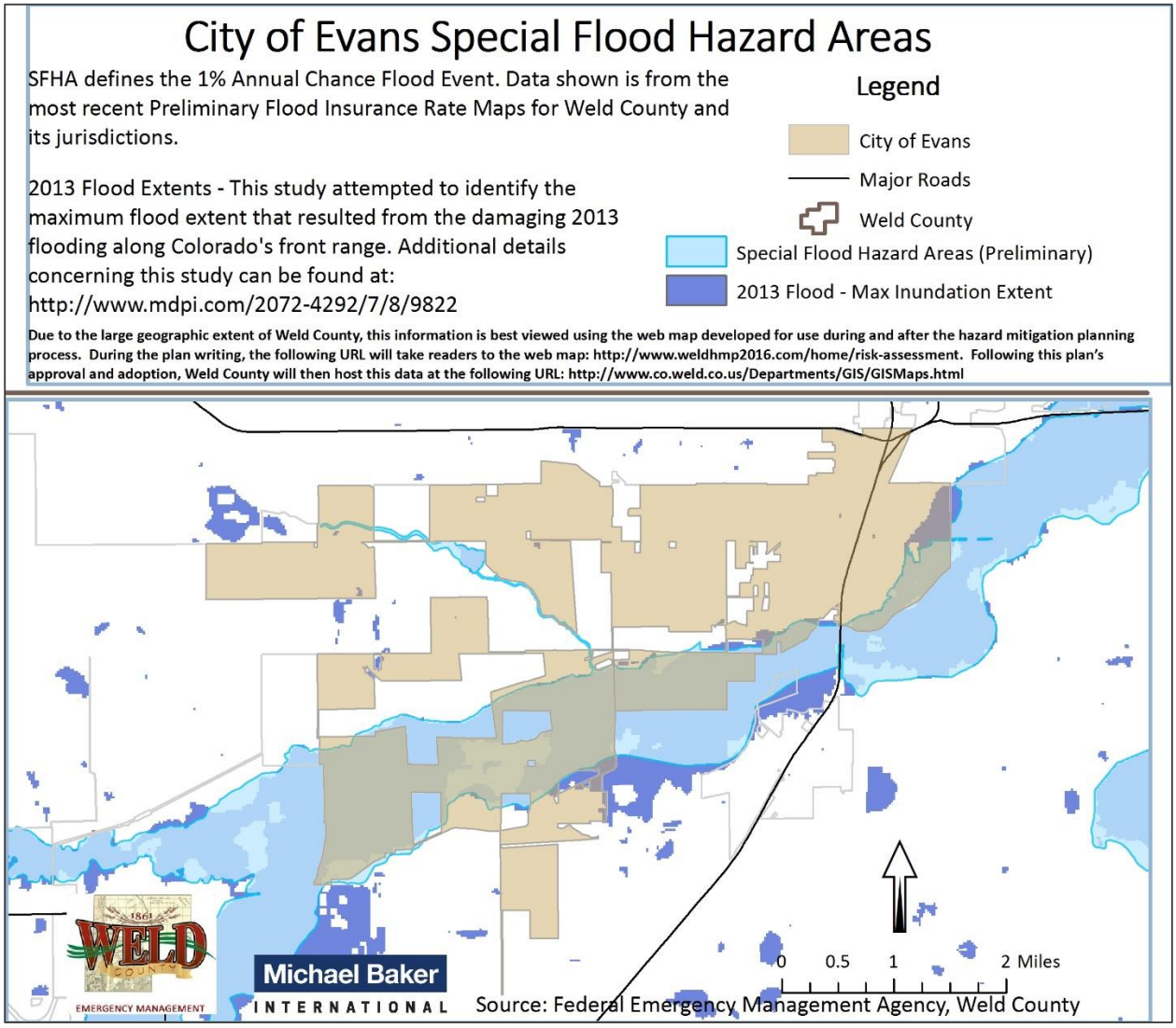


The City of Evans is characterized by a mix of medium to high levels of social vulnerability. The majority of the City is within the medium-high social vulnerability range and the north eastern portion of the town falls within the top 20% of socially vulnerable places in Weld County. Evaluating the individual social vulnerability indicators within the community over time will give local emergency managers, planners, and stakeholders an even clearer picture of which social vulnerability factors have the largest negative effect on the town and it resiliency.

Flood

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the City of Evans caused by flooding. There have been flood events that occurred within the

town limits as well as near the town limits. Although there is no historic data showing hazardous impacts on the town, there is a great potential for flood events to occur at any given time.



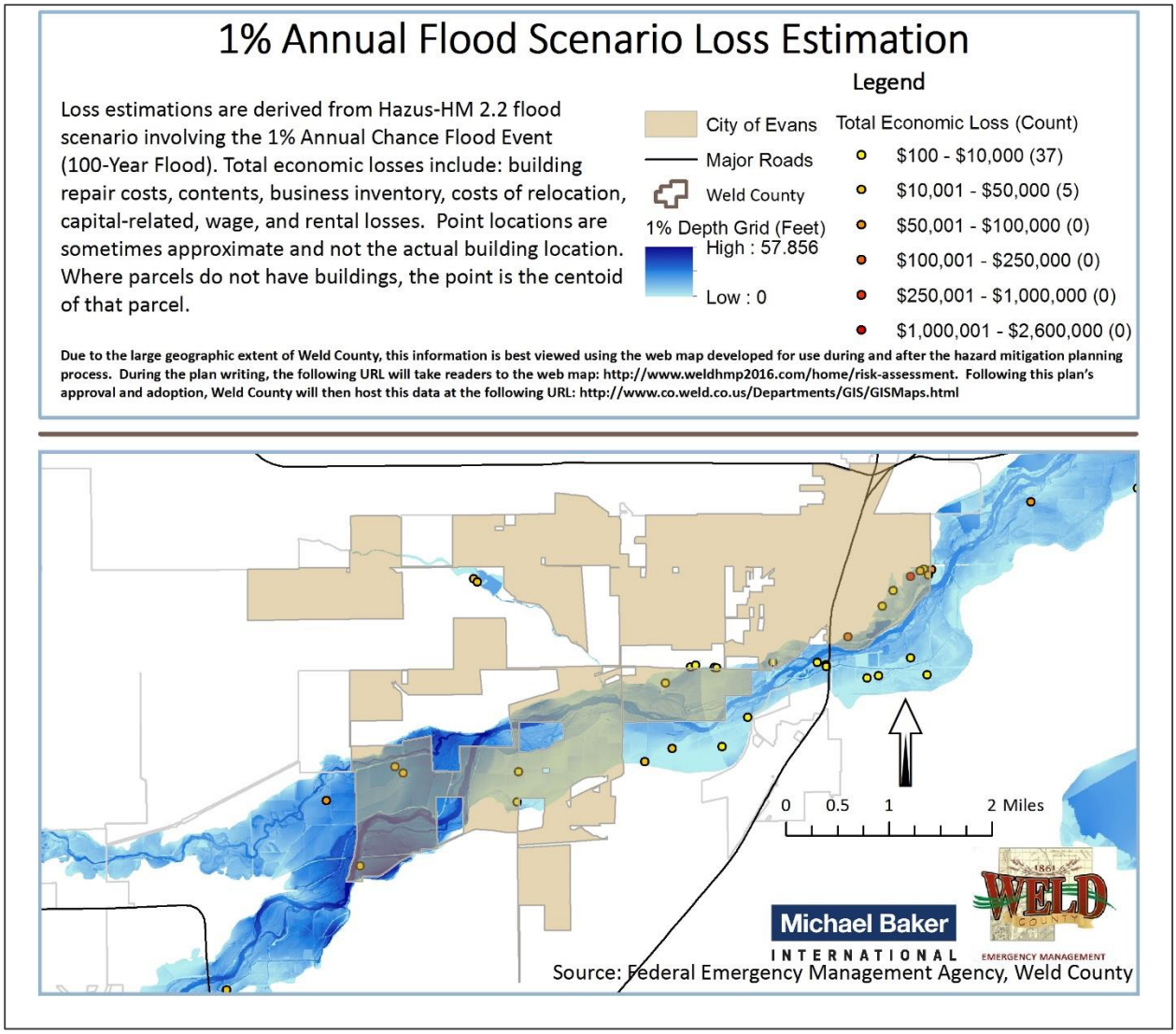
Inventory Exposed

The critical facility and structure exposure analysis estimates that there are no critical facilities and 13 structures in the City of Evans that are flood prone (not including the total miles of flood prone infrastructure). The appraised value of these exposed structures is approximately $2.1 million dollars.

Potential losses

Hazus estimates for the City of Evans that for a 100-year flood event, approximately 13 buildings will experience flood damage. The total economic loss estimated for the 100-year flood is over $2.6 million dollars.

The map below shows the flooding threat to structures in the City of Evans by layering identified special flood hazard areas (SFHA) with the locations of community-defined structures.



HAZMAT

Based on data supplied by the Pipeline and Hazardous Materials Safety Administration's (PHMSA) Incident Reports Database there have been 36 reported HAZMAT incidents within the City of Evans between 1972 and 2015.

Inventory Exposed

Two designated nuclear and hazardous materials transportation routes run adjacent the City of Evans (US 34 and US 85). All structures, natural resources, and people located within one mile of these transportation routes are exposed to the impacts of a potential HAZMAT event. Structures, people, and natural resources located outside of a one mile buffer of these routes are also at risk of exposure.

Assets and people that are located within one mile of an industrial or commercial fixed site are also at risk of exposure to the impacts of a HAZMAT release.

Potential losses

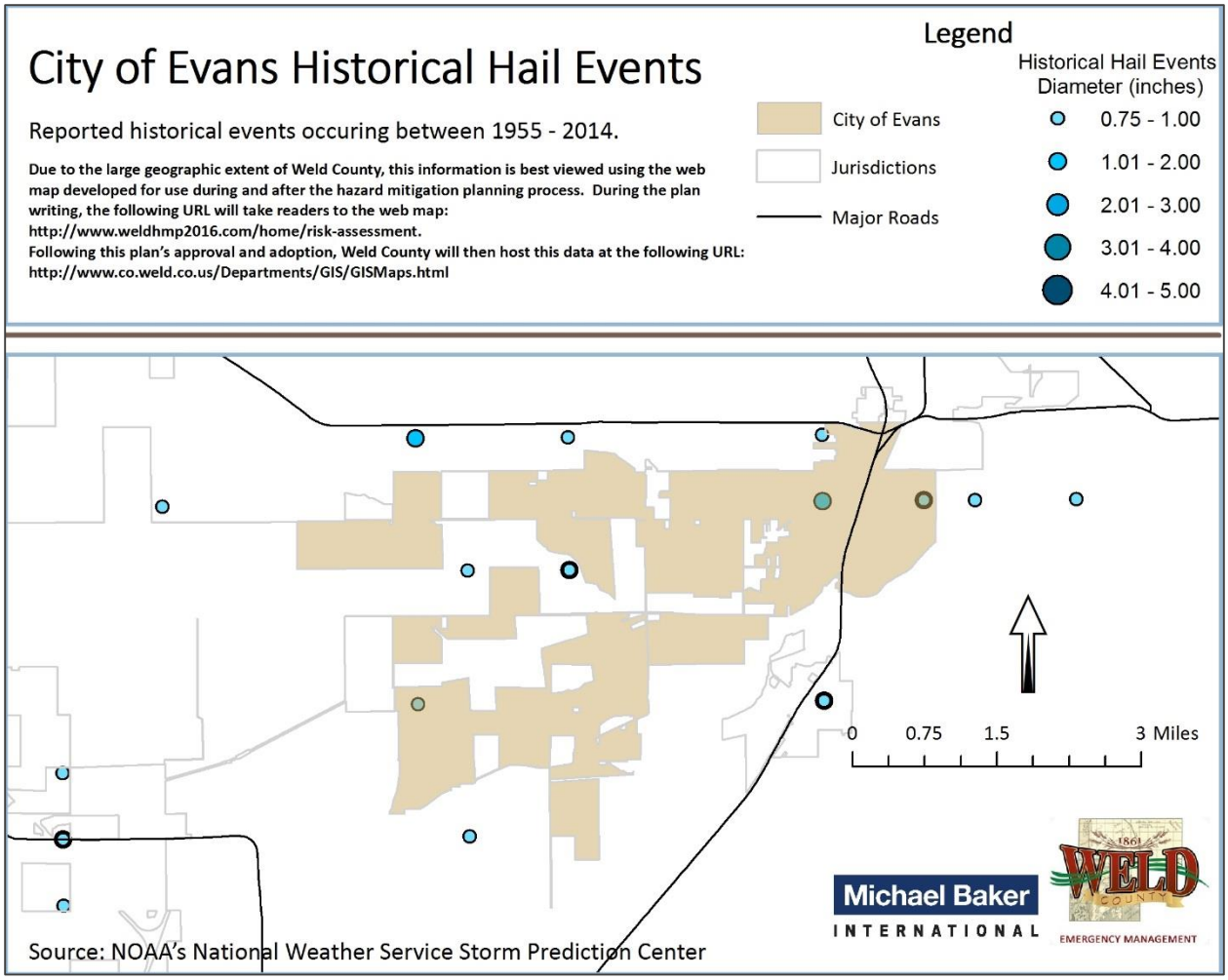
HAZMAT related events occur throughout Weld County every year. The intensity and magnitude of these incidents depend on weather conditions, the location of the event, the time of day, and the process by which the materials are released. *Was it raining when the event happened? Were the hazardous materials being transported by rail when they were released or were they at a fixed facility? Did the spill happen during rush hour traffic or in the middle of the night?* All of these considerations matter when determining the risk and potential damages associated with a HAZMAT incident.

HAZMAT events have the potential to threaten lives and disrupt business activity. Moreover, HAZMAT incidents can cause serious environmental contamination to air, ground, and water sources.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the City of Evans. There have been 9 recorded hail events within the City of Evans as well as several hail events that occurred less than one mile from the town limits, none of which reported injuries, deaths, property damage, or crop damage. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the best available data, no injuries, property damage, or crop damage have occurred within the City of Evans caused by Lightning. There have been two recorded Lightning incidents in Evans one of which resulted in a death on June 5, 2009. There is a great potential for Lightning to occur at any given time in the City of Evans.

Winter Storm

According to the best available data, the City of Evans has experienced 25 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. There were no deaths, injuries or damage to crops reported for any of these storms. The City of Evans is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the City of Evans can be considered at risk from severe storms. This includes 20,473 people, or 100% of the town's population and all buildings and infrastructure within the city. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the city's critical facilities, should be able to provide adequate protection from hail

but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

Severe storms affect the entire planning area of the City of Evans including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the City of Evans. It is likely that lightning and hail will also be experienced in the area due to such storms.

Extreme Temperatures

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Evans due to extreme temperatures. There are two reports of extreme cold temperatures in central and southern Weld County on December 16th and 17th, 1996. There is a great potential for extreme temperature events to occur within the region at any given time.

Inventory Exposed

Due to the regional nature of extreme temperatures hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of extreme temperatures. This includes places with high numbers of elderly residents, low income families and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to extreme temperatures. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, a high poverty rate and/or large numbers of rental properties can plan accordingly to provide appropriate services and mitigation assistance during extreme temperature events.

Populations Vulnerable to Extreme Temperatures			
	Age: 65 and Over (%)	**Persons Below Poverty Level (%)**	**Renter-occupied housing units (%)**
Colorado	10.9	12.9	34.5
City of Evans	6.1	19.6	41.5

The City of Evans has a lower percentage of elderly residents than does the state of Colorado. Evans has a higher percentage of people living below poverty level than the state. A lower percentage of Evans residents own their homes than the general population of Colorado. Based on these statistics, Evans residents (in general) appear to be more acutely vulnerable to the impacts of extreme temperatures than the general population of Colorado. That said, future mitigation efforts related to extreme temperature should focus on reaching those residents who are elderly, live in poverty, are homeless, or are renters.

Potential Losses

Because there is no defined geographic boundary for extreme temperature hazards, all of the people and infrastructure within the City of Evans are exposed to extreme temperatures. Those with elevated risk and potential loss are the homeless, infirm, elderly, and low income families. Given the lack of historical data and limited likelihood of structural losses in the City of Evans resulting from extreme heat or cold, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the City of Evans due to extreme temperatures are currently considered unquantifiable.

Drought

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Evans due to drought. There are four reports of drought in southern Weld County. The four drought events all occurred in April of 2002 and March of 2011. There is a great potential for a drought event to occur at any given time.

Inventory Exposed

Drought will have little to no direct impact on critical facilities or structures in the City of Evans. Should a drought affect the water available for public water systems or individual wells, the availability of clean drinking water could be compromised. This situation would require emergency actions and could possibly overwhelm local capacities and financial resources.

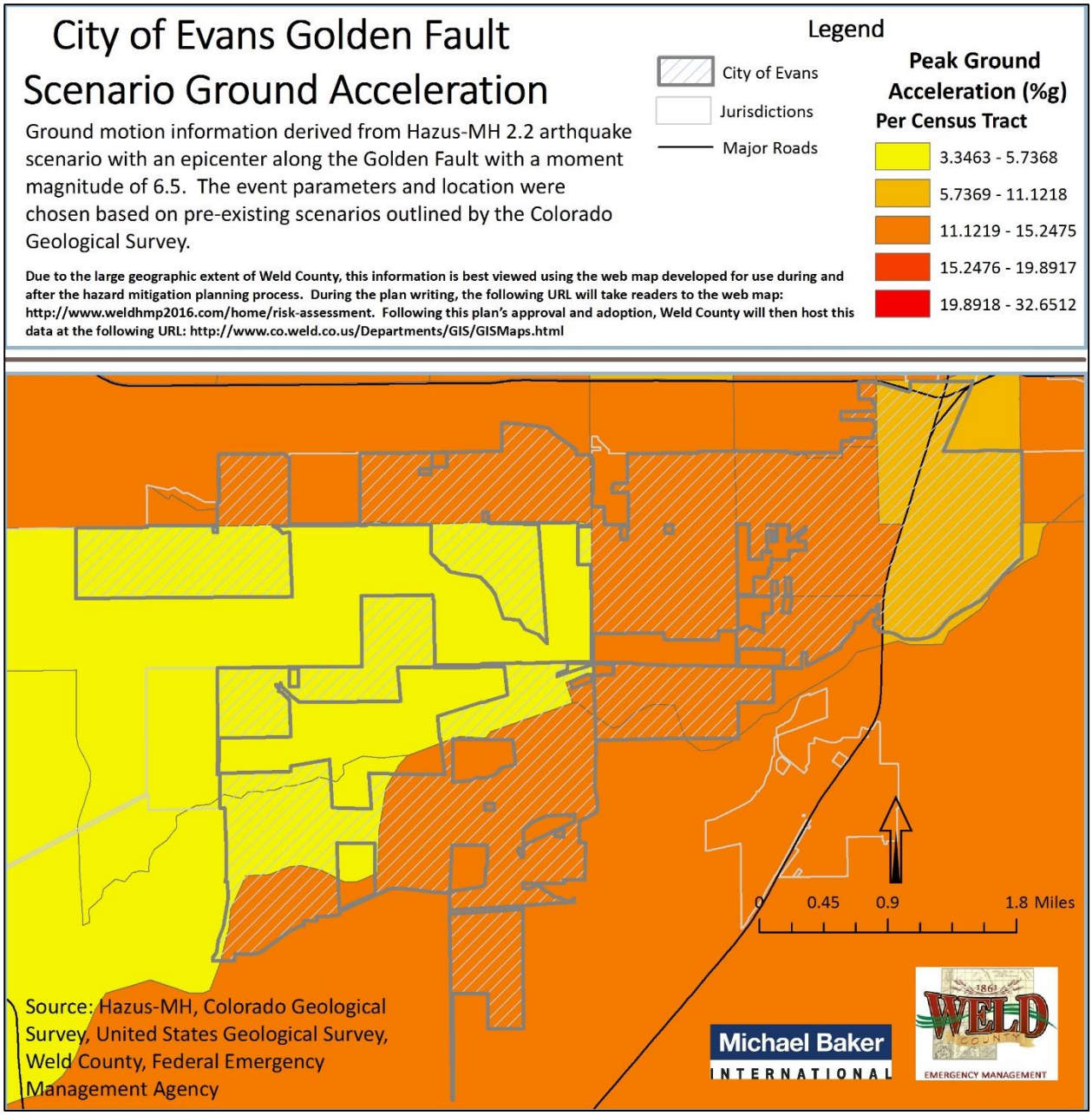
Potential Losses

Although it is unlikely that drought conditions will affect existing buildings, infrastructure, and critical infrastructure, economic livelihoods in the City of Evans could be negatively impacted due to crop loss, water shortages, and wildfires as a result of drought. Possible losses/impacts to critical facilities include the loss of critical function due to low water supplies.

As Evans continues to grow, it will consider water-saving mitigation activities that will decrease local vulnerability to drought.

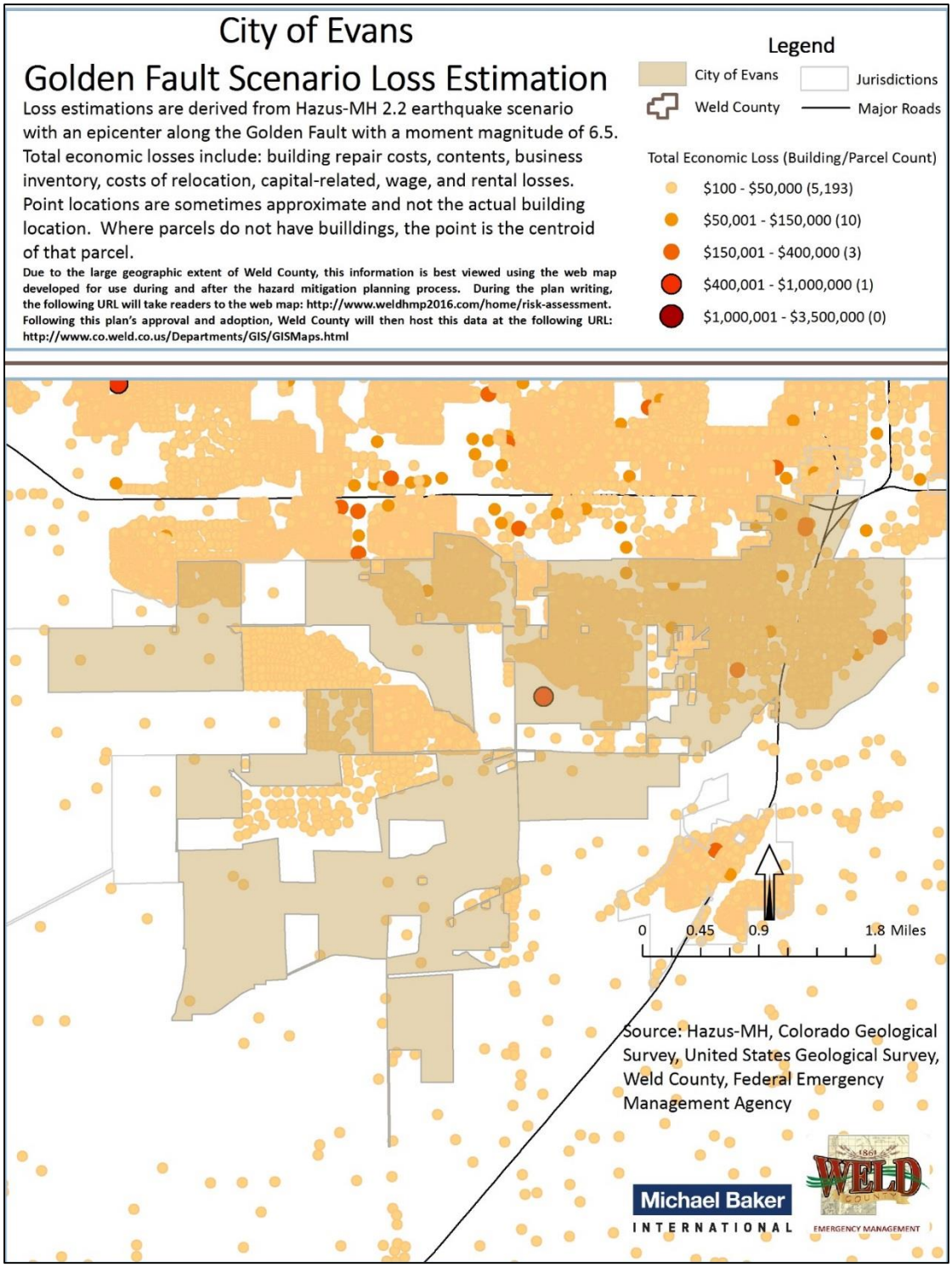
Earthquake

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Evans due to earthquakes. Although there is no historic data showing hazardous impacts on the city, there is a great potential for earthquake events to occur at any given time.



Inventory Exposed

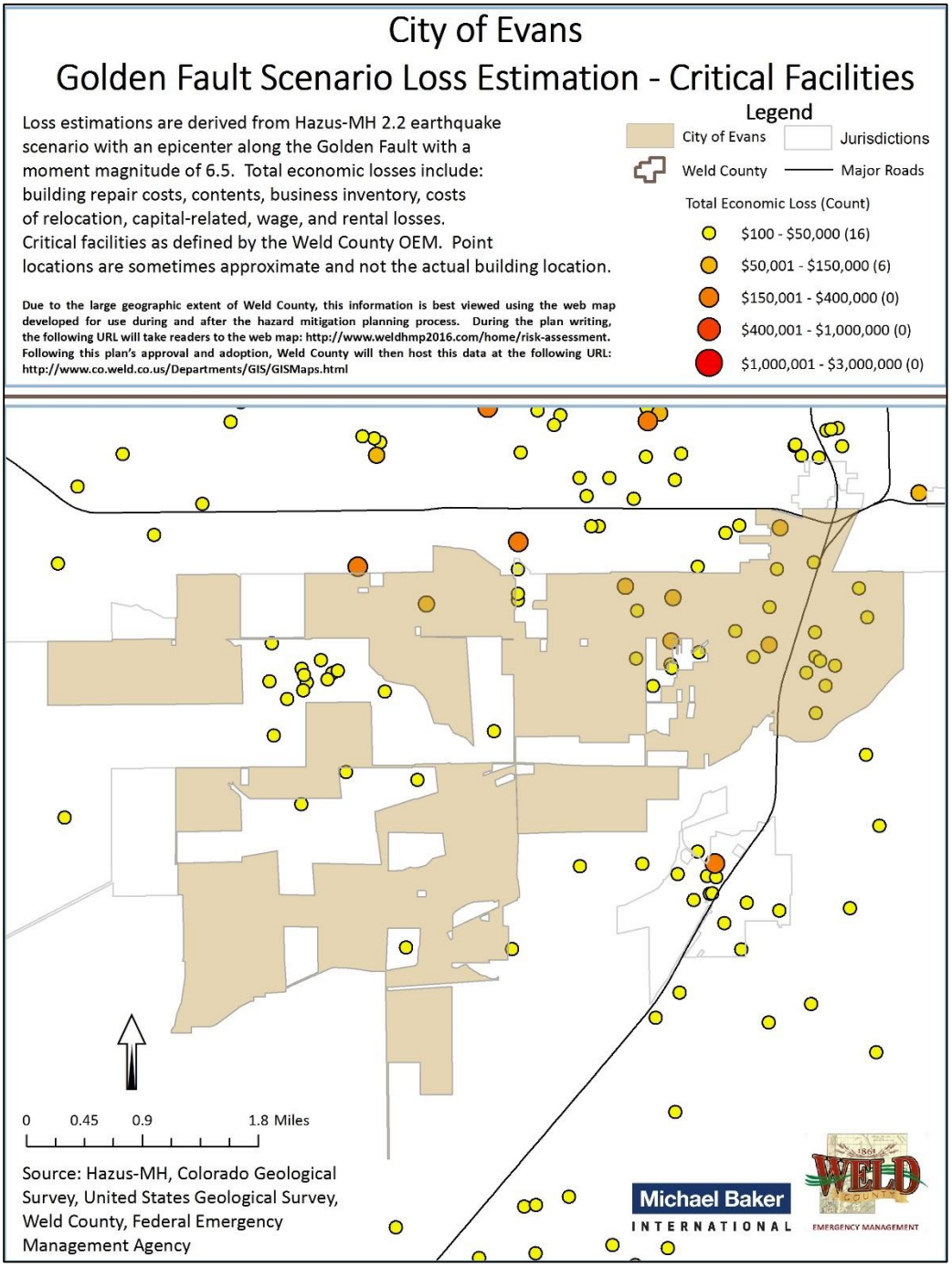
According to the Hazus inventory, there are an estimated 6,756 buildings in the City of Evans with a total building replacement value (excluding contents) of $641,363,150.



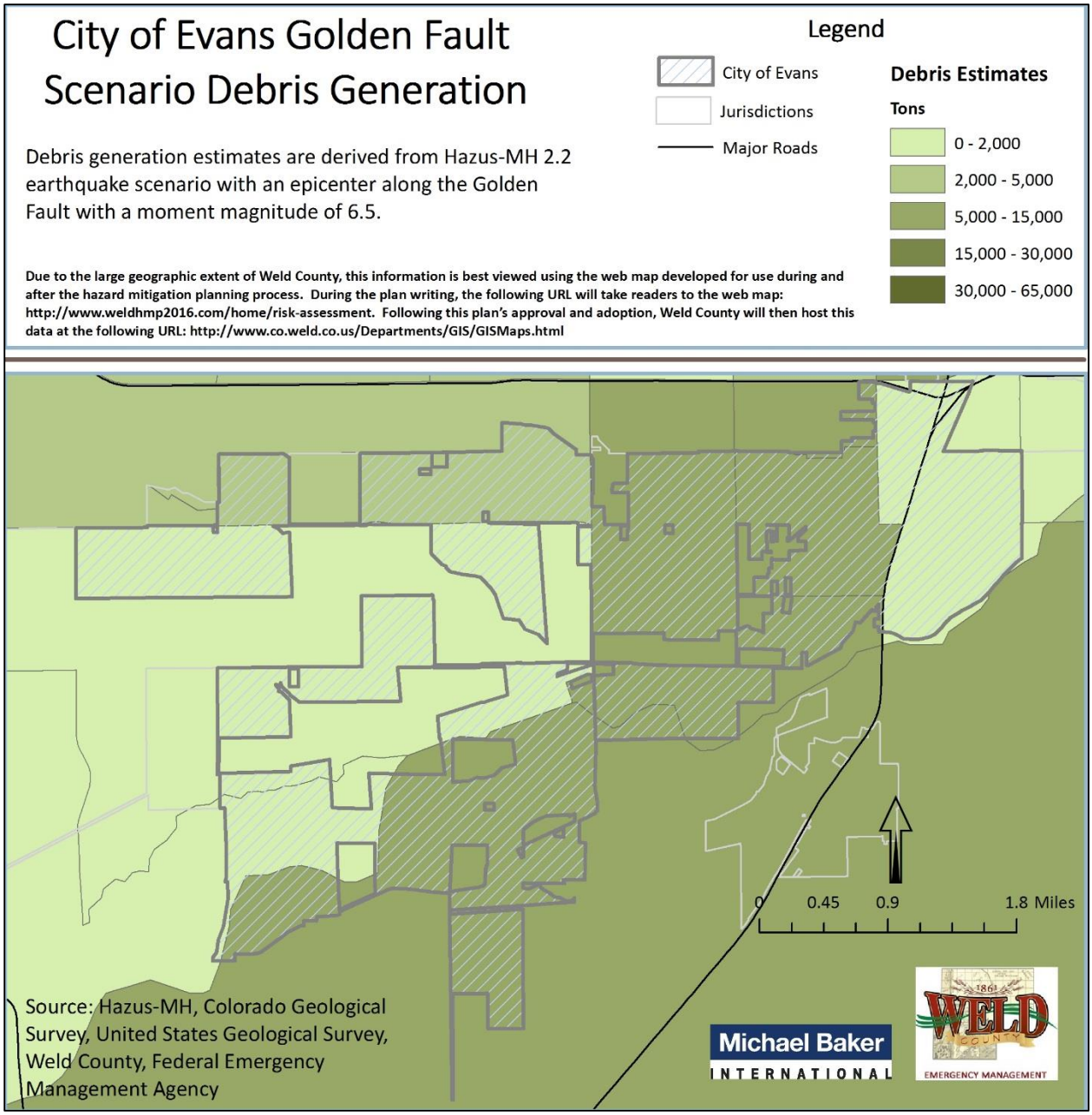
Potential Losses

For the Golden Fault earthquake scenario, the total losses were estimated to be $8,514,415. Spatially, a majority of the worst loss areas were located in the southern and western, urban portion of the city. Generally, these are areas which are more densely/highly populated and more closely located to the

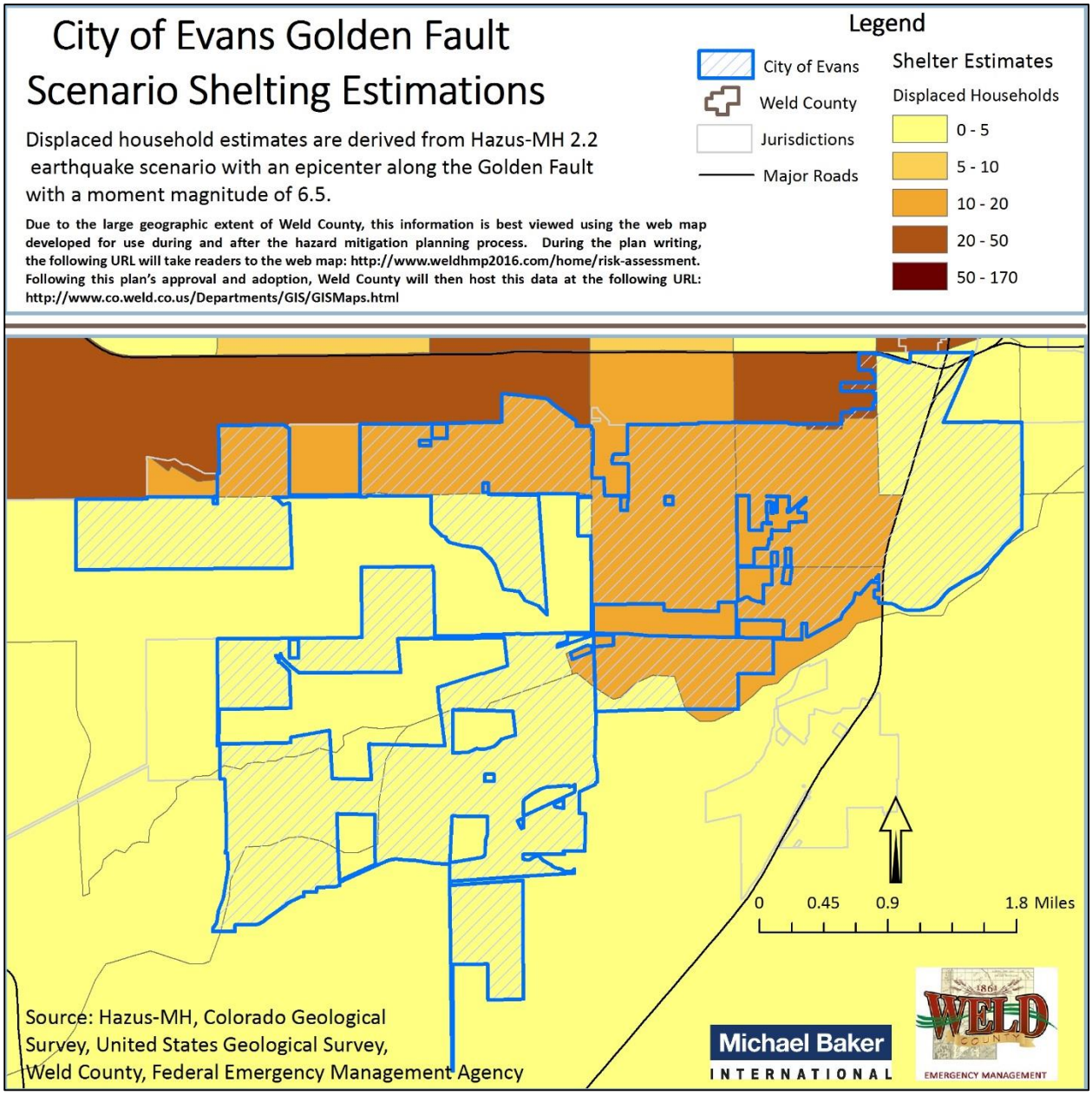
Golden epicenter. Hazus estimates 22 critical facilities with a total loss of $611,684. Of the 22 critical facilities, all will be over 50% functional on the first day of the event.



The Golden Fault scenario estimates that a total of 39 tons of debris will be generated from that 6.5 magnitude event. Of the total amount, brick and wood make up 40% of the total, with the remainder of the debris being reinforced concrete and steel. When the debris tonnage is converted to an estimated number of truckloads, it will require 2 truckloads (@25 tons/truck) to remove the debris generated by the earthquake.



The Golden Fault model estimates that 136 households will be displaced in the City of Evans due to an earthquake and 99 people will seek temporary shelter in public shelters.



Land Subsidence

The risk analysis indicates that the City of Evans has limited exposure to land subsidence. Not only have there been no previous land subsidence events reported in the city, CGS data of at-risk areas shows very few areas of historical undermining, none of which intersect with critical facilities or future development areas.

Inventory Exposed

Based on the hazard risk assessment performed for this plan there are no structures, parcels, or critical facilities located in identified subsidence areas in the City of Evans.

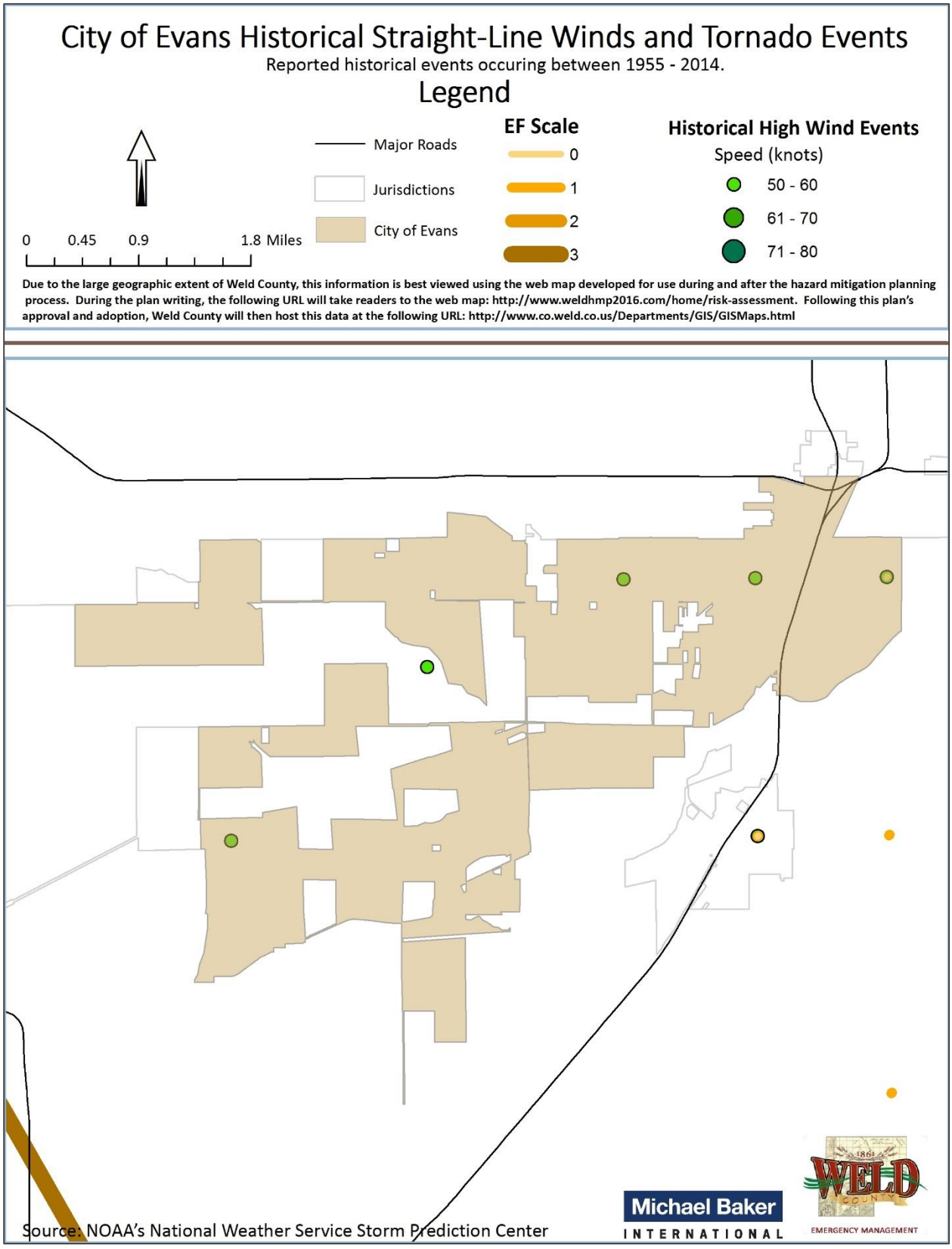
Potential Losses

Based on the hazard risk assessment performed for this plan there are no structures, parcels, or critical facilities located in identified subsidence areas in the City of Evans. Therefore, potential hazard losses are expected to be negligible or zero.

Straight-Line Winds and Tornado

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Evans due to tornadoes. There is record of 1 tornado reported within the city limits on June 22, 1991. This incident caused $5,000 worth of property loss. There have been tornadoes reported very close to the borders of the city limits. Tornadoes will remain a highly likely occurrence for the City of Evans.

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Evans due to straight-line winds. There have been 7 reported high wind events between 1956 and 2013 within the city limits. On May 16, 1988 a high wind event caused $4,000 in property damage. Straight-line winds remain a highly likely occurrence for the City of Evans.



Inventory Exposed

All assets located in the City of Evans can be considered at risk from straight-line winds and tornadoes. This includes 20,473 people, or 100% of the city's population, and all buildings and structures within the city. Most structures, including the city's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

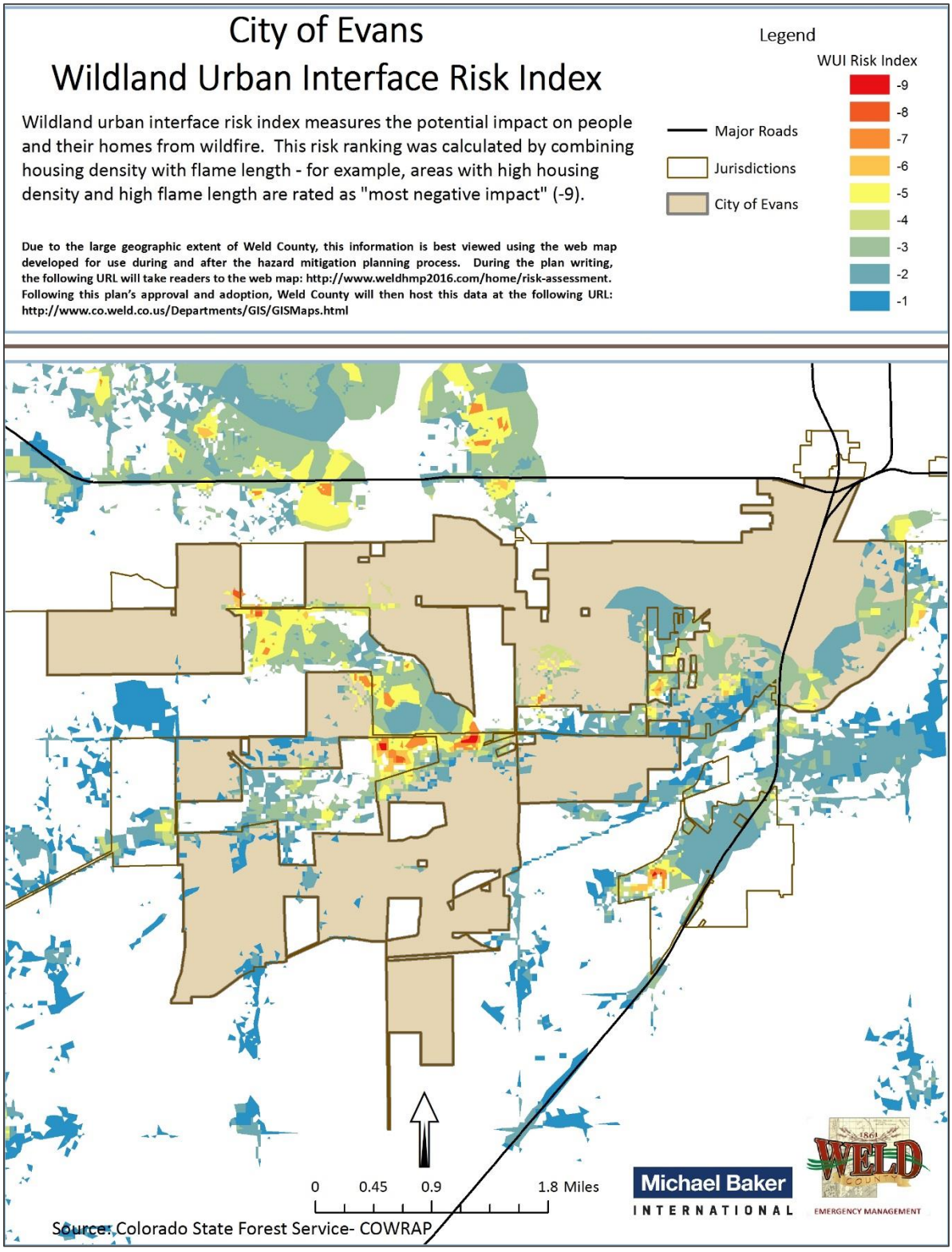
Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $641,363,150. Potential losses could be substantial.

Prairie Fire

According to best available data, there are no historic prairie fires occurring within the City of Evans and no injuries, deaths, property damage or crop damages have been recorded.

There is a small area in the central region of the city that are within the medium to highest level on the WUI Risk Index Scale. This means that the potential impact on people and homes from a prairie fire in those areas is medium to high in relationship to the rest of Weld County. This level of risk is derived by combining housing density with predicted flame length.



Inventory Exposed

Fires can extensively impact the economy of an affected area, including the agricultural, recreation and tourism industries, water resources, and the critical facilities upon which the City of Evans depends. There

are 5 identified structures located in areas with the *highest* wildfire threat total. The appraisal value of the assets within these high threat areas is approximately $708,279. When considering assets located in areas of *moderate* wildfire threat there are 149 structures identified. The appraised value of these assets is approximately $10,389,437. There are no critical facilities in the moderate or high wildfire threat areas.

Potential Losses

Currently, there is no method for estimating wildfire loss. In most cases, the emergency management community equates potential losses to assets exposed to wildfire as a method of quantifying and comparing potential losses across communities. The exposure data provided in the previous section (Inventory Assets Exposed) provides the clearest picture of potential losses to wildfire in the City of Evans.

Public Health Hazard

Public health hazards, including epidemics and pandemics, have the potential to cause serious illness and death, especially among those who have compromised immune systems due to age or underlying medical conditions. During the 2015 planning process, pandemic flu was identified as the key public health hazard in the county.

Inventory Exposed

Due to the regional nature of public health hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of public health hazards. This includes places with high numbers of elderly residents, young children, low income families, and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to public health hazards. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, young children, and a high poverty rate can plan accordingly to provide appropriate services and mitigation assistance during public health hazards outbreaks.

Populations Vulnerable to Public Health Hazards			
	Age: 65 and Over (%)	**Age: 5 and under (%)**	**Persons Below Poverty Level (%)**
Colorado	10.9	6.8	12.9
City of Evans	6.1	9.5	19.6

The City of Evans has a lower percentage of elderly residents than does the state of Colorado. A larger percentage of Evans residents are under the age of 5 than the general population of Colorado. There is a much greater percentage of people living below poverty level than the state. Based on these statistics, Evans residents (in general) appear to be more vulnerable to the impacts of public health hazards. That said, future mitigation efforts related to public health hazards should focus on reaching those residents who are elderly, young children, live in poverty, or are homeless.

Potential Losses

Because there is no defined geographic boundary for public health hazards, all of the people and infrastructure within the City of Evans are exposed to public health hazards. Those with elevated risk and potential loss are the homeless, infirm, elderly, young and low income families. Given the lack of historical data in the City of Evans resulting from public health hazards, and that placing a dollar amount on the cost

of a human life are beyond the scope of the Plan, annualized economic losses for the City of Evans due to public health hazards are currently considered unquantifiable.

Capabilities Assessment

The capability assessment examines the ability of the City of Evans to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the City's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the City's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager	X		
Floodplain Administrator		X	
Community Planner	X		
GIS Specialist	X		
Grant Writer	X		

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the City's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	Y
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and

codes. The City of Evans has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The City of Evans has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the city will continue public participation in the plan maintenance process.

Jurisdiction	Strategy
City of Evans	*The mitigation actions will be reviewed by City Council annually.* *As part of the plan maintenance process, the City of Evans will continue to engage the public in the process of identifying hazard risks and prioritizing mitigation actions. To do so the mitigation plan and the actions identified will be posted to the city website and it will be updated annually as actions and priorities change over time.*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The table below lists the specific integration strategies identified by the City of Evans based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
City of Evans	"Priorities that have been identified are in the following master plans and policy documents: stormwater, transportation, and flood ordinances."

Mitigation Action Guides

The following Mitigation Action Guides present status updates on Evans' mitigation actions that were included in past Plans.

City of Evans: Implement the high priority actions of the City of Evans' Comprehensive Master Drainage Plan.	
PRIORITY: Medium (implement as funding becomes available)	**HAZARDS ADDRESSED:** Flooding
LOCATION: City of Evans	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: The City of Evans has a Comprehensive Master Drainage Plan that identifies over $22 Million in drainage improvements that necessary throughout the community. The City does have its own stormwater utility program which generates revenue to manage a stormwater master drainage plan. The plan is a multi-volume engineering document that delineates the problems, designs solutions, and calculates the cost-effectiveness of the recommended actions. The Public Works Department intends, over time, to implement the entire plan. For the purposes of this plan, however, Evans has prioritized the work to be accomplished first and submitted the following projects for inclusion in this plan.	
RECOMMENDATION: The Public Works Department intends, over time, to implement the entire plan. For the purposes of this plan, however, Evans has prioritized the work to be accomplished first and submitted the following projects for inclusion in this plan. · Storm sewer improvements in the vicinity of US85 and 31st St.· Improve existing detention facilities/Construct storm sewer improvements in the vicinity of US85 and 37th St. · Construct a large diameter storm sewer in 37th St., just east of US85 eastward to the Platte River. · Construct a storm sewer and drainage structures in W. Service Rd, from 42nd St. to the Platte River.	
ACTION: Implement the high priority actions of the City of Evans' Comprehensive Master Drainage Plan.	
LEAD AGENCY: Evans Public Works	**EXPECTED COST:** · Storm sewer improvements in the vicinity of US85 and 31st St. $950,000 · Improve existing detention facilities/Construct storm sewer improvements in the vicinity of US85 and 37th St. $236,000 · Construct a large diameter storm sewer in 37th St., just east of US85 eastward to the Platte River. $1,905,000 · Construct a storm sewer and drainage structures in W. Service Rd, from 42nd St. to the Platte River. $335,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Stormwater utility fees and in-kind labor serve as match for grants

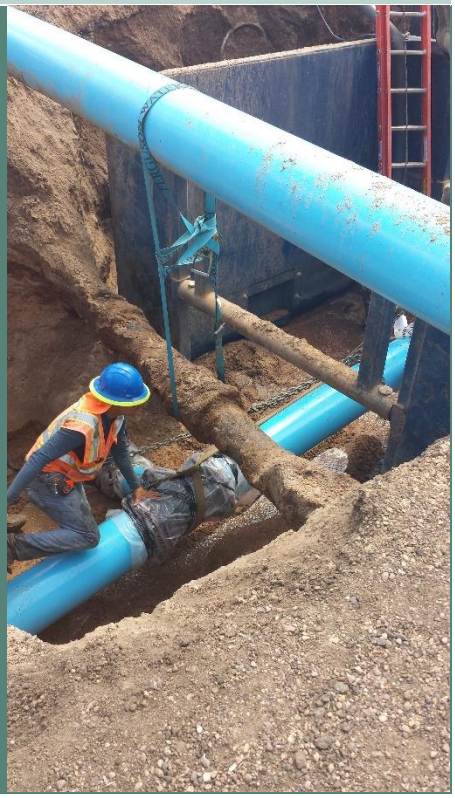
PROGRESS MILESTONES: The City of Evans completed phase one of a large diameter storm sewer in 37th Street, ease of US 85 to the Platte River. Evans also completed a storm sewer and drainage structures in W Service Road from 42nd St. to the Platte River. Storm sewer improvements in the vicinity of US 85 and 31st Street are scheduled to start in 2009, as are ongoing improvement to existing detention facilities in the vicinity of US 85 and 37th Street. Dacono uses the "Anderson Plan" that was completed in 1999. The plan needs to be updated. Complete and an on-going action that continues to be updated as master plans are updated.

City of Evans: Participate in Storm Ready	
PRIORITY: High	**HAZARDS ADDRESSED: Severe Weather**
LOCATION: Weld County-wide	**GOALS ADDRESSED: 1, 2, 3**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: A, B, E**
TARGET COMPLETION DATE: Ongoing; Four classes completed in the spring March-May 2009	
ISSUE: One of the goals for the Northeast region is to have all 11 counties' participate in Storm Ready. Weld County has been a participant in the past, and the intent is to maintain Storm Ready status	
RECOMMENDATION: As a Storm Ready County, we hold several Weather Spotter Classes. These classes are taught by NOAA and participants can become a spotter and report information to NOAA or the WCRCC.	
ACTION: Apply and maintain 'Storm Ready" status with NOAA.	
LEAD AGENCY: Weld County OEM in conjunction with appropriate County/Town Departments with municipalities participating in this plan (Ault, Dacono, Evans, Firestone, Fort Lupton, Frederick, Garden City, Gilcrest, Greeley, Grover, Hudson, Johnstown, Keenesburg, Kersey, LaSalle, Mead, Milliken, New Raymer, Pierce, Platteville, Severance, and Windsor), and school districts (Weld County RE-4, RE-6 and RE-8, Platte Valley Schools).	**EXPECTED COST:** Staff Time and funds for meeting for drinks and goodies. This will come from the OEM budget
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** OEM Budget and local business sponsor's
PROGRESS MILESTONES: Evans has been participating with Weld County as being a member of the Counties StormReady program. Currently the City host at least one weather spotter class per year and will continue to expand the community's server weather awareness.	

City of Evans: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Evans	**GOALS ADDRESSED: 1, 2, 3, 4**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: A, C, E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to floodprone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION:	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: The City has hired a consultant from to act as out flood plain manager. Post the September 2013 floods, the City updated their flood mitigation ordinance to help mitigate additional damage from future floods.	

The following Mitigation Action Guides each of Evans' new mitigation actions that were developed for the 2016 Plan.

City of Evans: Implement the high priority actions of the City of Evans' Comprehensive Master Drainage Plan.	
PRIORITY: High	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Evans	**GOALS ADDRESSED: 1, 3**
RECOMMENDATION DATE: 09/15/2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 2018	
ISSUE: The City of Evans has a current Master Drainage Plan that has identifies over $22 Million in drainage improvements that necessary throughout the community. However, the city is in the process if updating the Master Drainage Plan and should be approved In 2016. The City does have its own storm water utility program which generates revenue to manage a storm water master drainage plan. The plan is a multi-volume engineering document that delineates the problems, designs solutions, and calculates the cost-effectiveness of the recommended actions. The Public Works Department intends, over time, to implement the entire plan. For the purposes of this plan, however, Evans has prioritized the work to be accomplished first and submitted the following projects for inclusion in this plan.	
RECOMMENDATION The Public Works Department intends, over time, to implement the entire plan. For the purposes of this plan, however, Evans has prioritized the work to be accomplished first and submitted the following projects for inclusion in this plan, but may change at the completion of the updated Master Drainage Plan · Storm sewer improvements in the vicinity of US85 and 31st St.	

improve existing detention facilities/Construct storm sewer improvements in the vicinity of US85 and 37th St. · Construct a storm sewer and drainage structures in W. Service Rd, from 42nd St. to the Platte River. Install a secondary storm water system that will carry storm water back to the river when the river has raised significantly and has covered the primary storm water discharges.	
ACTION: Implement the high priority actions of the City of Evans' Comprehensive Master Drainage Plan.	
LEAD AGENCY: City of Evans Public Works	**EXPECTED COST:** • Storm sewer improvements in the vicinity of US85 and 31st St. $950,000 • Improve existing detention facilities/Construct storm sewer improvements in the vicinity of US85 and 37th St. $236,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Storm water utility fees and in-kind labor serve as match for grants
PROGRESS MILESTONES: Improvements to many of the existing detention facilities have been completed since the 2004 hazard mitigation plan. Storm sewer improvements in the vicinity of US85 and 37th St. were completed in the summer of 2015, the picture to the right is of the project. Storm sewer improvements in the vicinity of US85 and 31st St. started in the fall of 2015 and is expected to be completed in 2016.	

City of Evans: Apply for and maintain "Weather Ready Ambassador" status with NOAA	
PRIORITY: Medium	**HAZARDS ADDRESSED: Severe Weather**
LOCATION: City of Evans	**GOALS ADDRESSED: 1, 3**
RECOMMENDATION DATE: 09/15/2015	**OBJECTIVES ADDRESSED: A, B,C, E**
TARGET COMPLETION DATE: 2018	
ISSUE: While still participating with Weld County as "Storm Ready." The City of Evans intends to be a Weather Ready Ambassador through NOAA.	
RECOMMENDATION: As a Weather Ready Ambassador, we hold several Weather Spotter Classes. These classes are taught by NOAA and participants can become a spotter and report information to NOAA or the WCRCC.	
ACTION: Apply and maintain "Weather Ready Ambassador" status with NOAA.	
LEAD AGENCY: City of Evans Office of Emergency Management.	**EXPECTED COST:** Staff Time and funds for meeting for drinks and goodies. This will come from the OEM budget
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** OEM Budget and local business sponsors

City of Evans: Implement ordnances to prevent any building within the 100yr floodplain	
PRIORITY: Medium	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Evans	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 09/15/2015	**OBJECTIVES ADDRESSED: C, D, E**
TARGET COMPLETION DATE: 2018	
ISSUES: Start the process of implementing no building ordinances within the 100yr flood plan.	
RECOMMENDATION: Work with City Council, County Commissioners, and legal counsel to start to enhance the city's floodplain ordinances to prevent structures from being built within the 100yr floodplain in order to protect life and property.	
ACTION: Implement ordnances prevent any building within the 100yr floodplain.	
LEAD AGENCY: City Manager's Office	**EXPECTED COST:** Staff Time and legal fees
SUPPORT AGENCIES: Community Development, City of Evans OEM, flood recovery team.	**POTENTIAL FUNDING SOURCES:** General budget.

City of Evans: Complete engineering, hazard mitigation analysis on 49th street and Industrial Pkwy; Rebuild 49th street and Industrial Pkwy; Update and implement Transportation Plan	
PRIORITY: High	**HAZARDS ADDRESSED: Flood**
LOCATION: City of Evans	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 09/15/2015	**OBJECTIVES ADDRESSED: D, E**
TARGET COMPLETION DATE: 2017	
ISSUES: As the City of Evans continues to grow and change, the transportation system needs to be updated to meet the needs of the future and allow adequate access for residents, businesses, property owners and first responders in the event of disaster. During the September 2013 Flood several roads in and around the City of Evans sustained damage. While most of this damage has been addressed, the heavy rains of May/June 2015 once again damaged the low lying sections of 49th St., Industrial Parkway and Brantner Road. In the near term, these streets need to be reconstructed in a more resilient manner. In the long term the city should develop options to using these low lying roads.	
RECOMMENDATION: The following items need to be addressed. • Update 2004 Transportation plan with an emphasis on community resiliency, economic development, connectivity, and hazard mitigation. • As part of the transportation plan, develop standards/guidelines for new and existing transportation infrastructure in floodplains • Complete engineering, hazard mitigation analysis, and reconstruction 49th St., Industrial Parkway and Brantner Road, to make the roads resilient to future floods and able to accommodate expected industrial traffic in the area.	

ACTION: Complete engineering, hazard mitigation analysis on 49th street and Industrial Pkwy. Rebuild 49th street and Industrial Pkwy, Update and implement Transportation Plan.	
LEAD AGENCY: City of Evans Public Works	**EXPECTED COST:** • Transportation Plan $165,000 • 49th street and Industrial PKWY engineering and mitigation analysis $70, 000 • 49th street and Industrial PKWY construction cost is estimated around $600,000 to $1, 000, 0000.
SUPPORT AGENCIES: City of Evans OEM, flood recovery team.	**POTENTIAL FUNDING SOURCES:** General budget and grants.

Letter of Intent to Participate

City of Evans, Colorado

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the City of Evans is submitting this letter of intent to confirm that the City of Evans has agreed to participate in the Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the City of Evans agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The City of Evans understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Aden Hogan, the City of Evans to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

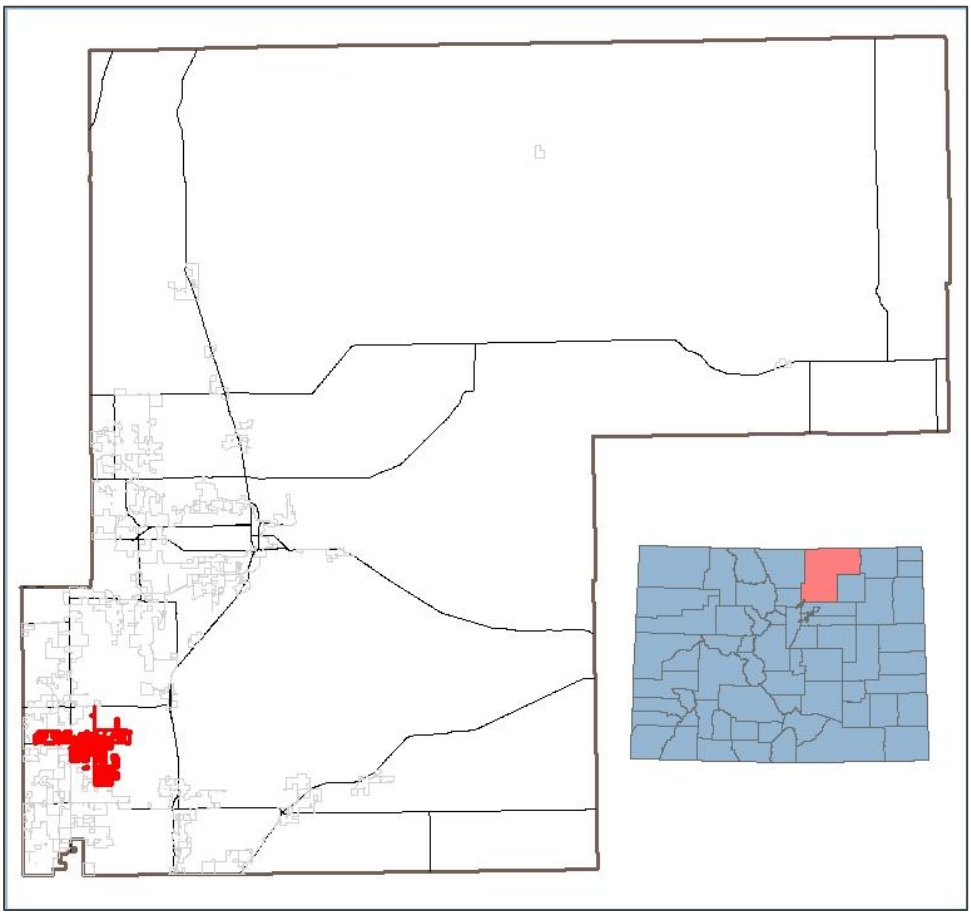
Executed this 29 day of August, 2014

City Manager

Town of Firestone

"The Town of Firestone is a unique community of citizens, businesses, and governments that are united in creating a stable, safe, prosperous, and healthful environment in which to live, work, worship, learn, recreate and exercise the rights and freedoms provided by the United States Constitution." – Firestone Master Plan 2013

Located just 20 minutes north of Denver along the I-25 corridor, Firestone's boundary is approximately 7,774 acres with a planning area of about 56 square miles. Despite its rapid growth, the town has maintained 15 parks and five miles of trails that connect to the regional St. Vrain Legacy Trail and the Colorado Front Range Trail System.



The Town of Firestone was incorporated in 1908. The Denslow Coal Company owned the land and subdivided the proposed town. At the time of incorporation, the estimated population of Firestone was 75. Firestone has claim to many firsts in the County including the first saloon, telephone central, lumber store and post office. The early 1960's saw the shift beginning from coal mining to natural gas drilling and home building and development in Firestone began on a larger scale. Since the mid-1990s, Firestone has experienced rapid growth in both the residential and commercial sectors.

Today, Firestone is home to over 11,000 residents and the town has earned the title of the "Fastest Growing Community" in Colorado between 2000 and 2010, boasting an increase in population of 423% during that time (an increase from 1,908 people to 10,147 people).

Community Profile

The table below summarizes key demographic and development related characteristics of the Town of Firestone.

Town of Firestone Statistics		
	Town of Firestone	Colorado
Population, 2014	11,537	5,355,866
Population, % change April 1, 2010 to July 1, 2014	13.5%	6.5%
% Population under 5 years, 2010	10.2%	6.8%
% Population under 18 years, 2010	33.3%	24.4%
% Population 65 years and over, 2010	5.2%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	11.9%	16.8%
Homeownership Rate	88.9%	65.4%
Persons Per Household	3.21	2.53
Persons below poverty level, %, 2009-2013	4.5%	13.2%
Median Household Income, 2009- 2013	$79,091	$58,433

Source: US Census Bureau

Hazard Identification and Risk Assessment

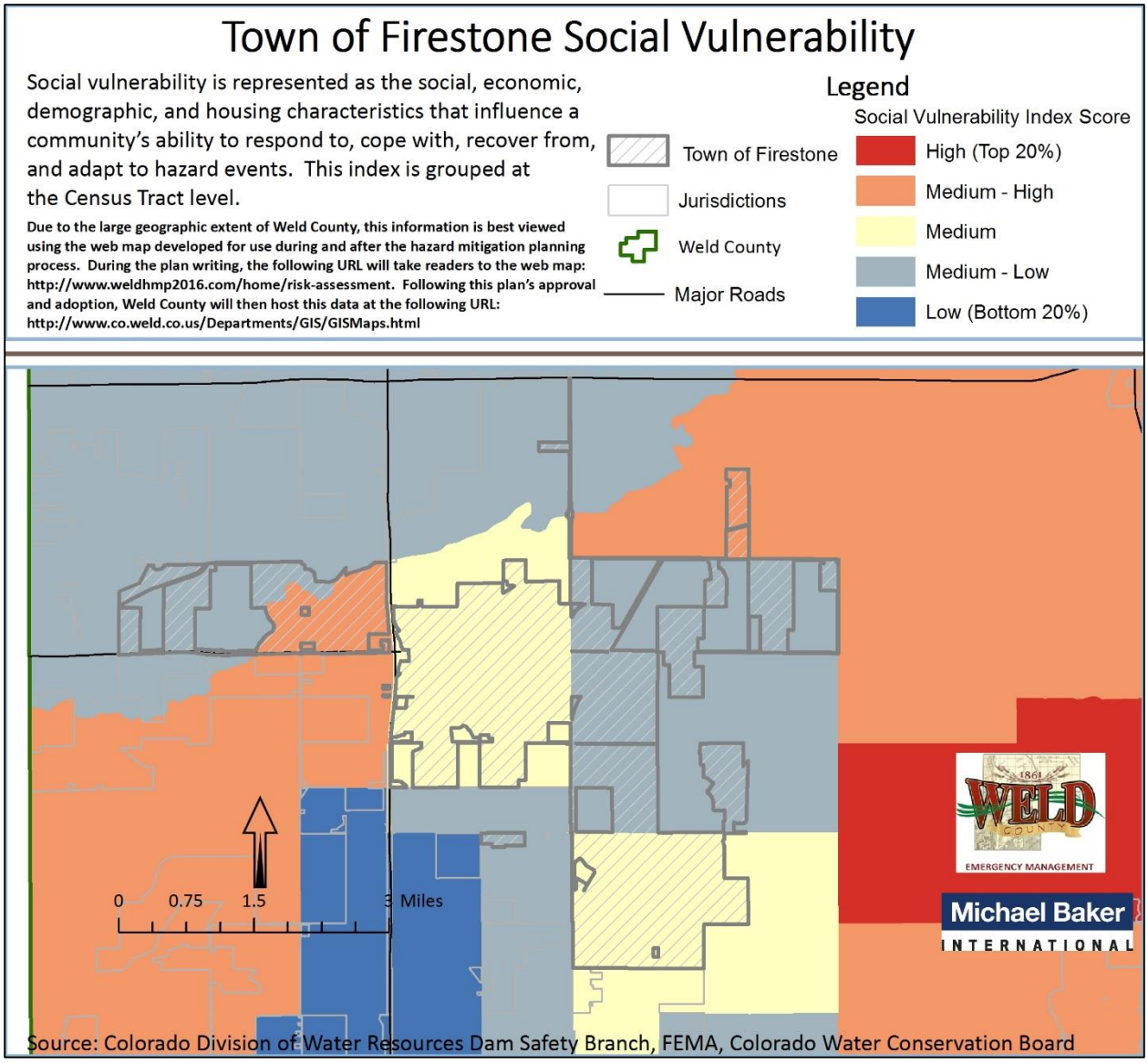
NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Flood	0.9	0.3	0.8	0.3	0.4	2.700
Severe Storm	0.9	0.3	0.6	0.2	0.4	2.400
Straight-Line Winds & Tornadoes	0.9	0.3	0.6	0.2	0.4	2.400
HAZMAT	0.9	0.3	0.4	0.4	0.2	2.200
Extreme Temperatures	0.9	0.3	0.4	0.1	0.4	2.100
Prairie Fire	0.6	0.3	0.4	0.4	0.3	2.000
Land Subsidence	0.6	0.3	0.4	0.1	0.1	1.500
Drought	0.6	0.3	0.4	0.1	0.1	1.500
Public Health Hazards	0.6	0.3	0.4	0.1	0.1	1.500
Earthquake	0.3	0.3	0.4	0.1	0.1	1.200
HIGH RISK (2.5 or higher): Flood						
MODERATE RISK HAZARD (2.0 - 2.4): Severe Storm; Straight-Line Winds & Tornadoes; HAZMAT, Extreme Temperatures; Prairie Fire						

Low Risk (1.9 or lower): Land Subsidence; Drought; Public Health Hazards; Earthquake

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Firestone, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Firestone.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Firestone's social vulnerability map shows social vulnerability within the community.

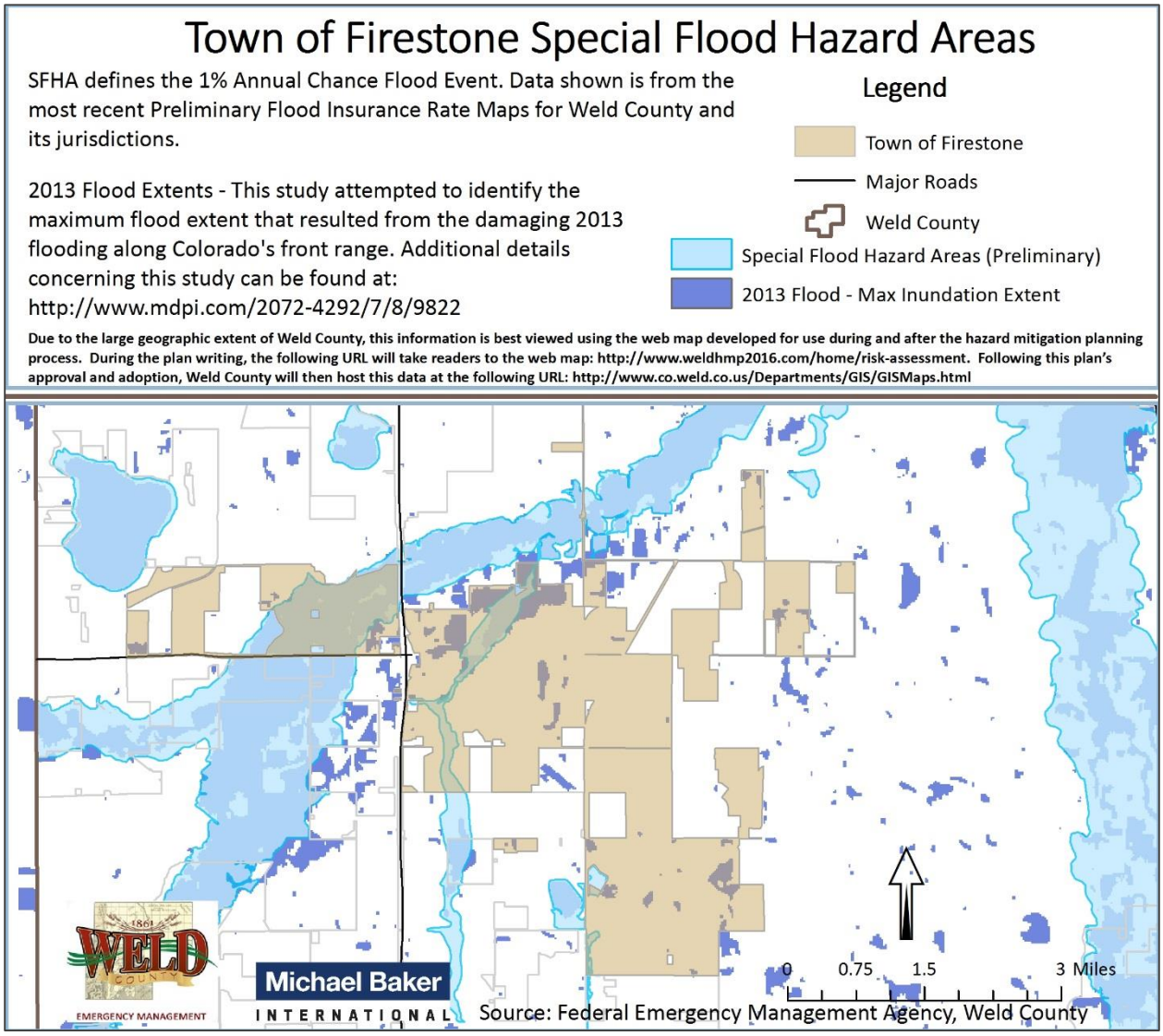


The Town of Firestone is characterized by a mix of medium-low to medium-high levels of social vulnerability. The majority of the Town is in the bottom 20% of social vulnerability in the county although large portions of the county have medium levels of social vulnerability. There are also areas to the eastern border of the city that may struggle in times of disaster due to very high social vulnerability levels. Over time, close analysis of the individual social vulnerability indicators within the community will give local emergency managers, planners, and stakeholders an even clearer picture of which social vulnerability factors have the largest negative effect on the town and it resiliency.

Flood

According to the best available data there are no reported injuries or deaths in the Town of Firestone caused by flooding. There has been 1 recorded flood in the Town of Firestone on August 6, 2008 that caused $50,000 in property damage and $25,000 in crop damage. There have been flood events that occurred within the town limits as well as several events close to the town limits, none of which reported

injuries, deaths, property damage, or crop damage. There is a great potential for flood events to occur at any given time in the Town of Firestone.



Inventory Exposed

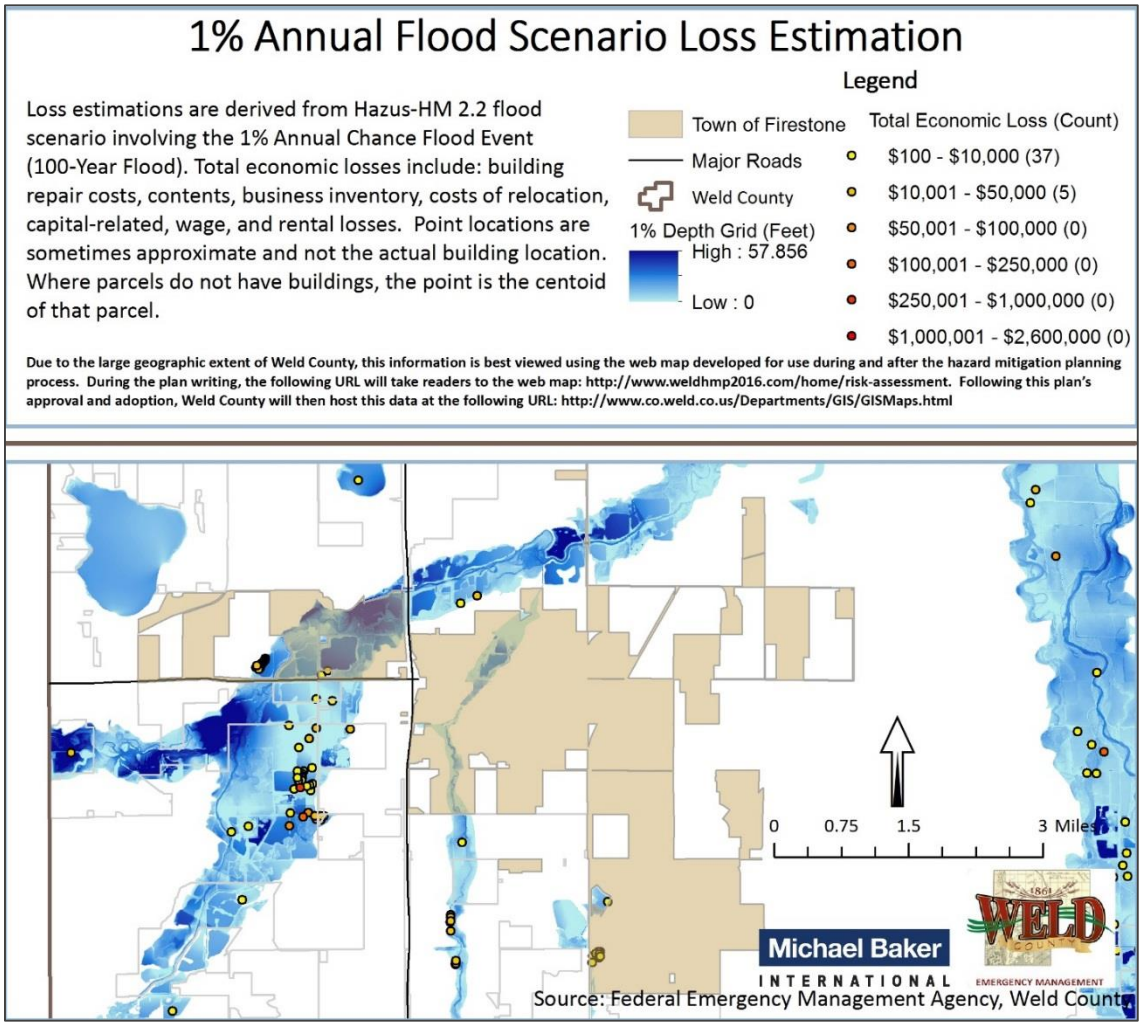
The critical facility and structure exposure analysis estimates that there are 8 structures in the Town of Firestone that are flood prone (not including the total miles of flood prone infrastructure). No critical facilities within the planning area are flood prone. The appraised value of the eight exposed structures is approximately $338,728.

Potential Losses

Hazus estimates for the Town of Firestone that for a 100-year flood event, approximately 8 buildings will experience flood damage. The total economic loss estimated for the 100-year flood is $14,704. There are no critical facilities located within the floodplain in the Town of Firestone.

Hazus estimates for the Town of Firestone that for a 100-year flood event, approximately 8 buildings will experience flood damage. The total economic loss estimated for the 100-year flood is over $14,704.

The map below shows the flooding threat to structures in the Town of Firestone by layering identified special flood hazard areas (SFHA) with the locations of community-defined structures.



Capabilities Assessment

The capability assessment examines the ability of the Town of Firestone to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the Town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager	X		
Floodplain Administrator			X
Community Planner			X
GIS Specialist			X
Grant Writer			X

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the Town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	Y
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Firestone has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of Firestone has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the city will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Firestone	*The mitigation actions will be reviewed annually both by the police department and the Town Board.* *As part of the plan maintenance process, the Town of Firestone will continue to engage the public in the process of identifying hazard risks and prioritizing mitigation actions. To do so, the mitigation plan will be reviewed by the Town Board on a regular basis, the public is always welcome and allowed input.*

Integration Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Firestone did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Firestone based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Firestone	*"We will integrate hazard mitigation actions into our Capital Improvements Plan by emphasizing projects that mitigate the impacts of our highest risk hazards."*

Mitigation Action Guides

The following Mitigation Action Guides present status updates on each of Firestone's mitigation actions that were included in the 2009 Plan.

Town of Firestone: Participate in Storm Ready	
PRIORITY: High	**HAZARDS ADDRESSED: Weather**
LOCATION: Weld County-wide	**GOALS ADDRESSED: 1, 2, 3**
RECOMMENDATION DATE:	**OBJECTIVES ADDRESSED: A, B, E**
TARGET COMPLETION DATE: Four classes in the spring March-May	
ISSUE: One of the goals for the Northeast region is to have all 11 counties participate in Storm Ready. Weld County has been a participant in the past, and the intent is to maintain Storm Ready status	
RECOMMENDATION: As a Storm Ready County, we hold several Weather Spotter Classes. These classes are taught by NOAA and participants can become a spotter and report information to NOAA or the WCRCC.	
ACTION: Apply and maintain 'Storm Ready" status with NOAA.	
LEAD AGENCY: Weld County OEM in conjunction with appropriate County/Town Departments with municipalities participating in this plan (Ault, Dacono, Evans, Firestone, Fort Lupton, Frederick, Garden City, Gilcrest, Greeley, Grover, Hudson, Johnstown, Keenesburg, Kersey, LaSalle, Mead, Milliken, New Raymer, Pierce, Platteville, Severance, and Windsor), and school districts (Weld County RE-4, RE-6 and RE-8, Platte Valley Schools).	**EXPECTED COST:** Staff Time and funds for meeting for drinks and goodies. This will come from the OEM budget
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** OEM Budget and local business sponsor's
PROGRESS MILESTONES: The Town of Firestone continues to coordinate with Weld County OEM to provide and make classes available.	

Town of Firestone: Backup Generators for Town Hall and Critical Facilities	
PRIORITY: Medium	**HAZARDS ADDRESSED:** All
LOCATION: Town of Firestone	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Implemented in January 2011	

ISSUE: Currently the Town of Firestone has no contingency plan for maintaining services during a power outage	
RECOMMENDATION: Implementing this plan will result in a reduction in losses based on the levels of services the Town of Firestone is able to maintain. It should increase the Town's ability to communication and coordinate with stakeholders.	
ACTION: Backup Generators for Town Hall and Critical Facilities	
LEAD AGENCY: Office of Emergency Management	**EXPECTED COST:** $60,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** HLS grant, military surplus
PROGRESS MILESTONES: The Town of Firestone has purchased the back-up generator and it is fully functional during a power outage.	

Firestone: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Firestone	**GOALS ADDRESSED: 1, 2, 3, 4**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continued compliance with the NFIP	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: The Town of Firestone is not participating in the CRS program; however we are a member of NFIP. The Town of Firestone adopted the model ordinance in Jan of 2014 as required by the State of Colorado. The Town of Firestone enforces the floodplain regulations in accordance with FEMA's requirements.	

The following Mitigation Action Guides present each of Firestone's new mitigation actions that were developed for the 2016 Plan.

Town of Firestone: Installation of culverts in the 4000 Blk. of Firestone Blvd. to reduce flooding	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Town of Firestone (4000 Blk. of Firestone Blvd.)	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 10/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Implemented by December 2016	
ISSUE: The Town of Firestone needs to install culverts in the 4000 Blk. of Firestone Blvd. to mitigate street flooding issues on the roadway. This area of roadway is the main artery into the Town and can become flooded with moderate to heavy precipitation.	
RECOMMENDATION: Implementing this plan will result in keeping the roadway open to stake holders and emergency vehicles in times of moderate and heavy precipitation.	
ACTION: Installation of culverts in the 4000 Blk. of Firestone Blvd. for safe passage of vehicles.	
LEAD AGENCY: Office of Emergency Management	**EXPECTED COST:** $3,500,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** DOLA ($750,000)
PROGRESS MILESTONES:	

Town of Firestone: Installation of culvert at the intersection of Colorado Blvd. and Pine Cone Ave	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Town of Firestone (Colorado Blvd. and Pine Cone Ave.)	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 10/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Implemented by December 2016	
ISSUE: During times of heavy and prolonged precipitation this intersection and the 8000 Blk. of Colorado Blvd. can become flooded, preventing the safe passage of vehicle traffic.	
RECOMMENDATION: Installation of this culvert will reduce the flooding in the above area. This is a main artery for citizens and emergency vehicles to travel.	
ACTION: Minimize flooding for the safe passage of vehicles.	
LEAD AGENCY: Office of Emergency Management	**EXPECTED COST:** $80,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES: Existing budget**
PROGRESS MILESTONES:	

Letter of Intent to Participate

FIRESTONE
COLORADO
A COMMUNITY IN MOTION

LETTER OF INTENT TO PARTICIPATE

November 24, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Town of Firestone, a Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Firestone, hereinto referred to as the "Town," is submitting this letter of intent to confirm that the Town has agreed to participate in the Weld County's] Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Wesley LaVanchy, commit the Town of Firestone to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 24th day of November, 2014

Wesley LaVanchy, Town Manager

Firestone Town Hall | 151 Grant Ave. | P.O. Box 100 | Firestone, CO 80520
303-833-3291 | Fax 303-833-4863 | www.FirestoneCO.gov

1861 WELD COUNTY
EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

City of Fort Lupton

"Fort Lupton, building on the traditions of the past, will strive to provide every citizen with a safe, healthy and prosperous environment to live, learn, work and play while encouraging quality and well-managed growth."

– City of Fort Lupton Comprehensive Plan

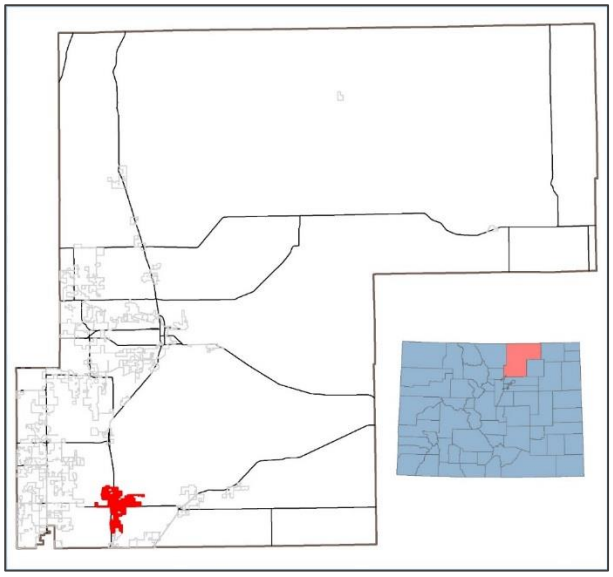
One of the primary goals of Fort Lupton is to become a sustainable city that provides ample opportunities for all of its residents to live learn, work and play

The following are the overall goals that the City of Fort Lupton established in their Comprehensive Plan: The purpose of the plan is to help express what kind of city Fort Lupton will be in the future. This vision expresses the community members' desire for Fort Lupton to be a place that has a sustainable standard of living and a high quality of life for everyone. Citizens want:

- To strengthen the downtown and encourage business owners and citizens to invest in the community.
- Safe, clean, friendly neighborhoods that have homes, shopping, parks, schools, and jobs within walking distance.
- Community leaders to collaborate with residence, developers, business owners, school leaders, and other governments to create a vibrant city.
- To support all ages, ethnicities, cultures, and income groups and to encourage a spirit of openness and opportunity.
- To encourage growth that helps to strengthen the city's identity and economy and maintains or improves the environment.

Community Profile

The City of Fort Lupton is located 25 miles away from Denver, Boulder, and Greeley and is poised to grow very rapidly in the near future. The city is located at the intersection of Highway 85 and Highway 52, two major highways in southern Weld County. Currently, Fort Lupton is in the midst of a major oil boom and major oil related businesses continue to establish their Colorado operations within the city limits.



The table below summarizes key demographic and development related characteristics of the City of Fort Lupton.

City of Fort Lupton Statistics		
	City of Fort Lupton	Colorado
Population, 2014	7,783	5,355,866
Population, % change April 1, 2010 to July 1, 2014	5.2%	6.5%
% Population under 5 years, 2010	8.9%	6.8%
% Population under 19 years, 2010	34%	27.1%
% Population 65 years and over, 2010	8.4%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	35.7%	16.8%
Homeownership Rate	66.9%	65.4%
Persons Per Household	3.03	2.53
Persons below poverty level, %, 2009-2013	16.6%	13.2%
Median Household Income, 2009- 2013	$50,261	$58,433

Source: US Census Bureau

Hazard Identification and Risk Assessment

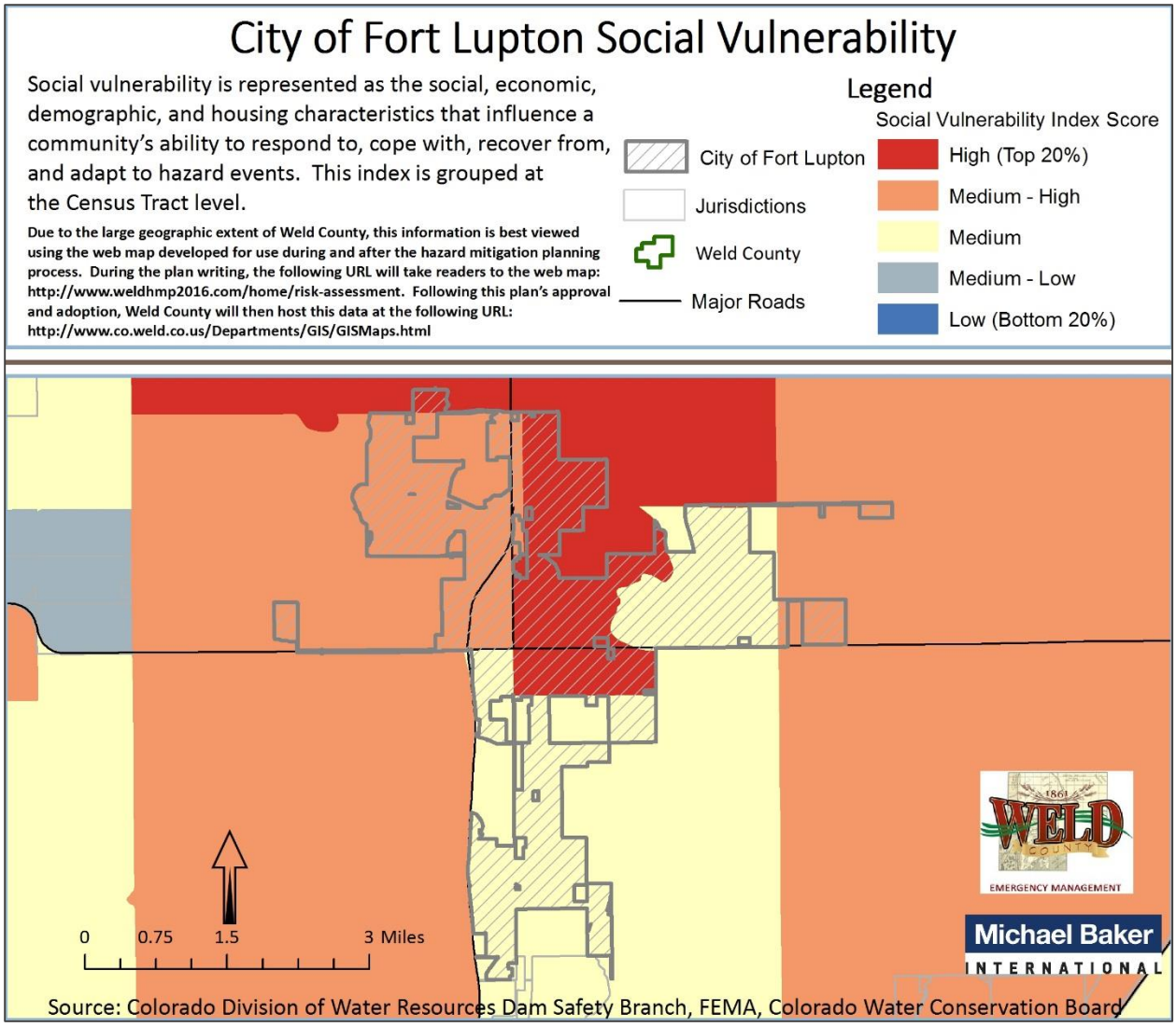
NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Public Health Hazards	0.9	0.9	0.6	0.2	0.2	2.800
Drought	0.9	0.9	0.4	0.1	0.2	2.500
Earthquake	0.6	0.6	0.6	0.3	0.1	2.200
Flood	0.9	0.6	0.4	0.2	0.1	2.200

HAZMAT	0.6	0.6	0.6	0.2	0.1	2.100
Straight-Line Winds & Tornadoes	0.6	0.6	0.6	0.1	0.1	2.000
Extreme Temperatures	0.6	0.6	0.4	0.1	0.2	1.900
Prairie Fire	0.9	0.3	0.4	0.2	0.1	1.900
Severe Storm	0.6	0.3	0.6	0.1	0.3	1.900
Land Subsidence	0.6	0.6	0.2	0.2	0.1	1.700
HIGH RISK (2.5 or higher): Public Health Hazards; Drought						
MODERATE RISK HAZARD (2.0 - 2.4): Earthquake; Flood; HAZMAT; Straight-Line Wind and Tornadoes						
Low Risk (1.9 or lower): Extreme Temperatures; Prairie Fire; Severe Storm; Land Subsidence						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the City of Fort Lupton, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the City of Fort Lupton.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The City of Fort Lupton's social vulnerability map shows social vulnerability within the community.



The City of Fort Lupton is characterized by a mix of medium to high levels of social vulnerability. The majority of the city is within the medium-high social vulnerability range and the north central portion of the city falls within the top 20% of socially vulnerable places in Weld County. Evaluating the individual social vulnerability indicators within the community over time will give local emergency managers, planners, and stakeholders an even clearer picture of which social vulnerability factors have the largest negative effect on the city and it resiliency.

Public Health Hazards

Public health hazards, including epidemics and pandemics, have the potential to cause serious illness and death, especially among those who have compromised immune systems due to age or underlying medical conditions. During the 2015 planning process, pandemic flu was identified as the key public health hazard in the county.

Inventory Exposed

Due to the regional nature of public health hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of public health hazards. This includes

places with high numbers of elderly residents, young children, low income families, and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to public health hazards. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, young children, and a high poverty rate can plan accordingly to provide appropriate services and mitigation assistance during public health hazards outbreaks.

Populations Vulnerable to Public Health Hazards			
	Age: 65 and Over (%)	**Age: 5 and under (%)**	**Persons Below Poverty Level (%)**
Colorado	10.9	6.8	12.9
City of Fort Lupton	8.4	8.9	16.6

The City of Fort Lupton has a lower percentage of elderly residents than does the state of Colorado. There is a larger percentage of people under the age of 5 living in the city. There is also a larger percentage of Fort Lupton residents living below poverty level than the general population of Colorado. Based on these statistics, Fort Lupton residents (in general) appear to be vulnerable to the impacts of public health hazards. That said, future mitigation efforts related to public health hazards should focus on reaching those residents who are elderly, young children, live in poverty, or are homeless.

Potential Losses

Because there is no defined geographic boundary for public health hazards, all of the people and infrastructure within the City of Fort Lupton are exposed to public health hazards. Those with elevated risk and potential loss are the homeless, infirm, elderly, young and low income families. Given the lack of historical data in the City of Fort Lupton resulting from public health hazards, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the City of Fort Lupton due to public health hazards are currently considered unquantifiable.

Drought

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Fort Lupton due to drought. However, there are four reports of drought in southern Weld County. The four drought events all occurred in April of 2002 and March of 2011. There is a great potential for a drought event to occur at any given time.

Due to the nature of drought, all jurisdictions within Weld County are expected to be impacted under drought conditions. Agricultural communities are expected to bear the brunt of drought effects in the county.

Inventory Exposed

Drought will have little to no direct impact on critical facilities or structures in the City of Fort Lupton. Should a drought affect the water available for public water systems or individual wells, the availability of clean drinking water could be compromised. This situation would require emergency actions and could possibly overwhelm local capacities and financial resources.

Potential losses

Although it is unlikely that drought conditions will affect existing buildings, infrastructure, and critical infrastructure, economic livelihoods in the City of Fort Lupton could be negatively impacted due to crop loss, water shortages, and wildfires as a result of drought. Possible losses/impacts to critical facilities include the loss of critical function due to low water supplies.

As Fort Lupton continues to grow, it will consider water-saving mitigation activities that will decrease local vulnerability to drought.

Capabilities Assessment

The capability assessment examines the ability of the City of Fort Lupton to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the city's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the city's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager			X
Floodplain Administrator			X
Community Planner	X		
GIS Specialist	X		
Grant Writer			X

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the city's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	Y
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y

A Long-Term Recovery Plan	Y
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The City of Fort Lupton has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The City of Fort Lupton has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the city will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
City of Fort Lupton	*"We will review the plan on a regular basis and makes necessary adjustments."* *"We have monthly public meetings and the plan can be reviewed and public input received."*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The City of Fort Lupton did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the City of Fort Lupton based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
City of Fort Lupton	*"We have identified hazards within the community and we are constantly training and ensuring that we have the proper equipment to address these hazards. We have a long range plan to address these ongoing needs."*

Mitigation Action Guides

The following Mitigation Action Guide presents a status update on Fort Lupton's mitigation action that was included in the 2009 Plan.

City of Fort Lupton: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Fort Lupton	**GOALS ADDRESSED: 1, 2, 3, 4**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continued use of building zoning and inspection to mitigate probable loss in flood prone areas.	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: Fort Lupton has addressed floodplain regulations in their municipal code, Article VI. Fort Lupton enforces floodplain regulations in accordance with FEMA's requirements.	

The following Mitigation Action Guides presents Fort Lupton's new mitigation action that was developed for the 2016 Plan.

City Fort Lupton: Prioritize and execute drainage improvements in the Storm Drainage Master Plan	
PRIORITY: HIGH	**HAZARDS ADDRESSED: Flood**
LOCATION: Fort Lupton Drainage System	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 10/20/2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 12/31/2020	
ISSUE: Several areas of Fort Lupton are in need of drainage improvements.	
RECOMMENDATION: Comprehensive planning for the enhancement of the waste water and storm water system to accommodate larger flows. Implementation and continuous update of the Town of Fort Lupton's Storm Drainage Master Plan.	
ACTION: Prioritize and execute drainage improvements in the Storm Drainage Master Plan, and continually update the plan. Look for opportunities to incorporate flood risk reduction into policy and through specific projects.	

LEAD AGENCY: Town of Fort Lupton, Planning and Building Department	**EXPECTED COST:** Planning can be accomplished within existing budgets. Specific projects will be funded through the Storm Drainage fund.
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** A Storm Drainage fund, established in 2007 and rates adjusted in 2015, has helped to fund needed improvements, but needs to grow before further projects can be completed.
PROGRESS MILESTONES:	

Letter of Intent to Participate

LETTER OF INTENT TO PARTICIPATE

City of Fort Lupton

August 26, 2015

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the City of Fort Lupton is submitting this letter of intent to confirm that the City of Fort Lupton has agreed to participate in Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the City of Fort Lupton agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The City of Fort Lupton understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Kenneth E. Poncelow, commit the City of Fort Lupton to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 26th day of August, 2015 

EMERGENCY MANAGEMENT

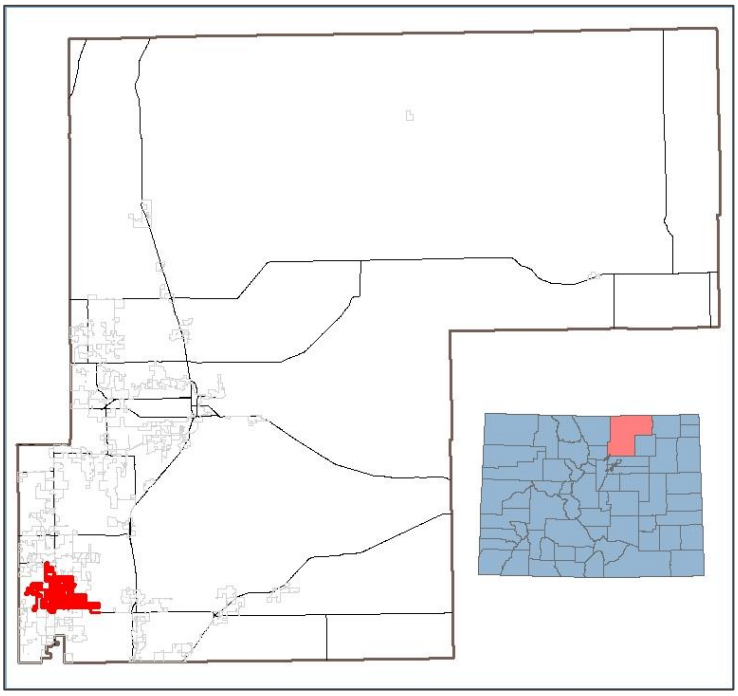
Michael Baker INTERNATIONAL

Town of Frederick

"Frederick aspires to be a balanced community where residents can live, work, learn and play. The Town should be safe, friendly, connected, walk-able, and inclusive for all residents, with ample places and opportunities for people to interact and recreate."

– Community Vision, Town of Frederick 2015 Comprehensive Plan

Frederick is a small town located along Colorado's Front Range. It is situated between the towns of Firestone and Dacono in southwestern Weld County. Collectively, the three towns are referred to as the Tri-Town area. Frederick originated as a mining camp as was incorporated in 1907. The immigrants who settled in the Tri-Town area and worked in the coalmines were from all over the world including Italy, France, Greece, Turkey, the Slavic countries, and Mexico. The Town of Frederick 2015 Comprehensive Plan states that, "As with all of the Tri-Towns, Frederick is a close-knit, hard-working community."



According to the Frederick Comprehensive Plan, the Tri-Towns have a history of working together as neighbors. For example, a formal effort to cooperate in planning the region has been initiated through intergovernmental agreements and the mutually adopted Uniform Baseline Design Standards. "The success of these regional efforts are dependent on a commitment to the ideals expressed in the Town of Frederick Comprehensive Plan, 2006, as well as those identified by the communities of Firestone and Dacono," states the 2015 Frederick Comprehensive Plan.

Implementation of the Town of Frederick's community vision depends on a commitment by daily decision-makers and stakeholders who shape growth, development, infrastructure, and design of the community. The local hazard mitigation actions outlined in this plan will also contribute to building a "safe, friendly, connected, walk-able, and inclusive for all residents, with ample places and opportunities for people to interact and recreate."

Community Profile

The table below summarizes key demographic and development related characteristics of the Town of Frederick.

Town of Frederick Statistics		
	Town of Frederick	Colorado
Population, 2014	10,927	5,355,866
Population, % change April 1, 2010 to July 1, 2014	26.1%	6.5%
% Population under 5 years, 2010	9.5%	6.8%
% Population under 18 years, 2010	31.0%	24.4%
% Population 65 years and over, 2010	6.4%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	8.0%	16.8%
Homeownership Rate	87.5%	65.4%
Persons Per Household	3.01	2.53
Persons below poverty level, %, 2009-2013	7.5%	13.2%
Median Household Income, 2009- 2013	$81,015	$58,433

Source: US Census Bureau

Hazard Identification and Risk Assessment

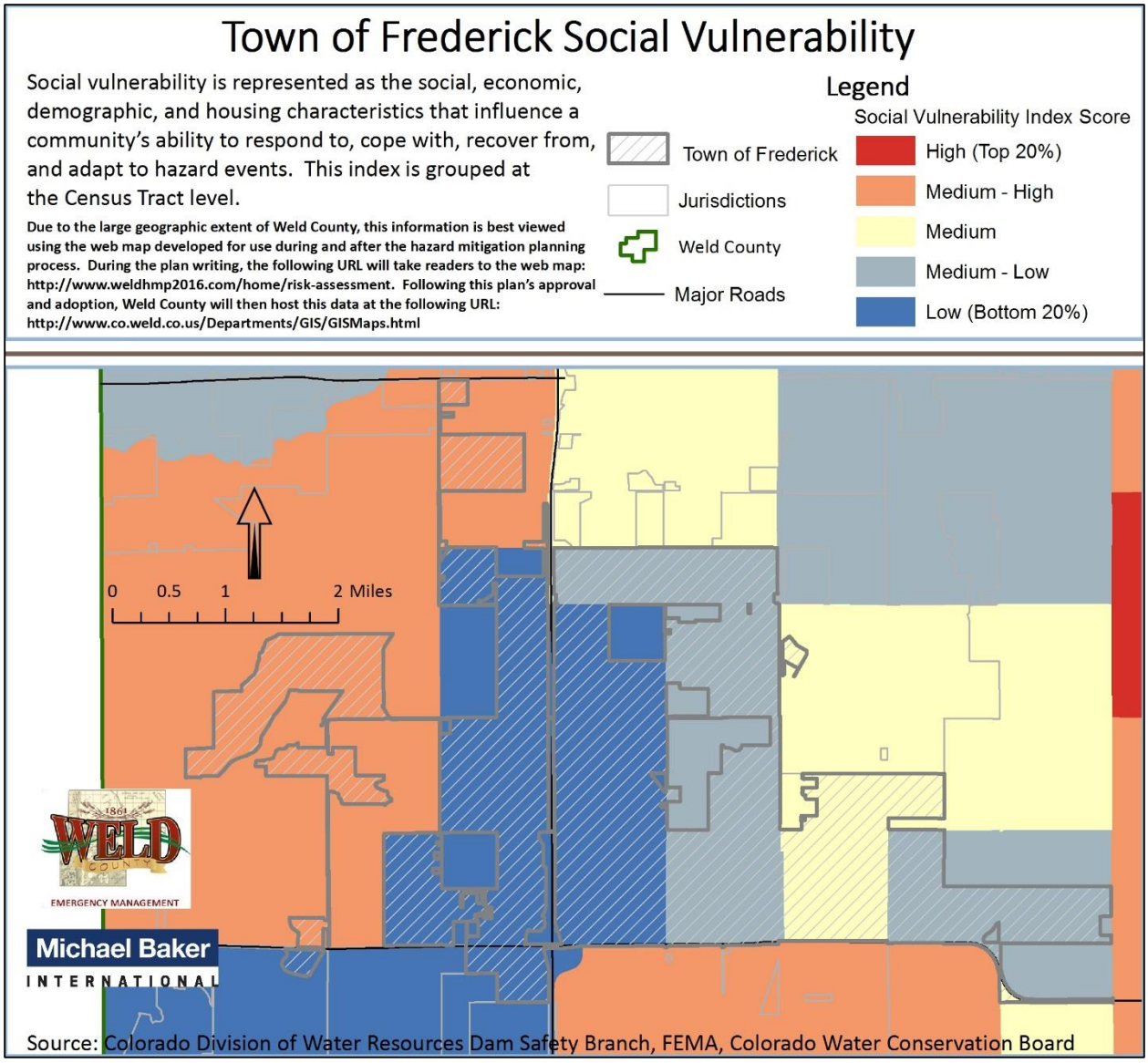
NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Severe Storm	0.9	0.9	0.8	0.1	0.1	2.800
Straight-Line Winds & Tornadoes	0.9	0.9	0.8	0.1	0.1	2.800
Flood	0.9	0.9	0.8	0.1	0.1	2.800
Prairie Fire	0.9	0.9	0.8	0.1	0.1	2.800
Drought	0.9	0.6	0.8	0.1	0.1	2.500
Public Health Hazards	0.6	0.6	0.4	0.1	0.1	1.800
HAZMAT	0.6	0.3	0.4	0.1	0.1	1.500
Extreme Temperatures	0.6	0.3	0.4	0.1	0.1	1.500
Earthquake	0.3	0.3	0.2	0.1	0.1	1.000
Land Subsidence	0.6	0.3	0.2	0.1	0.1	1.300

HIGH RISK (2.5 or higher): Severe Storm; Straight-Line Winds & Tornadoes; Flood; Prairie Fire; Drought
MODERATE RISK HAZARD (2.0 - 2.4):
Low Risk (1.9 or lower): Public Health Hazards; HAZMAT; Extreme Temperatures; Earthquake; Land Subsidence

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Frederick, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Frederick.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Frederick's social vulnerability map shows social vulnerability within the community.

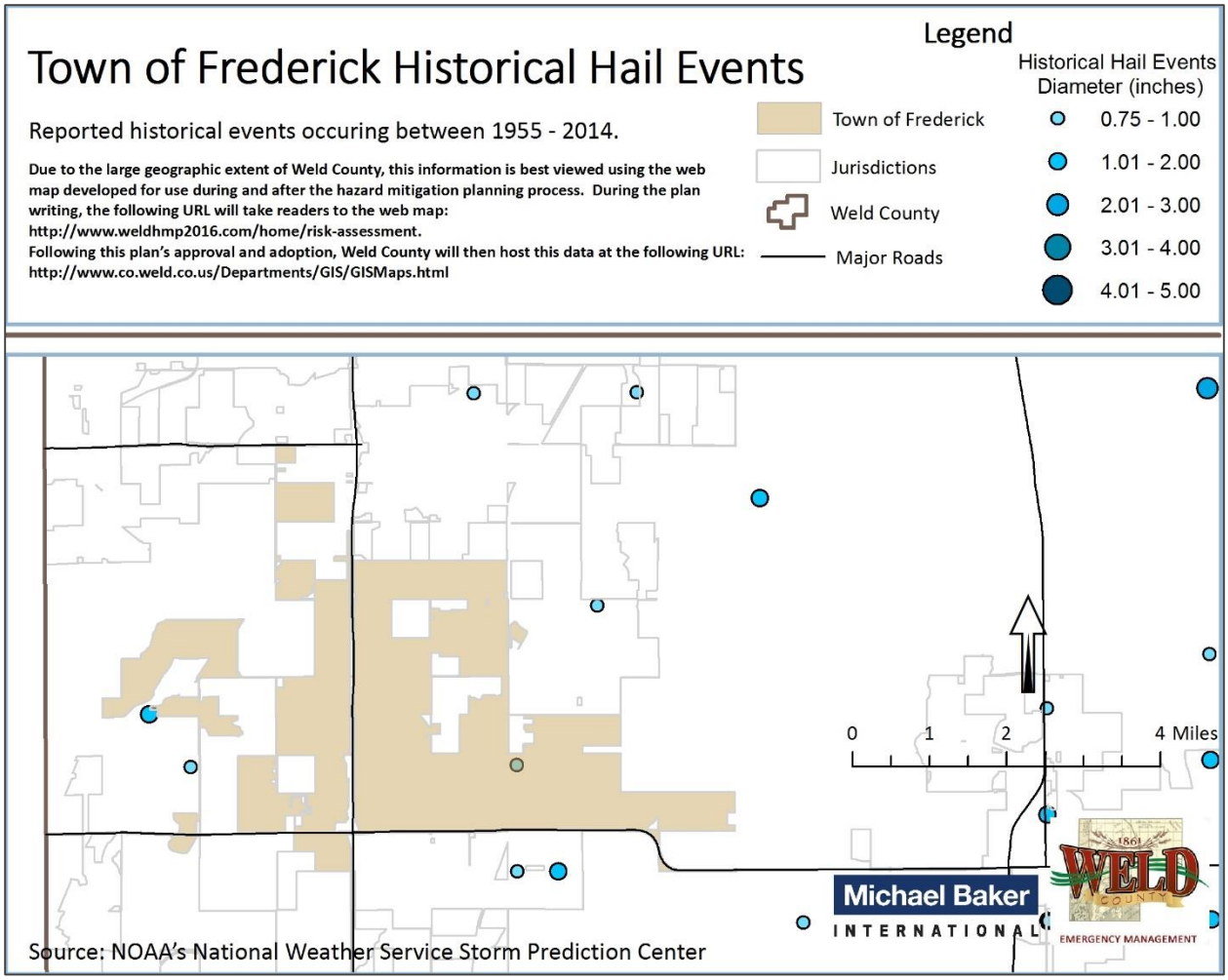


The Town of Frederick contains areas that range from low social vulnerability to medium high levels. There is a stark juxtaposition of very low vulnerability areas adjacent to medium-high levels. This has potential to threaten the resiliency of the Town. It is important that the Town continue to evaluate the reasons for these disparities so that they can more accurately manage and reduce social vulnerability to disasters over time.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the Town of Frederick. There has been one hail event recorded within the town limits and several hail events that occurred close to the town limits. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the best available data, no injuries, deaths, property damage, or crop damage have occurred within the Town of Frederick due to Lightning. Although there is no historic data showing hazardous impacts on the town, there is still great potential for Lightning to occur at any given time.

Winter Storm

According to NOAA's Storm Events Database, the Town of Frederick has experienced 25 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. There were no deaths, injuries or damage to crops reported for any of these storms. The Town of Frederick is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the Town of Frederick can be considered at risk from severe storms. This includes 10,927 people, or 100% of the town's population, and all buildings and infrastructure within the town. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail

but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

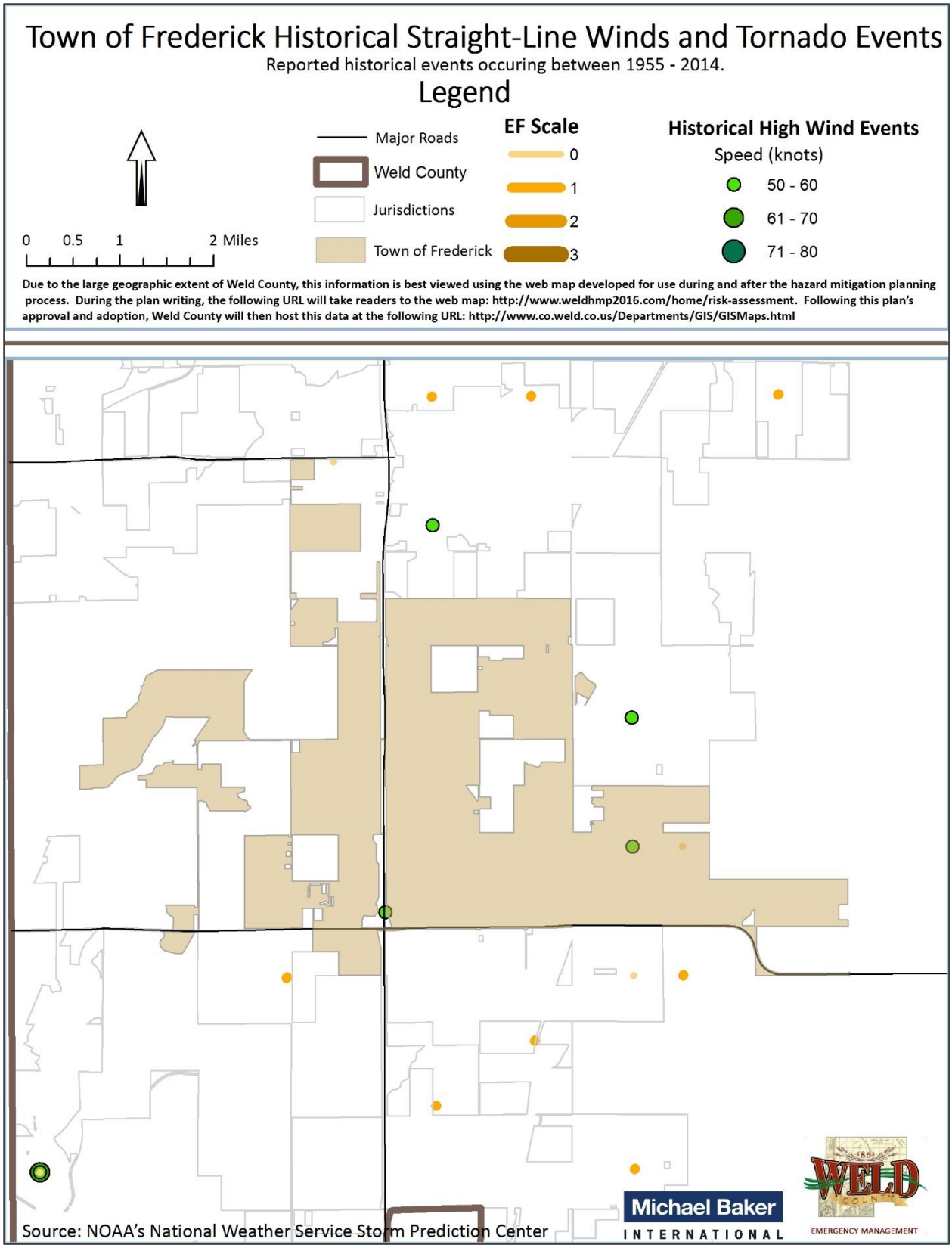
Severe storms affect the entire planning area of the Town of Frederick including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of Frederick. It is likely that lightning and hail will also be experienced in the area due to such storms.

Straight-Line Winds & Tornadoes

According to the best available data, no injuries, deaths, property damage or crop damages have been recorded within the Town of Frederick due to tornadoes. There is record of 1 tornado reported within the town limits between on June 5, 1961. There have been tornadoes reported very close to both the of the Town limits. Tornadoes will remain a highly likely occurrence for the Town of Frederick.

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Frederick due to straight-line winds. On July 2, 1991 a strong wind event was reported to have caused $3,000 in property damage. Straight-line winds remain a highly likely occurrence for the Town of Frederick.



Inventory Exposed

EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

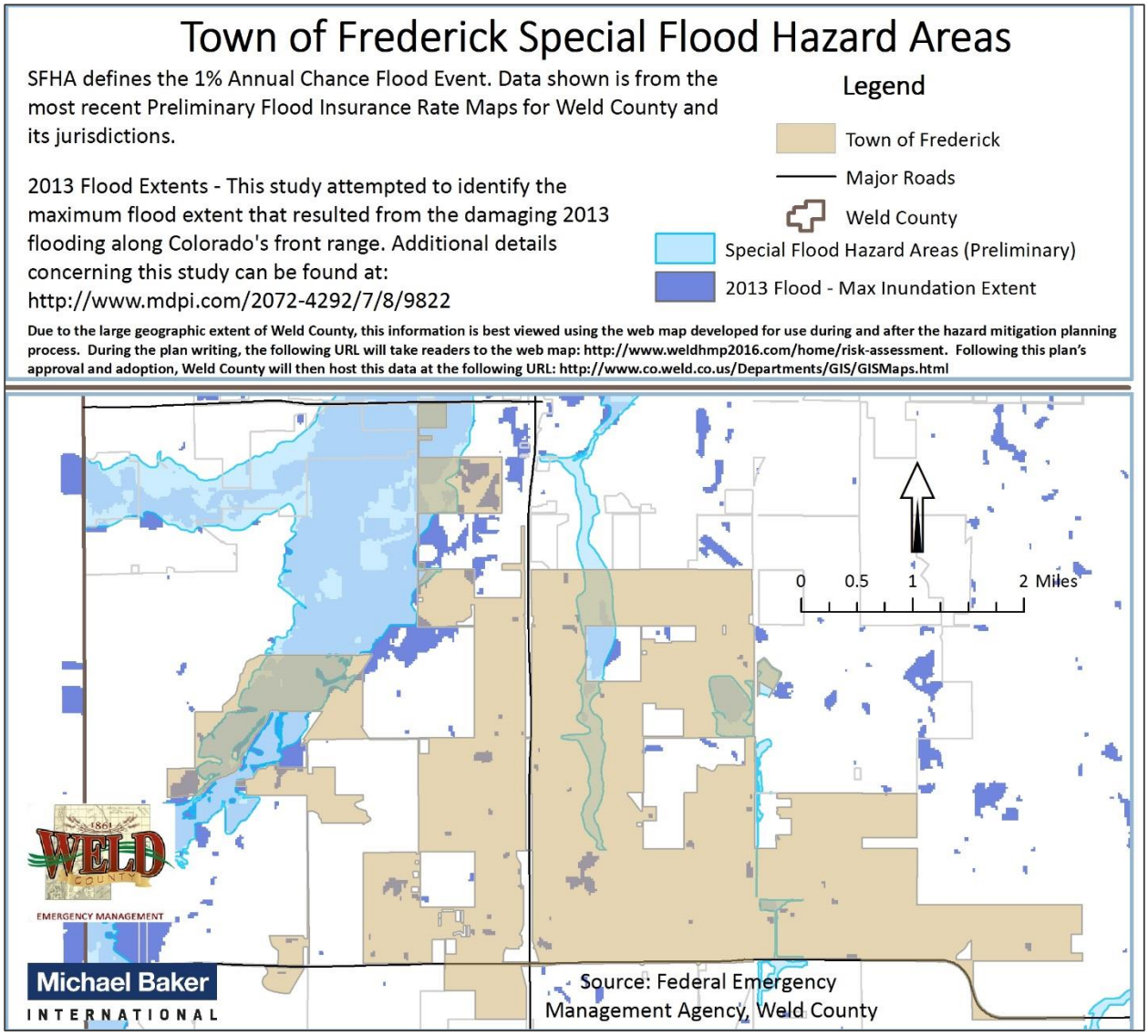
All assets located in the Town of Frederick can be considered at risk from straight-line winds and tornadoes. This includes 10,927 people, or 100% of the town's population, and all buildings and structures within the town. Most structures, including the town's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $732,613,942. Potential losses could be substantial.

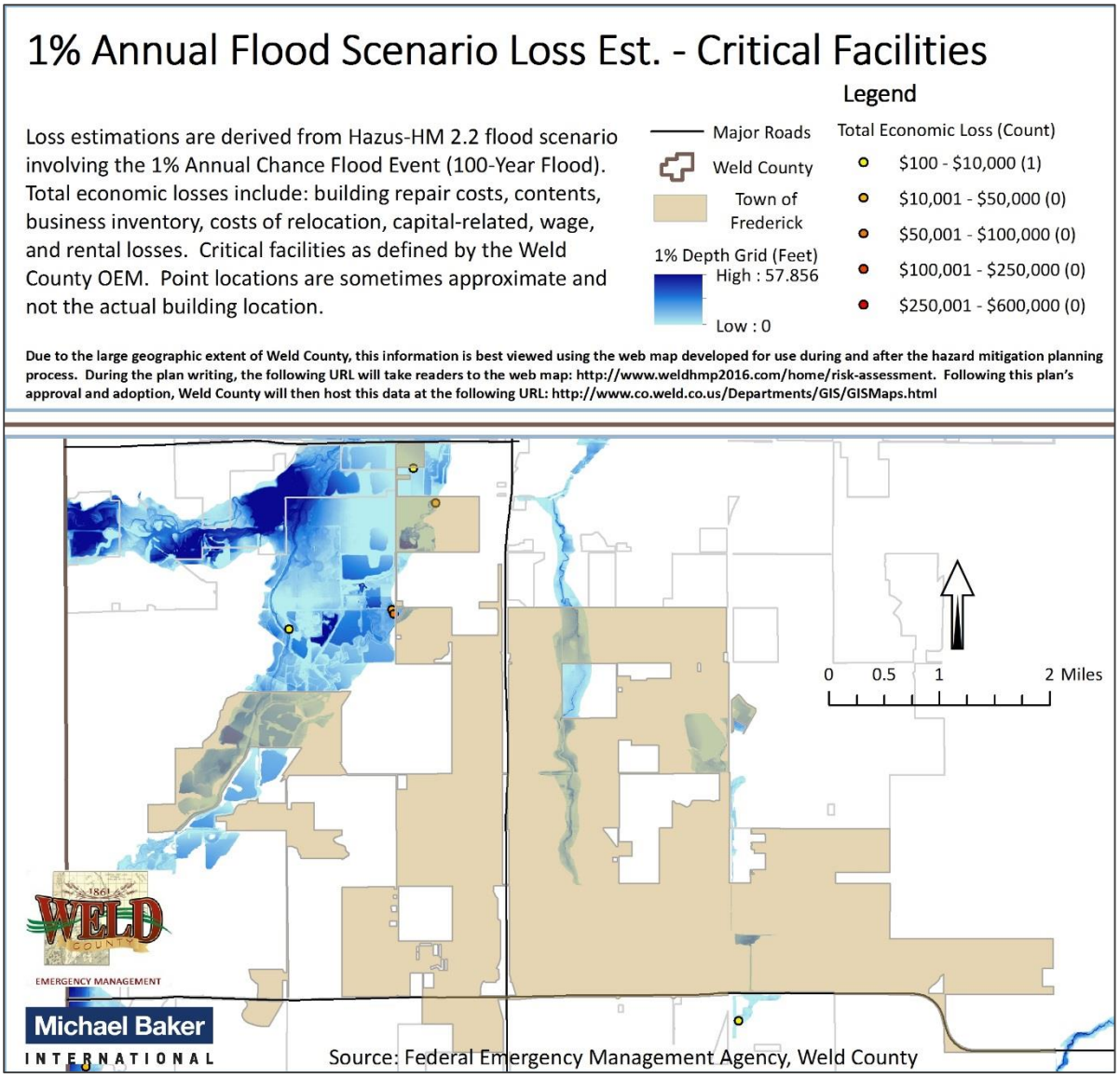
Flood

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the Town of Frederick caused by flooding. Although there is no historic data showing hazardous impacts on the town, there is a great potential for flood events to occur at any given time.



Inventory Exposed

The map below shows the flooding threat to critical facilities in the Town of Frederick by layering identified special flood hazard areas (SFHA) with the locations of community-defined critical facilities. Critical facilities are essential to the health and welfare of the whole population and are especially important both during and after hazard events. Critical structures or areas that overlap or touch the SFHA are considered "flood prone."

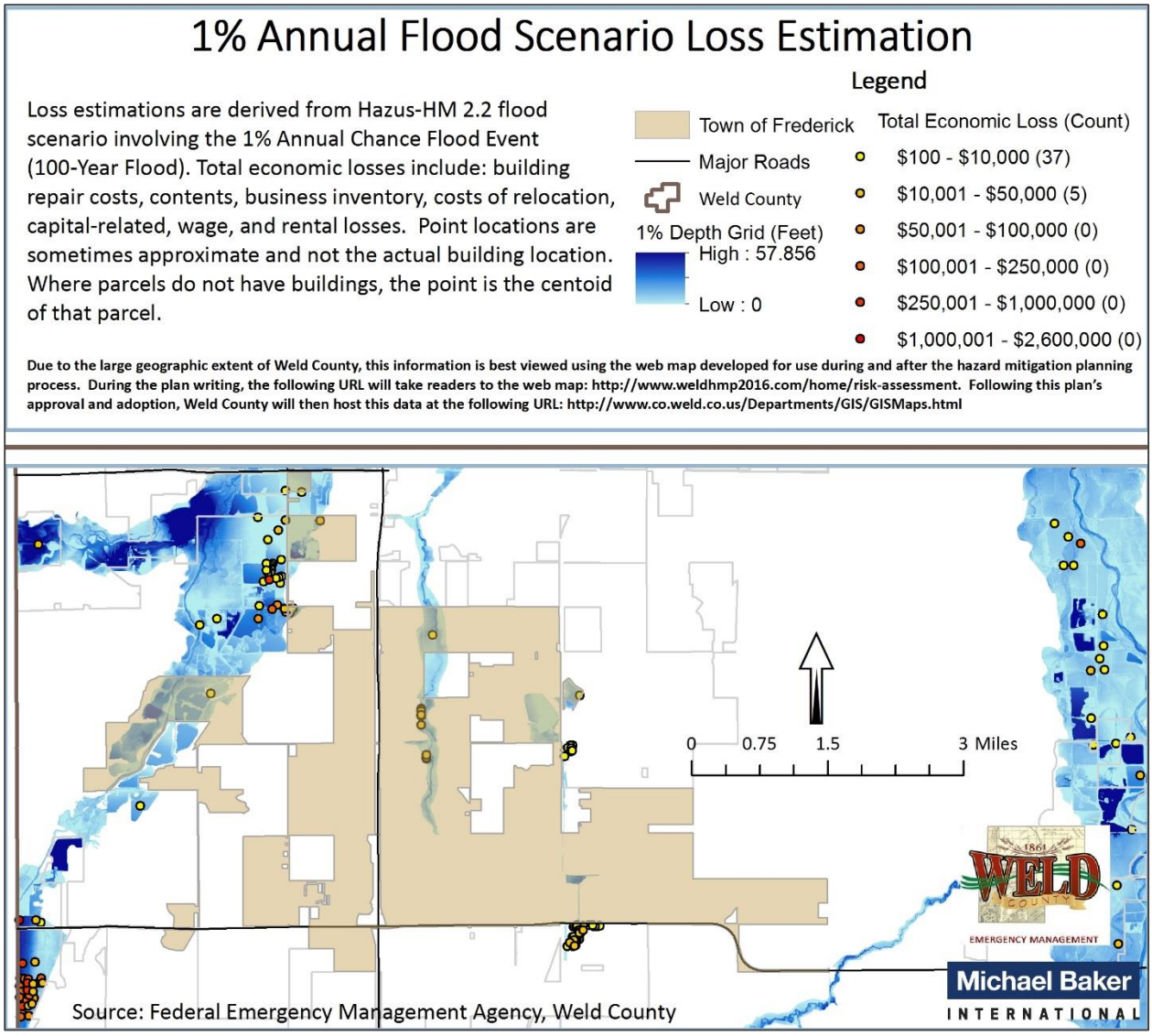


The critical facility and structure exposure analysis estimates that there is 1 critical facility and 14 structures in the Town of Frederick that are flood prone (not including the total miles of flood prone infrastructure). The appraised value of the exposed critical facility is $8,177 and the exposed structures is approximately $1,796,299 million dollars.

Potential losses

Hazus estimates for the Town of Frederick that for a 100-year flood event, approximately 14 buildings will experience flood damage. The total economic loss estimated for the 100-year flood is $112,759. There is one critical facilities located within the floodplain in the Town of Frederick. The total economic loss estimated for the 100-year flood is $24,900.

The total building losses for the 100-year flood event are estimated to be $59,303. Building content losses are estimated to be over $25,574. Inventory losses are estimated to be over $27,881.



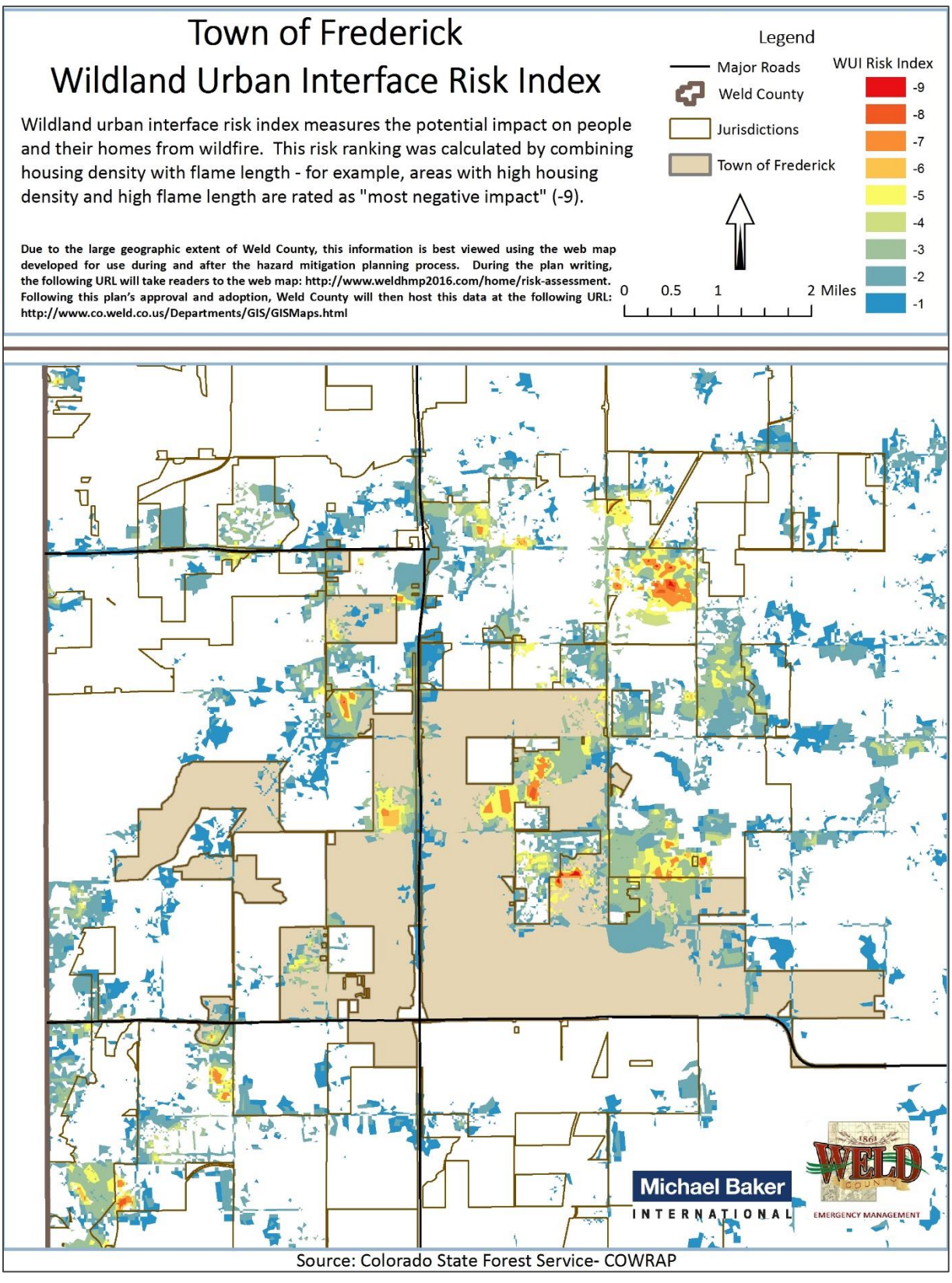
Prairie Fire

There are a number of areas in the central region of the town that are within the medium to highest level on the WUI Risk Index Scale. This means that the potential impact on people and homes from a prairie fire in those areas is medium to high in relationship to the rest of Weld County. This level of risk is derived by combining housing density with predicted flame length.

Town of Frederick
Wildland Urban Interface Risk Index

Wildland urban interface risk index measures the potential impact on people and their homes from wildfire. This risk ranking was calculated by combining housing density with flame length - for example, areas with high housing density and high flame length are rated as "most negative impact" (-9).

Due to the large geographic extent of Weld County, this information is best viewed using the web map developed for use during and after the hazard mitigation planning process. During the plan writing, the following URL will take readers to the web map: http://www.weldhmp2016.com/home/risk-assessment. Following this plan's approval and adoption, Weld County will then host this data at the following URL: http://www.co.weld.co.us/Departments/GIS/GISMaps.html



Source: Colorado State Forest Service- COWRAP

Inventory Exposed

Fires can extensively impact the economy of an affected area, including the agricultural, recreation and tourism industries, water resources, and the critical facilities upon which the Town of Frederick depends. There are 152 identified structures located in areas with the highest wildfire threat total. The appraisal value of the assets within these high threat areas is approximately $28,087,598. When considering assets located in areas of moderate wildfire threat there are 384 structures identified. The appraised value of these assets is approximately $70,177,649. There is 1 critical facility in the moderate wildfire threat areas and none in the highest wildfire threat areas.

Potential Losses

Currently, there is no method for estimating wildfire loss. In most cases, the emergency management community equates potential losses to assets exposed to wildfire as a method of quantifying and comparing potential losses across communities. The exposure data provided in the previous section (Inventory Assets Exposed) provides the clearest picture of potential losses to wildfire in the Town of Frederick.

Drought

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Frederick due to drought. There are four reports of drought in southern Weld County. The four drought events all occurred in April of 2002 and March of 2011. There is a great potential for a drought event to occur at any given time.

Inventory Exposed

Drought will have little to no direct impact on critical facilities or structures in the Town of Frederick. Should a drought affect the water available for public water systems or individual wells, the availability of clean drinking water could be compromised. This situation would require emergency actions and could possibly overwhelm local capacities and financial resources.

Potential Losses

Although it is unlikely that drought conditions will affect existing buildings, infrastructure, and critical infrastructure, economic livelihoods in the Town of Frederick could be negatively impacted due to crop loss, water shortages, and wildfires as a result of drought. Possible losses/impacts to critical facilities include the loss of critical function due to low water supplies.

As Frederick continues to grow, it will consider water-saving mitigation activities that will decrease local vulnerability to drought.

Capabilities Assessment

The capability assessment examines the ability of the Town of Frederick to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the Town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager		X	
Floodplain Administrator		X	
Community Planner	X		
GIS Specialist	X		
Grant Writer		X	

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the Town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	Y
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	Y
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	Y
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Frederick has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

The Town of Frederick has had previous experience receiving, administering, and applying for grants for mitigation and planning-related activities or projects. These include:

- Grants: CDBG, FEMA, and FHWA

Plan Maintenance and Implementation

The Town of Frederick has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Frederick	*The plan is monitored by the Town's leadership team in cooperation with partner agencies, such as the fire district and the Weld County Office of Emergency Management.* *As part of the plan maintenance process, the Town of Frederick will continue to engage the public in the process of identifying hazard risks and prioritizing mitigation actions. To do so mitigation actions and priorities will be posted on the town's website for public review and comment.*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The table below lists the specific integration strategies identified by the Town of Frederick based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Frederick	*"Current Land Use Code includes environmental constraints related to hazard mitigation. "* *"The Town's CIP includes priority mitigation projects related to Storm Water Management."*

Mitigation Action Guides

The following Mitigation Action Guides present status updates on Frederick's mitigation actions that were included in the 2009 Plan.

Town of Frederick: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Town of Frederick	**GOALS ADDRESSED: 1, 2, 3, 4**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES: Weld County OEM	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: Town of Frederick is not participating in the CRS program however we are a member of NFIP and the Town adopted the model ordinance in Jan of 2014 as required by the State. The Town enforces the floodplain regulations in accordance with FEMA's requirements.	

The following Mitigation Action Guides present each of Frederick's new mitigation actions that were developed for the 2016 Plan.

Town of Frederick: Box Culvert at Bella Rosa Parkway	
PRIORITY: 1	**HAZARDS ADDRESSED: Flooding**
LOCATION: Bella Rosa Parkway/No Name Creek	**GOALS ADDRESSED: 1, 2, 3, 4**
RECOMMENDATION DATE: 09/19/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 09/20/2020	
ISSUE: Flood control and drainage improvements have been done subsequent to the 2013 flood. More improvements are needed in order to withstand a 100-year flood.	
RECOMMENDATION: Completion of the box culverts as designed but not yet funded.	
ACTION: Engineering and construction of box culverts	
LEAD AGENCY: Town of Frederick	**EXPECTED COST:** $1.7 million

SUPPORT AGENCIES: Weld County OEM	**POTENTIAL FUNDING SOURCES:** Town capital budget, CDBG, FHWA

PROGRESS MILESTONES:

This section of Bella Rosa Parkway was severely undercut by water flooding over it during the event of September 2013. This damage has been repaired but the lack of adequate box culverts to handle a 100-year flood will result in future damage.

Town of Frederick: Snow Removal	
PRIORITY: 4	**HAZARDS ADDRESSED: Severe Winter Storms**
LOCATION: Downtown Frederick	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 09/19/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 09/20/2018	
ISSUE: The town lacks sufficient heavy equipment to move snow during a severe winter storm, particularly in the Old Town area, to include 5th Street and Tipple Parkway.	
RECOMMENDATION: Acquire a snow blower attachment for the front end loader, enabling it to load trucks to clear heavy snow accumulations from the roads.	
ACTION: Obtain the snow blower attachment	
LEAD AGENCY: Town of Frederick	**EXPECTED COST:** $75,000
SUPPORT AGENCIES: Weld County OEM	**POTENTIAL FUNDING SOURCES:** Town capital budget, CDBG, FHWA

PROGRESS MILESTONES:

Severe winter storms affect this area approximately every eight to ten years. Deep, heavy water-laden snow is extremely difficult to remove from important arterial roads and streets, especially in the Old Town area and other parts with narrow streets. The successful movement of snow from the streets with the new blower will show progress.

Town of Frederick: Tipple Parkway Box Culvert	
PRIORITY: 2	**HAZARDS ADDRESSED: Flooding**
LOCATION: Godding Hollow Creek where it crosses Tipple Parkway	**GOALS ADDRESSED: 1, 2, 3, 4**
RECOMMENDATION DATE: 09/19/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 09/20/2020	
ISSUE: Flood control and drainage improvements have been done subsequent to the 2013 flood. More improvements are needed in order to withstand a 100-year flood.	
RECOMMENDATION: Completion of the box culverts as designed but not yet funded.	
ACTION: Engineering and construction of box culverts	
LEAD AGENCY: Town of Frederick	**EXPECTED COST:** $900,000
SUPPORT AGENCIES: Weld County OEM	**POTENTIAL FUNDING SOURCES:** Town capital budget, CDBG, FHWA

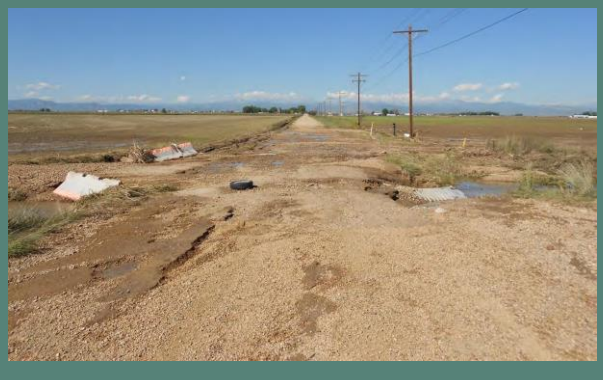
PROGRESS MILESTONES:

This section of Tipple Parkway was severely damaged by water flooding over it during the event of September 2013. This damage has been repaired but the lack of adequate box culverts to handle a 100-year flood will result in future damage.

Town of Frederick: Tipple Parkway Paving to I-25 Frontage Road	
PRIORITY: 3	**HAZARDS ADDRESSED: Flooding**
LOCATION: Tipple Parkway west to I-25 frontage road	**GOALS ADDRESSED: 1, 2, 3, 4**
RECOMMENDATION DATE: 09/19/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 09/20/2020	
ISSUE: Flood control and drainage improvements have been done subsequent to the 2013 flood. More improvements are needed in order to withstand a 100-year flood.	
RECOMMENDATION: Completion of the paving of this road west of CR 11 to the east I-25 frontage road	
ACTION: Complete the paving of this road in conjunction with the installation of box culverts.	
LEAD AGENCY: Town of Frederick	**EXPECTED COST:** $340,000
SUPPORT AGENCIES: Weld County OEM	**POTENTIAL FUNDING SOURCES:** Town capital budget, CDBG, FHWA

PROGRESS MILESTONES:

This section of Tipple Parkway was severely damaged by water flooding over it during the event of September 2013. This damage has been repaired but paving is required in order for it to withstand another flood.



Letter of Intent to Participate

401 Locust Street • P.O. Box 435 • Frederick, CO 80530-0435

Phone: (720) 382-5500 • Fax: (720) 382-5520

www.frederickco.gov

August 18, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Frederick is submitting this letter of intent to confirm that the Town of Frederick has agreed to participate in the Weld County's] Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Frederick agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town of Frederick understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Matt LeCerf, Town Manager, commit the Town of Frederick to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 19th day of August, 2014

Matt LeCerf, Frederick Town Manager

Built on What Matters.

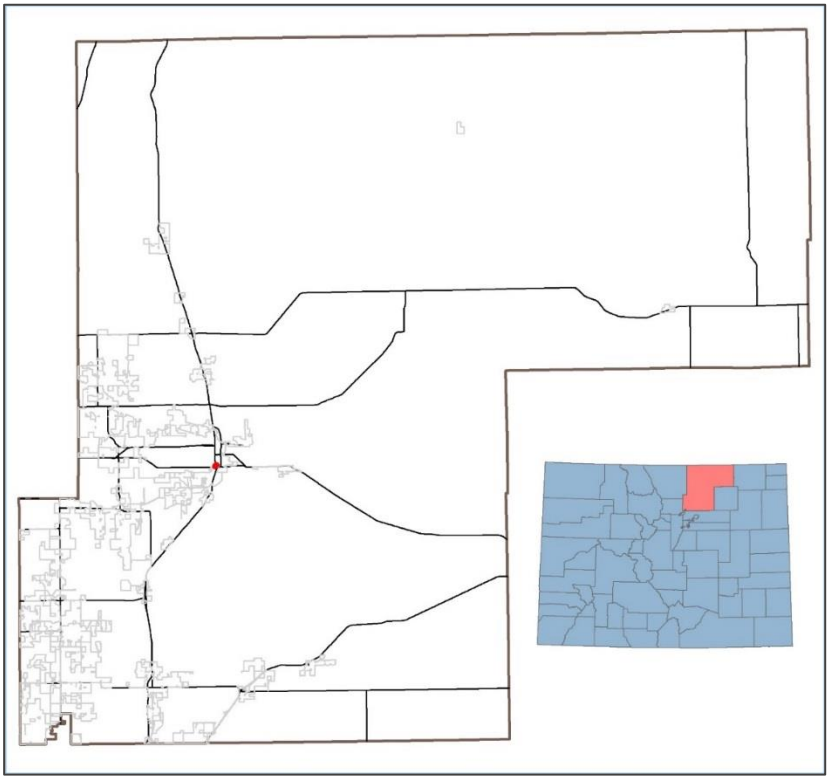
EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

Town of Garden City

Community Profile

The Town of Garden City is surrounded by the City of Evans to the South and the City of Greeley to the west, north, and east. The history of Garden City began in the mid 1930's when the City of Greeley voted to prohibit the sale, manufacture for sale, transportation for sale, or possession for sale of liquor in the city limits. Garden City was built on a tradition of thinking differently and the ideal of personal freedom and was incorporated in 1938.



The table below summarizes key demographic and development related characteristics of the Town of Garden City.

Town of Garden City Statistics		
	Town of Garden City	Colorado
Population, 2014	264	5,355,866
Population, % change April 1, 2010 to July 1, 2014	11.4%	6.5%
% Population under 5 years, 2010	5.6%	6.8%
% Population under 18 years, 2010	21.9%	24.4%
% Population 65 years and over, 2010	14.1%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	39.0%	16.8%
Homeownership Rate	15.4%	65.4%
Persons Per Household	2.45	2.53
Persons below poverty level, %, 2009-2013	35.3%	13.2%
Median Household Income, 2009- 2013	$25,179	$58,433

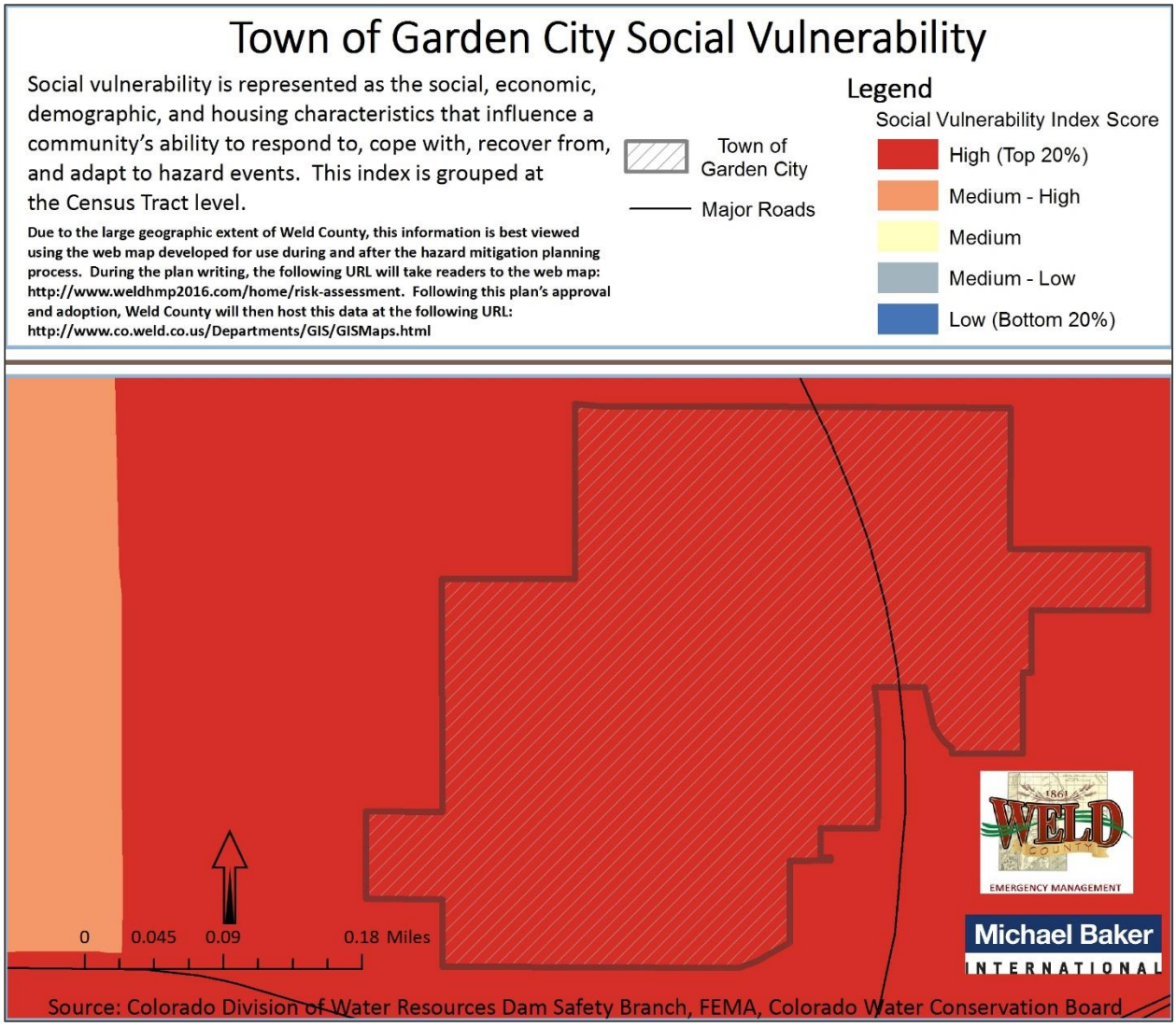
Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Extreme Temperatures	0.6	0.3	0.4	0.1	0.3	1.700
Public Health Hazards	0.6	0.3	0.2	0.4	0.1	1.600
Severe Storm	0.6	0.3	0.2	0.4	0.1	1.600
Earthquake	0.3	0.3	0.2	0.4	0.1	1.300
Land Subsidence	0.3	0.3	0.2	0.4	0.1	1.300
Flood	0.3	0.3	0.2	0.4	0.1	1.300
Straight-Line Wind and Tornadoes	0.3	0.3	0.2	0.4	0.1	1.300
Prairie Fire	0.3	0.3	0.2	0.4	0.1	1.300
HAZMAT	0.3	0.3	0.2	0.4	0.1	1.300
Drought	0.3	0.3	0.2	0.1	0.4	1.300
HIGH RISK (2.5 or higher): NONE						
MODERATE RISK HAZARD (2.0 - 2.4): NONE						
Low Risk (1.9 or lower): Extreme Temperatures; Public Health Hazards; Severe Storms; Earthquake; Land Subsidence; Flood; Straight-Line Wind and Tornadoes; Prairie Fire; HAZMAT; Drought						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town Garden City. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town Garden City.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Garden City's social vulnerability map shows social vulnerability within the community.



The Town of Garden City is characterized by a high level of social vulnerability. The City falls within the top 20% of socially vulnerable places in Weld County. Evaluating the individual social vulnerability indicators within the community over time will give local emergency managers, planners, and stakeholders an even clearer picture of which social vulnerability factors have the largest negative effect on the city and it resiliency.

Capabilities Assessment

The capability assessment examines the ability of the Town of Garden City to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the Town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager			X
Floodplain Administrator			X
Community Planner			X
GIS Specialist			X
Grant Writer			X

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the Town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	N
Local building codes	Y
A comprehensive plan / master plan	N
A Capital Improvements Plan	N
A Stormwater Plan	IDK
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Garden City has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of Garden City has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Garden City	*"The 2016 Hazard Mitigation Plan will be reviewed annually."* *"We will announce changes and updates to the plan via Town newsletter and website."*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Garden City did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Garden City based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Garden City	*"We will update our zoning/land use if and when necessary."*

Mitigation Action Guides

The following Mitigation Action Guides present status updates on each of Garden City's mitigation actions that were included in the 2004 Plan.

Garden City Action Item #3: Communities with NSFHA or Never Mapped should consider joining NFIP for the availability of insurance, especially if growing/annexing rapidly.	
PRIORITY: HIGH	**HAZARDS ADDRESSED:** Flooding
LOCATION: Garden City	**GOALS ADDRESSED: 1, 4**
RECOMMENDATION DATE: 10/21/2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: Ongoing	Page 493-494
ISSUE: Garden City has never been mapped for flood hazards. As such, they chose not to join the NFIP. Currently, because they do not participate in the NFIP, flood insurance is unavailable to building owners. However, as communities grow and annex land from the County, they may be acquiring land that is flood prone or subject to drainage problems. A community can join the NFIP by adopting an ordinance and agreeing to regulate development in flood prone areas, as indicated on a FEMA-provided map. Where there is no map, no enforcement is necessary ---- but ---- having adopted the ordinance will allow building owners to purchase flood insurance if they so choose.	
RECOMMENDATION: Communities should contact the CWCB and ask to join the NFIP	
ACTION: : Communities with NSFHA or Never Mapped should consider joining NFIP for the availability of insurance, especially if growing/annexing rapidly. In cases where there is a known watercourse	

within the existing or expanding community boundaries, the community should request CWCB and/or FEMA to develop a floodplain map that can be used for regulatory and insurance purposes.	
LEAD AGENCY: Communities	**EXPECTED COST:** Staff time only for initial inventory and discussion of protection methods, and cost-benefit analysis.
SUPPORT AGENCIES: CWCB, FEMA	**POTENTIAL FUNDING SOURCES:** There is no cost for the initial inventory and decision-making. Protective measures should be taken where cost-effective.
PROGRESS MILESTONES: Garden City has never been mapped for flood hazards. As such, we chose not to join the NFIP. Garden City is addressing this action in a new action for 2016. Garden City will re-evaluate this issue every two years beginning 2016. If determined to do so, adopt an Ordinance, apply for membership to NFIP.	

The following Mitigation Action Guides present each of Garden City's new mitigation actions that were developed for the 2016 Plan.

Town of Garden City #1 High Risk Individuals Tracking Data Base	
PRIORITY: High	**HAZARDS ADDRESSED: Drought, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat**
LOCATION: Town as a whole	**GOALS ADDRESSED: 1,2**
RECOMMENDATION DATE: 11/01/2015	**OBJECTIVES ADDRESSED: e**
TARGET COMPLETION DATE: 03/31/2015	
ISSUE: Garden City has a high number of at risk individuals living in substandard environments. A sharable data base detailing members of the household, special needs, language barriers and family member contact information is vital for first responders and town staff in an emergency situation.	
RECOMMENDATION: Create and maintain a data base in a digital and sharable format.	
ACTION: Creation of the data base with regular review and updates. Create a reporting mechanism for landlords and property managers with a higher turnover of tenants.	
LEAD AGENCY: Town Administration	**EXPECTED COST:** Staff time.
SUPPORT AGENCIES: Envision, Community Advantage	**POTENTIAL FUNDING SOURCES:** Garden City General Fund

PROGRESS MILESTONES: Complete data base by deadline. Review and update data base quarterly.

Town OF Garden City #2 – IBC Compliance	
PRIORITY: High	**HAZARDS ADDRESSED: Extreme Temperatures, Severe Storm, Wind & Tornado, Fire, Public Health**
LOCATION: Town as a whole	**GOALS ADDRESSED: 1,2**
RECOMMENDATION DATE: 10/15/2015	**OBJECTIVES ADDRESSED: c,e**
TARGET COMPLETION DATE: Ongoing	
ISSUE: Garden City has a high inventory of older structures built before the implementation of building and land use codes. The Town has adopted the International Building, Plumbing, Electrical and Property Management Codes of 2012. These codes and a contracted building official will allow the Town to address safety issues in businesses and homes, mandating compliance when able to do so. The goal is to obtain structurally sound buildings that withstand the above hazards.	
RECOMMENDATION: Regular review of codes, update and adoption of revisions when necessary. In depth review and inspection regarding building permits and code enforcement issues to determine when compliance can be obtained at any level. Maintain same.	
ACTION: Staff and contractor review of all code related issues. Determine relative codes in noncompliance. Educate home and building owners regarding codes. Force compliance when necessary.	
LEAD AGENCY: Town Administration	**EXPECTED COST:** Staff, time, Protective Inspections Contract dollars.
SUPPORT AGENCIES: Colorado Inspection Connection, HUD	**POTENTIAL FUNDING SOURCES:** Garden City General Fund

PROGRESS MILESTONES: Ongoing revitalization of deteriorated buildings and structure.

Letter of Intent to Participate

LETTER OF INTENT TO PARTICIPATE
Town of Garden City

August 26, 2015

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Garden City is submitting this letter of intent to confirm that the Town of Garden City has agreed to participate in the Weld County's] Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Garden City agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town of Garden City understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Cheryl Campbell, commit the Town of Garden City to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 26th day of August, 2015 Cheryl Campbell
Town Administrator

EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

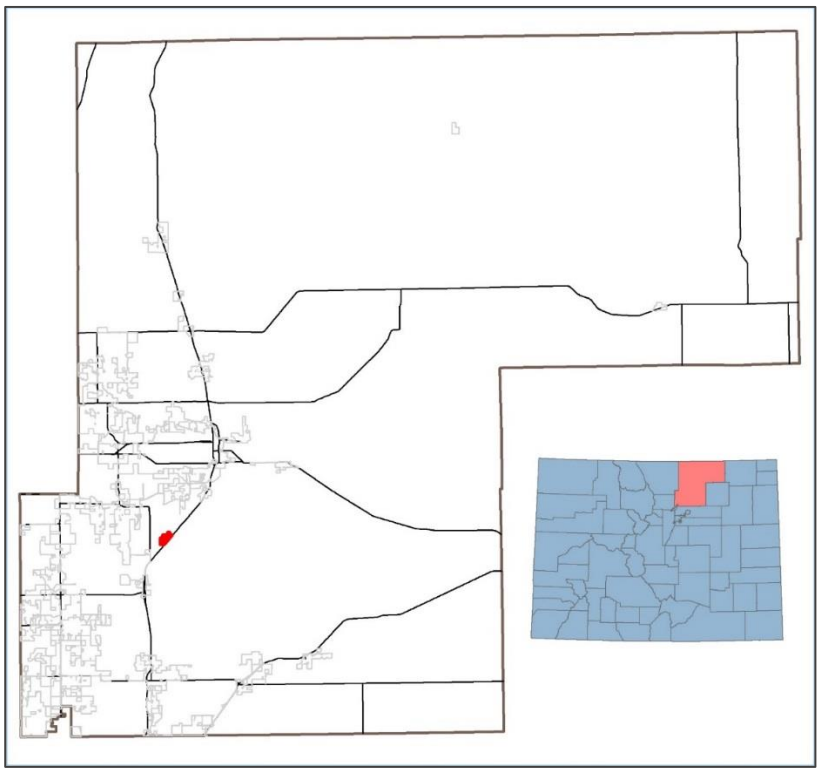
Town of Gilcrest

The Town of Gilcrest is located in central Weld County along the Highway 85. Gilcrest was originally the Town of Nantes. A new community began on the bones of Nantes and was renamed Gilcrest. Gilcrest was incorporated in 1912. Between 1913 and 1975 Greeley's Great Western Sugar Factory operated a sugar beet dump at the Gilcrest railroad station. Gilcrest was also a center for the potatoes that were harvested in the area and stored in town. In recent years oil and gas exploration and production in Weld County has impacted Gilcrest. With the oil and gas industry and other industries moving into Weld County, the Town of Gilcrest is thriving and continues to be a progressive community.

Community Profile

The following are the overall planning-related goals that the Town of Gilcrest laid out in their Comprehensive Plan:

- Creation of a healthy balance of housing, employment, availability of goods and services, recreation, educational and cultural opportunities as the town grows.
- Capitalizing on the tremendous growth of Oil and Gas Industry and Renewable Energy sectors.
- Maintaining Gilcrest's community character and collectively working to improve upon the overall image of the Town



EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

The table below summarizes key demographic and development related characteristics of the Town of Gilcrest.

Town of Gilcrest City Statistics		
	Town of Gilcrest	Colorado
Population, 2014	1,080	5,355,866
Population, % change April 1, 2010 to July 1, 2014	4.3%	6.5%
% Population under 5 years, 2010	6.0%	6.8%
% Population under 18 years, 2010	33.1%	24.4%
% Population 65 years and over, 2010	14.1%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	39.0%	16.8%
Homeownership Rate	73.8%	65.4%
Persons Per Household	3.19	2.53
Persons below poverty level, %, 2009-2013	27.8%	13.2%
Median Household Income, 2009- 2013	$50,069	$58,433

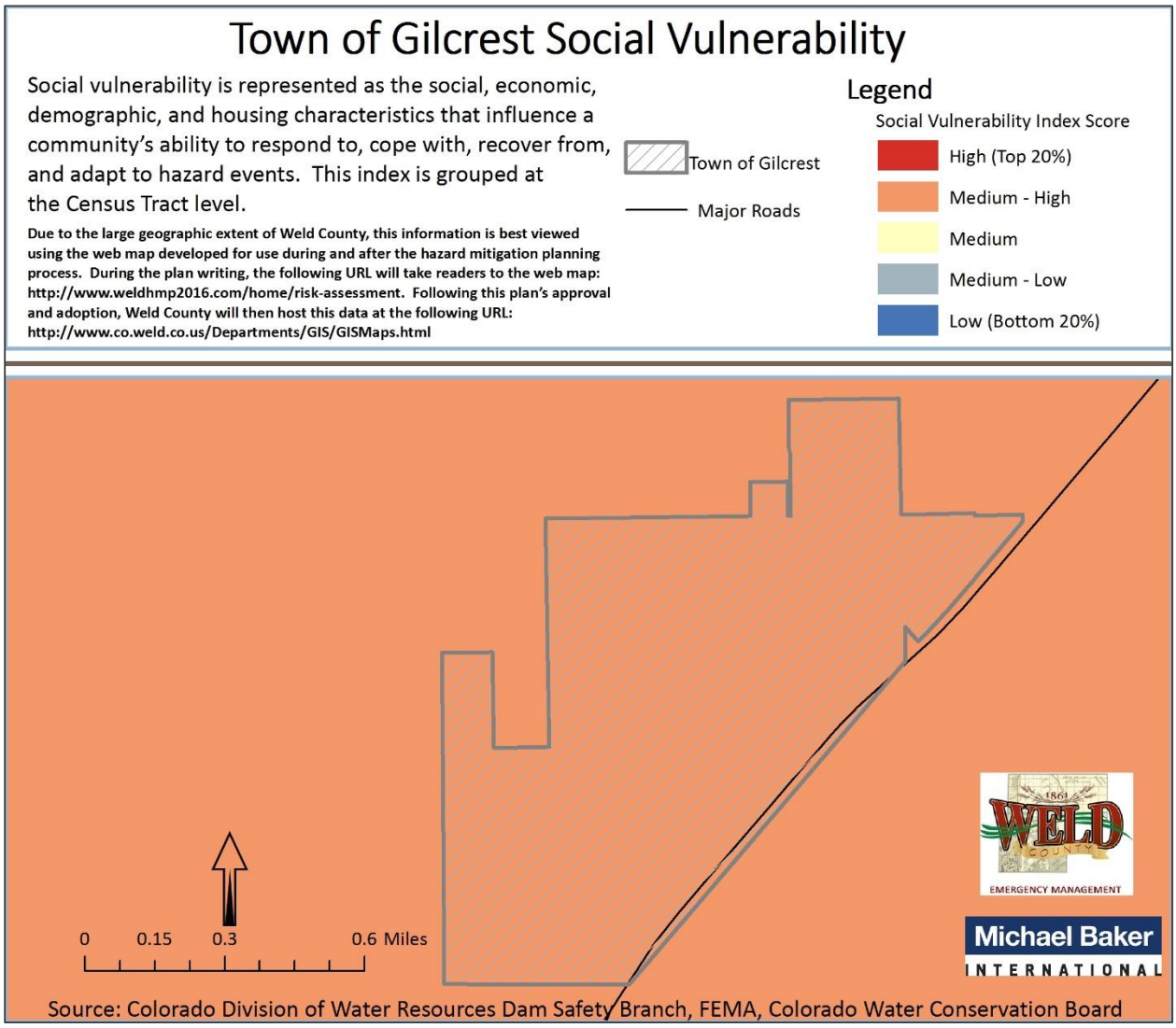
Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Drought	0.9	0.3	0.8	0.1	0.4	2.500
Extreme Temperatures	0.6	0.6	0.8	0.1	0.3	2.400
HAZMAT	0.9	0.6	0.4	0.4	0.1	2.400
Severe Storm	0.6	0.6	0.8	0.2	0.1	2.300
Flood	0.9	0.6	0.4	0.2	0.1	2.200
Public Health Hazards	0.6	0.6	0.4	0.4	0.1	2.100
Straight-Line Winds and Tornadoes	0.6	0.3	0.2	0.4	0.1	1.600
Prairie Fire	0.6	0.3	0.2	0.4	0.1	1.600
Earthquake	0.3	0.3	0.2	0.4	0.1	1.300
Land Subsidence	0.3	0.3	0.2	0.4	0.1	1.300
HIGH RISK (2.5 or higher): Drought						
MODERATE RISK HAZARD (2.0 - 2.4): Severe Storm; Flood; Public Health Hazards; HAZMAT; Extreme Temperatures						
Low Risk (1.9 or lower): Earthquake; Land Subsidence; Prairie Fire; Straight-Line Winds and Tornadoes						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Gilcrest. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Gilcrest.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Gilcrest's social vulnerability map shows social vulnerability within the community.



The Town of Gilcrest is characterized by a medium-high level of social vulnerability. Evaluating and monitoring the individual social vulnerability indicators within the community over time will give local emergency managers, planners, and stakeholders an even clearer picture of which social vulnerability factors have the largest negative effect on the town and it resiliency.

Drought

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Gilcrest due to drought. There are 2 reports of drought in southern Weld County in April of 2002 and March of 2011. There is a great potential for a drought event to occur at any given time.

Inventory Exposed

Drought will have little to no direct impact on critical facilities or structures in the Town of Gilcrest. Should a drought affect the water available for public water systems or individual wells, the availability of clean drinking water could be compromised. This situation would require emergency actions and could possibly overwhelm local capacities and financial resources.

Potential Losses

Although it is unlikely that drought conditions will affect existing buildings, infrastructure, and critical infrastructure, economic livelihoods in the Town of Gilcrest could be negatively impacted due to crop loss, water shortages, and wildfires as a result of drought. Possible losses/impacts to critical facilities include the loss of critical function due to low water supplies.

As Gilcrest continues to grow, it will consider water-saving mitigation activities that will decrease local vulnerability to drought.

Capabilities Assessment

The capability assessment examines the ability of the Town of Gilcrest to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the Town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager			X
Floodplain Administrator			X
Community Planner		X	
GIS Specialist			X
Grant Writer			X

In Gilcrest, Community Planning services are provided by a contract consultant.

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the Town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	N
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	IDK
A Continuity of Operations Plan (COOP)	IDK
An Emergency Operations Plan (EOP)	IDK
A Long-Term Recovery Plan	N
Participates in the NFIP	N

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Gilcrest has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of Gilcrest has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Gilcrest	*Our mitigation actions will be reviewed by the town administrator and a report given to town council annually.* *Changes to the plan will be discussed at public meeting specifically for the purpose. Meetings will be noticed on the town's website and at regular posting locations.*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Gilcrest did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Gilcrest based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Gilcrest	*"We will include mitigation actions in our capital improvement plan as well as identifying actions needed in undeveloped areas in our comprehensive plan."*

Mitigation Action Guides

The following Mitigation Action Guides present status updates on each of Gilcrest's mitigation actions that were included in previous hazard mitigation plans.

Gilcrest: Communities with NSFHA or Never Mapped should consider joining NFIP for the availability of insurance, especially if growing/annexing rapidly.	
PRIORITY: HIGH	**HAZARDS ADDRESSED:** Flooding
LOCATION: Gilcrest	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 2004	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: Complete	
ISSUE: Gilcrest has never been mapped for flood hazards. As such, they chose not to join the NFIP. Currently, because they do not participate in the NFIP, flood insurance is unavailable to building owners. However, as communities grow and annex land from the County, they may be acquiring land that is flood prone or subject to drainage problems. A community can join the NFIP by adopting an ordinance and agreeing to regulate development in flood prone areas, as indicated on a FEMA-provided map. Where there is no map, no enforcement is necessary ---- but ---- having adopted the ordinance will allow building owners to purchase flood insurance if they so choose.	
RECOMMENDATION: Communities should contact the CWCB and ask to join the NFIP	
ACTION: Communities with NSFHA or Never Mapped should consider joining NFIP for the availability of insurance, especially if growing/annexing rapidly. In cases where there is a known watercourse within the existing or expanding community boundaries, the community should request CWCB and/or FEMA to develop a floodplain map that can be used for regulatory and insurance purposes.	
LEAD AGENCY: Communities	**EXPECTED COST:** Staff time only for initial inventory and discussion of protection methods, and cost-benefit analysis.
SUPPORT AGENCIES: CWCB, FEMA	**POTENTIAL FUNDING SOURCES:** There is no cost for the initial inventory and decision-making. Protective measures should be taken where cost-effective.
PROGRESS MILESTONES: No action from 2004 to 2009	

The following Mitigation Action Guides present Gilcrest's new mitigation action that was developed for the 2016 Plan.

Gilcrest: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Gilcrest	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 10/2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continued compliance with the NFIP	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: An ordinance is being introduced on first reading on October 20, 2015 which amends the Town of Gilcrest Zoning Code to adopt a new section addressing flood damage prevention. It is expected that this ordinance will be approved on second reading on November 3rd with an effective date of January 20, 2016.	

Letter of Intent to Participate

TOWN OF
Gilcrest
COLORADO
Leaning Toward the Future

304 8th Street • PO Box 128 • Gilcrest, Colorado 80623 • (970) 737-2426 • (970) 737-2427 – FAX

LETTER OF INTENT TO PARTICIPATE
Town of Gilcrest, Colorado

November 24, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Gilcrest is submitting this letter of intent to confirm that the Town of Gilcrest has agreed to participate in the Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Gilcrest agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town of Gilcrest understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Trudy Peterson, commit the Town of Gilcrest to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

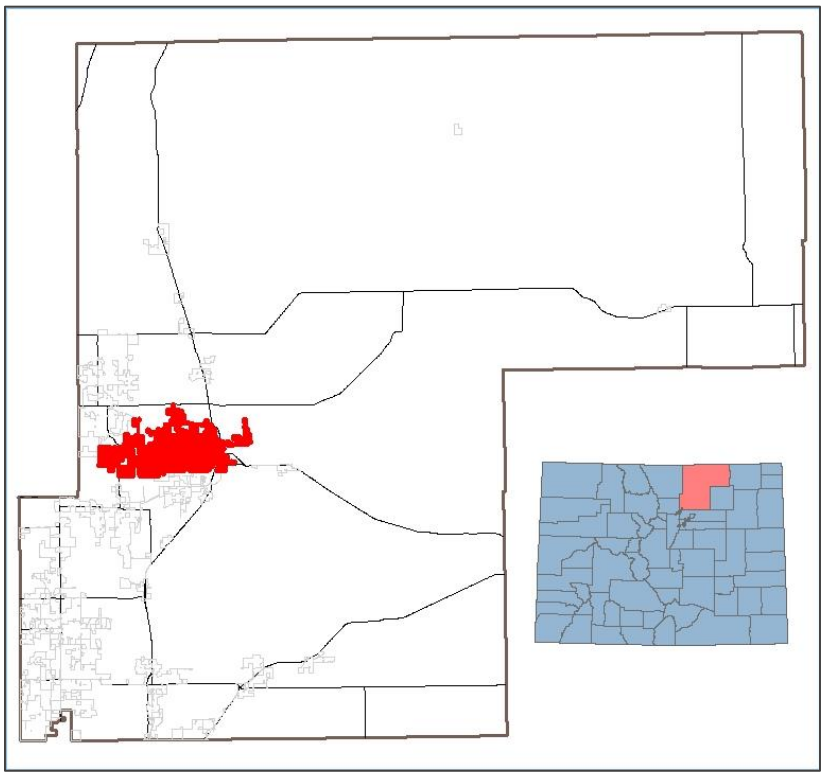
Executed this 24th day of November, 2014

Trudy Peterson
Town of Administrator
Town of Gilcrest

City of Greeley

"Greeley promotes a healthy, diverse economy and high quality of life responsive to all its residents and neighborhoods, thoughtfully managing its human and natural resources in a manner that creates and sustains a safe, unique, vibrant and rewarding community in which to live, work and play."
– City of Greeley 2060 Comprehensive Plan

According to the City of Greeley's Department of Economic Development "Greeley is the business center for Weld County." The second largest community in northern Colorado, Greeley serves as a major retail trade center for agricultural communities in northeastern Colorado, southeastern Wyoming, and southwestern Nebraska.



The City of Greeley is characterized by expansive prairie to the east and the towering Rocky Mountains to the west. Greeley is located in a semi-arid climate. The summers are hot and the winters are mild. Precipitation occurs mostly in the form of rain or snow from October to April: snowfalls are often light and usually melt within a few days.

Greeley's Core Values & Guiding Principles are outlined in their comprehensive plan, *City of Greeley 2060,* and serve as a guide for future development and policy decisions within the City's boundaries. They are as follows:

- Excellence in actions, attitude, leadership and focus
- Progressive and Appealing Industrial Development
- A Safe, Prepared, Secure and Harmonious community environment

- Sustainable Community Development through healthy behaviors, sensitive environmental stewardship, varied and compact community design and a complete, effective & forward-thinking transportation system
- A Community Rich in Diversity of People, Customs, and Ideas
- Every Neighborhood Thrives reflecting the spirit of community
- Center of a comprehensive Premier Educational System
- 'Better Together' leadership mode of intergovernmental & public/private cooperation to achieve exceptional community benefits
- A Regional Leader and Northern Colorado destination

These core values and guiding principles are interwoven throughout the City's Comprehensive Plan and form the basis for daily decision making, project/policy prioritization, and implementation strategies.

Community Profile

The table below summarizes key demographic and development related characteristics of the City of Greeley.

City of Greeley Statistics		
	City of Greeley	Colorado
Population, 2014	98,596	5,355,866
Population, % change April 1, 2010 to July 1, 2014	6.2%	6.5%
% Population under 5 years, 2010	7.8%	6.8%
% Population under 18 years, 2010	25.8%	24.4%
% Population 65 years and over, 2010	10.7%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	24.1%	16.8%
Homeownership Rate	55.6%	65.4%
Persons Per Household	2.68	2.53
Persons below poverty level, %, 2009-2013	22.9%	13.2%
Median Household Income, 2009- 2013	$46,272	$58,433

Source: US Census Bureau

Hazard Identification and Risk Assessment

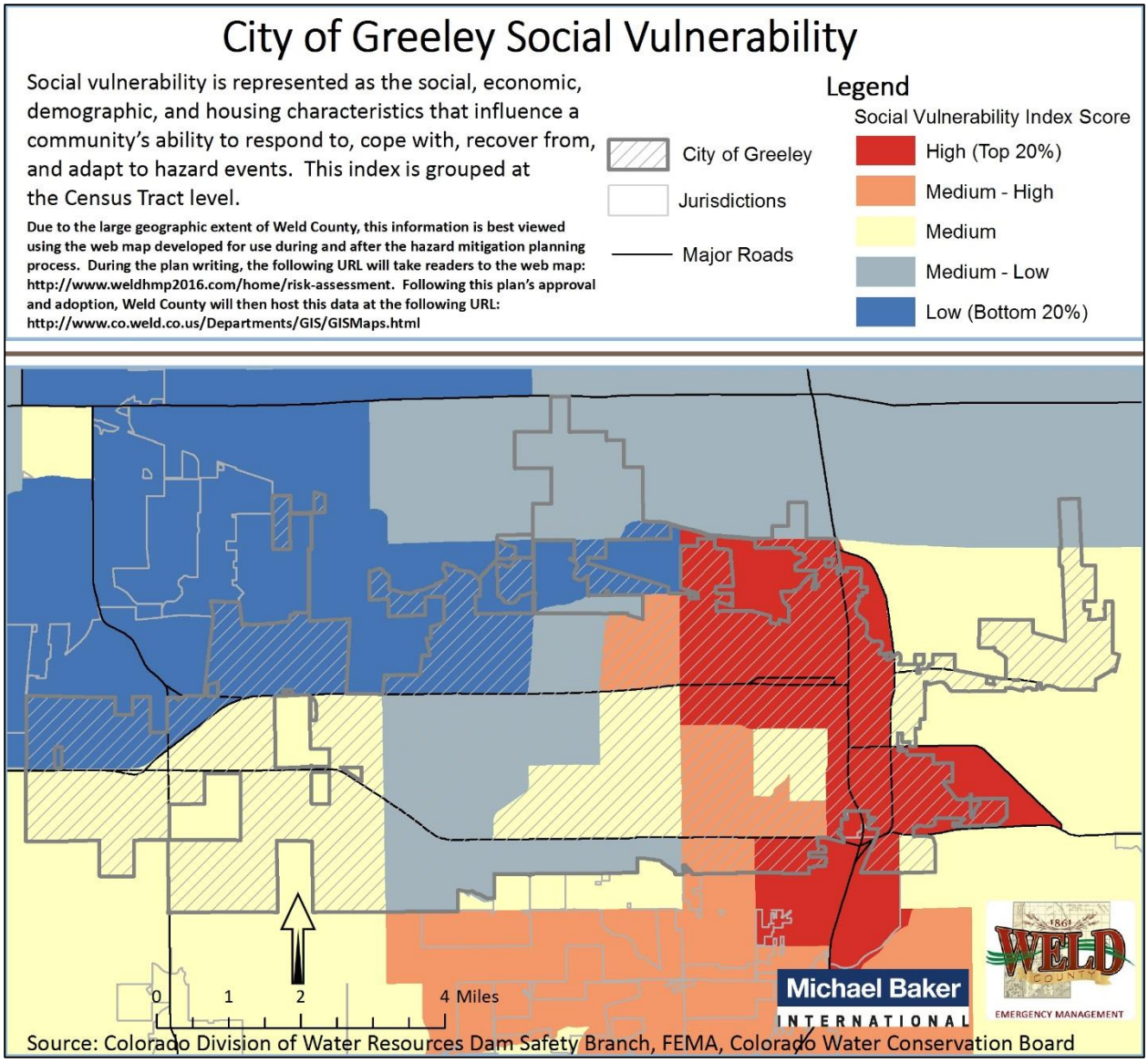
NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
HAZMAT	0.6	1.2	0.8	0.4	0.4	3.400
Extreme Temperatures	0.9	0.6	0.8	0.1	0.4	2.800
Drought	0.9	0.6	0.8	0.1	0.4	2.800
Public Health Hazards	0.6	0.9	0.6	0.2	0.4	2.700
Severe Storm	0.9	0.9	0.4	0.2	0.2	2.600
Flood	0.9	0.6	0.4	0.1	0.4	2.400

Prairie Fire	0.6	0.6	0.4	0.4	0.3	2.300
Straight-Line Winds & Tornadoes	0.6	0.6	0.4	0.4	0.1	2.100
Earthquake	0.3	0.6	0.4	0.4	0.1	1.800
Land Subsidence	0.3	0.3	0.2	0.3	0.2	1.300
HIGH RISK (2.5 or higher): HAZMAT; Extreme Temperatures; Drought; Public Health Hazards; Severe Storm						
MODERATE RISK HAZARD (2.0 - 2.4): Flood; Prairie Fire; Straight-Line Winds & Tornadoes						
Low Risk (1.5-1.9): Earthquake; Land Subsidence						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the City of Greeley, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the City of Greeley.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The City of Greeley's social vulnerability map shows social vulnerability within the community.



The City of Greeley consists of areas that range from low social vulnerability (the bottom 20% of the County) and high social vulnerability (the top 20% of the county. The highly socially vulnerable areas are clustered in the eastern part of the community. Resources and measures to reduce the social determinates of disasters may be most effectively allocated to the east of the City. Moreover, it is critical that the city analyze the individual social vulnerability indicators that make the eastern part of the community stand out. Through ongoing evaluation, the City of Greeley will be able to more effectively reduce local social vulnerability and increase their resilience to hazard events.

HAZMAT

Based on data supplied by the Pipeline and Hazardous Materials Safety Administration's (PHMSA) Incident Reports Database there have been 45 reported HAZMAT incidents within the City of Greeley between 1972 and 2015.

Inventory Exposed

Two designated nuclear and hazardous materials transportation routes run adjacent the City of Greeley (US 34 and US 85). All structures, natural resources, and people located within one mile of these transportation routes (and railways) are exposed to the impacts of a potential HAZMAT event. Structures, people, and natural resources located outside of a one mile buffer of these routes are also at risk of exposure.

Assets and people that are located within one mile of an industrial or commercial fixed site are also at risk of exposure to the impacts of a HAZMAT release.

Potential Losses

HAZMAT related events occur throughout Weld County every year. The intensity and magnitude of these incidents depend on weather conditions, the location of the event, the time of day, and the process by which the materials are released. *Was it raining when the event happened? Were the hazardous materials being transported by rail when they were released or were they at a fixed facility? Did the spill happen during rush hour traffic or in the middle of the night?* All of these considerations matter when determining the risk and potential damages associated with a HAZMAT incident.

HAZMAT events have the potential to threaten lives and disrupt business activity. Moreover, HAZMAT incidents can cause serious environmental contamination to air, ground, and water sources.

Extreme Temperatures

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Greeley due to extreme temperatures. There are two reports of extreme cold temperatures in northwestern and central Weld County on December 16th and 17th, 1996, and February 1, 2011. There is a great potential for extreme temperature events to occur within the region at any given time.

Inventory Exposed

Due to the regional nature of extreme temperatures hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of extreme temperatures. This includes places with high numbers of elderly residents, low income families and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to extreme temperatures. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, a high poverty rate and/or large numbers of rental properties can plan accordingly to provide appropriate services and mitigation assistance during extreme temperature events.

Populations Vulnerable to Extreme Temperatures			
	Age: 65 and Over (%)	**Persons Below Poverty Level (%)**	**Renter-occupied housing units (%)**
Colorado	10.9	12.9	34.5
City of Greeley	10.7	22.9	44.4

The City of Greeley has a slightly lower percentage of elderly residents than does the state of Colorado. The percentage of people living below poverty level in the city much larger than the state of Colorado. In addition a lower percentage of Greeley residents own their homes compared to the general population

of Colorado. Based on these statistics, Greeley residents (in general) appear to be more vulnerable to the impacts of extreme temperatures. That said, future mitigation efforts related to extreme temperature should focus on reaching those residents who are elderly, live in poverty or are homeless, or are renters.

Potential Losses

Because there is no defined geographic boundary for extreme temperature hazards, all of the people and infrastructure within the City of Greeley are exposed to extreme temperatures. Those with elevated risk and potential loss are the homeless, infirm, elderly, and low income families. Given the lack of historical data and limited likelihood of structural losses in the City of Greeley resulting from extreme heat or cold, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the City of Greeley due to extreme temperatures are currently considered unquantifiable.

Drought

According to the best available data, no injuries, deaths, or crop damages have been recorded within the City of Greeley due to drought. There are four reports of drought in southern Weld County. The four drought events all occurred in April of 2002 and March of 2011. There is a potential for a drought event to occur at any given time.

Inventory Exposed

Drought will have little to no direct impact on critical facilities or structures in the City of Greeley. Should a drought affect the water available for public water systems or individual wells, the availability of clean drinking water could be compromised. This situation would require emergency actions and could possibly overwhelm local capacities and financial resources.

Potential Losses

Although it is unlikely that drought conditions will affect existing buildings, infrastructure, and critical infrastructure, economic livelihoods in the City of Greeley could be negatively impacted due to crop loss, water shortages, and wildfires as a result of drought. Possible losses/impacts to critical facilities include the loss of critical function due to low water supplies.

As Greeley continues to grow, it will consider water-saving mitigation activities that will decrease local vulnerability to drought.

Public Health Hazards

Public health hazards, including epidemics and pandemics, have the potential to cause serious illness and death, especially among those who have compromised immune systems due to age or underlying medical conditions. During the 2015 planning process, pandemic flu was identified as the key public health hazard in the county.

Inventory Exposed

Due to the regional nature of public health hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of public health hazards. This includes places with high numbers of elderly residents, young children, low income families, and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to public health hazards. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly

residents, young children, and a high poverty rate can plan accordingly to provide appropriate services and mitigation assistance during public health hazards outbreaks.

Populations Vulnerable to Public Health Hazards			
	Age: 65 and Over (%)	**Age: 5 and under (%)**	**Persons Below Poverty Level (%)**
Colorado	10.9	6.8	12.9
City of Greeley	10.7	7.8	22.9

The City of Greeley has a slightly lower percentage of elderly residents than the state of Colorado. A slightly larger percentage of Greeley residents are under the age of 5 than the general population of Colorado. There is a much greater percentage of people living below poverty level than the state. Based on these statistics, Greeley residents (in general) appear to be more vulnerable to the impacts of public health hazards. That said, future mitigation efforts related to public health hazards should focus on reaching those residents who are elderly, young children, live in poverty, or are homeless.

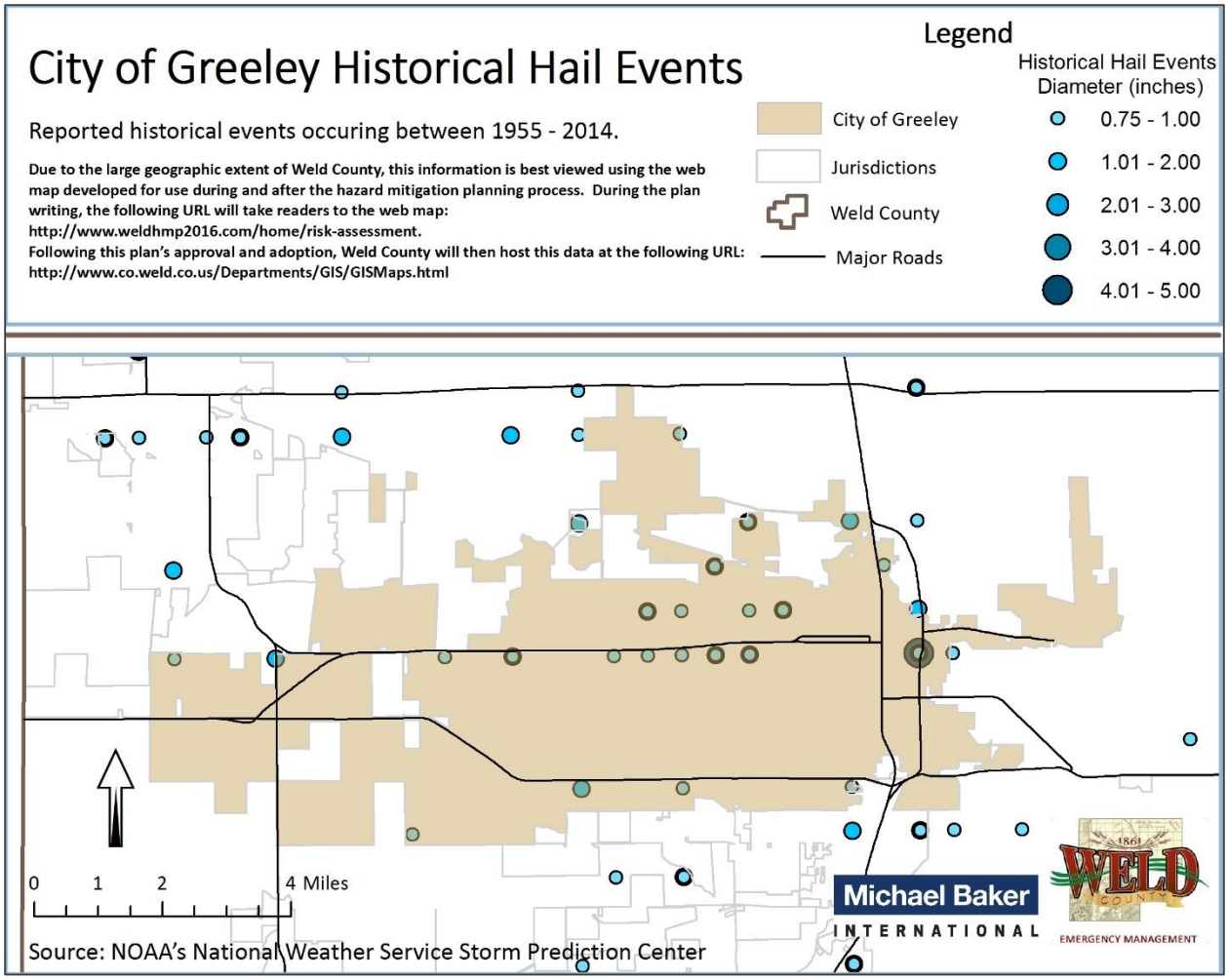
Potential Losses

Because there is no defined geographic boundary for public health hazards, all of the people and infrastructure within the City of Greeley are exposed to public health hazards. Those with elevated risk and potential loss are the homeless, infirm, elderly, young and low income families. Given the lack of historical data in the City of Greeley resulting from public health hazards, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the City of Greeley due to public health hazards are currently considered unquantifiable.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, or crop damage in the City of Greeley. There have been 74 hail events reported within the city limits and several hail events that occurred close to the city limits. There has been $9,000 in property damage reported as a result of these hail incidents. Based on the historic data showing hazardous impacts on the city, there is a great potential for hail events to occur at any given time.



Lightning

According to the best available data no deaths have occurred within the City of Greeley due to Lightning. There have been 8 recorded lightning incidents between 1996 and 2009 within the city limits, causing $143,000 in property damage and $6,000 in crop damage. On June 18, 2009 a lightning incident caused injury to one person. Based on the historic data showing hazardous impacts on the city, there is a great potential for Lightning to occur at any given time.

Winter Storm

According to NOAA's Storm Events Database, the City of Greeley has experienced 25 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. There were no deaths, injuries, or damage to crops reported for any of these storms. The City of Greeley is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the City of Greeley can be considered at risk from severe storms. This includes 98,596 people, or 100% of the town's population, and all buildings and infrastructure within the city. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most

structures, including the city's critical facilities, should be able to provide adequate protection from hail but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

Severe storms affect the entire planning area of the City of Greeley including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the City of Greeley. It is likely that lightning and hail will also be experienced in the area due to such storms.

Capabilities Assessment

The capability assessment examines the ability of the City of Greeley to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the City's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the City's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager	X		
Floodplain Administrator	X		
Community Planner	X		
GIS Specialist	X		
Grant Writer			X

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the City of Greeley's current capabilities as they relate to land use planning and codes

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	IDK

Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	IDK
A Continuity of Operations Plan (COOP)	Y
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	Y
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The City of Greeley has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

The City of Greeley has had previous experience receiving, administering, and applying for grants for mitigation and planning-related activities or projects. These include:

- Grants: HMGP, EMPG, DR-4145, CDBG

Plan Maintenance and Implementation

The City of Greeley has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the city will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
City of Greeley	*Each mitigation action item has a staff member assigned responsibility. Each staff member will follow regular departmental procedures in completing mitigation action items that are currently funded. The City's Emergency Manager will monitor progress of the action items on an annual basis as well as seek out funding opportunities for mitigation actions items that are not currently funded.* *As part of the plan maintenance process, the City of Greeley will continue to engage the public in the process of identifying hazard risks and prioritizing mitigation actions. To do so typically any mitigation action items will have to be approved by the planning commission and/or city council; these review meetings will provide adequate opportunity for public comment and participation.*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The City of Greeley did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the City of Greeley based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
City of Greeley	*"The city will consider updating its zoning ordinance to address our high risk hazards. The city will consider integrating its hazard mitigation actions into its Capital Improvement Plan and emphasize projects that mitigate our highest risk hazards."*

Mitigation Action Guides

The following Mitigation Action Guides present status updates on each of the community's mitigation actions included in the 2009 Plan.

City of Greeley: Commercial Weather Notification System	
PRIORITY: Medium	**HAZARDS ADDRESSED: Severe Storm**
LOCATION: City of Greeley	**GOALS ADDRESSED: 1, 2, 3**
RECOMMENDATION DATE: 2008	**OBJECTIVES ADDRESSED: A, B, E**
TARGET COMPLETION DATE: 2010-2011	
ISSUE: No Commercial Weather Notification System	
RECOMMENDATION: DTN provides definitive situational awareness through an internet platform for weather tracking, forecasting, and notification. Selected facilities and users would have access to this system. NWS alert radios throughout the community	
ACTION: Commercial Weather Notification System	
LEAD AGENCY: Weld/Greeley OEM	**EXPECTED COST:** $10-20,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Yearly budget
PROGRESS MILESTONES: Radios were purchased and distributed throughout the city. Program not funded from year to year; this was a one-time action.	

City of Greeley: Cache la Poudre Floodplain Mapping	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: City of Greeley	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: C**
TARGET COMPLETION DATE: 2010	
ISSUE: The U.S. Army Corps of Engineers is currently studying the Cache La Poudre River in Weld County and through the City of Greeley. The study updates the hydrology, hydraulics, floodplain, and floodway boundaries. New FIRMs (Flood Insurance Rate Maps) will be created using this updated information.	
RECOMMENDATION: More accurate flood information for the Cache La Poudre River will allow for better administration of flood fringe development.	
ACTION: Cache la Poudre Floodplain Mapping	
LEAD AGENCY: U.S. Army Corps of Engineers	**EXPECTED COST:** $5,000
SUPPORT AGENCIES: FEMA	**POTENTIAL FUNDING SOURCES:** In-House

PROGRESS MILESTONES: General investigation study has been completed. Flood damage reduction efforts are not being pursued. Environmental restoration work is proceeding.

The 2006 US Army Corps floodplain has been adopted by FEMA through the Weld County Digital Flood Insurance Rate Map (DFIRM) project. FEMA will make this flood map effective in January of 2016. The City of Greeley intends to adopt the Weld County DFIRM as our regulatory flood map.

City of Greeley: City-Initiated Floodway Rezone	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: City of Greeley	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE:	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 2010-2011 – Following adoption of the U.S. Army Corps of Engineers updated flood study	
ISSUE: Following adoption of the U.S. Army Corps of Engineers updated flood study, the City of Greeley will initiate a floodway rezone of all properties impacted by the revised floodway boundary. Properties within the revised floodway will be rezoned Conservation District (C-D) to restrict development within this area and preserve natural open space.	
RECOMMENDATION: Restricted development within the regulated floodway and preservation of natural open space	
ACTION: City-Initiated Floodway Rezone	
LEAD AGENCY: City of Greeley Community Development Department	**EXPECTED COST:** Under development
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Under development, likely largely in house
PROGRESS MILESTONES: This has been identified by the city as a future zoning map change. This mitigation action item will be continued as a mitigation action item for the 2016 plan update.	

City of Greeley: Bestway Regional Detention Facility	
PRIORITY: High	**HAZARDS ADDRESSED:** Flooding
LOCATION: City of Greeley	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 2008 - 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 2010 – 2011	
ISSUE: Any storm greater than a 25 year event currently can cause flooding in the area. 830 homes and 1 fire station are currently at risk of flooding which this project will protect. The project includes stormdrain inlets and piping to collect stormwater and divert it into a 100 year detention storage	

facility. Outlet structures and piping would then control the outflow to avoid flooding of downstream properties. Or Much, much larger storm pipes to the river	
RECOMMENDATION:	
ACTION: Flood mitigation by retaining the 100 year storm event and releasing the flow slowly to the Poudre River.	
LEAD AGENCY: City of Greeley, Public Works, Stormwater Management Division 970-336-4031	**EXPECTED COST:** $2,200,000
SUPPORT AGENCIES: FEMA	**POTENTIAL FUNDING SOURCES:** FEMA Grant & Stormwater Utility Fund
PROGRESS MILESTONES: Project complete.	

City of Greeley: Install Citywide Emergency Sirens	
PRIORITY: Low	**HAZARDS ADDRESSED:** Tornado
LOCATION: City of Greeley	**GOALS ADDRESSED: 1, 2, 3**
RECOMMENDATION DATE:	**OBJECTIVES ADDRESSED: A, E**
TARGET COMPLETION DATE: Ongoing pending further funding availability and future city governments.	
ISSUE: This project was investigated in 2008 as a result of the Windsor Tornado and alternative notification technologies were sought at that time. However, if future Greeley City Councils desire to refocus on this program, the City of Greeley would seek state and federal funding to assist in the project implementation.	
RECOMMENDATION: While the probability of a severe tornado hazard occurrence impacting Greeley is low, the potential impacts are very high, therefore it is important that the City have an adequate warning system in place. The avoided losses would include population casualties, though the property mitigation from this action would be minimal. For these reasons, the current City Council is utilizing their limited resources for a more all-hazards approach to overall disaster mitigation and preparedness.	
ACTION: Citywide Emergency Sirens; Action Item 1, telephone notification system, national weather service alert weather radios for public use, emergency alert system (EAS) usage	
LEAD AGENCY: City Office of Emergency Management	**EXPECTED COST:** $600,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** State and Federal
PROGRESS MILESTONES: Project was not funded; deemed impractical for a City the size of Greeley. Focusing efforts on educating public about existing notification platforms such as CodeRed, and NWS weather radios.	

The following Mitigation Action Guides each of the community's new mitigation actions that were developed for the 2016 Plan.

City of Greeley: City-Initiated Floodway Rezone	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: City of Greeley	**GOALS ADDRESSED:** 2
RECOMMENDATION DATE: 2015	**OBJECTIVES ADDRESSED:** C
TARGET COMPLETION DATE: 2021 – Following adoption of the U.S. Army Corps of Engineers updated flood study	
ISSUE: Following adoption of the U.S. Army Corps of Engineers updated flood study, the City of Greeley will initiate a floodway rezone of all properties impacted by the revised floodway boundary. Properties within the revised floodway will be rezoned Conservation District (C-D) to restrict development within this area and preserve natural open space.	
RECOMMENDATION: Restricted development within the regulated floodway and preservation of natural open space	
ACTION: City-Initiated Floodway Rezone	
LEAD AGENCY: City of Greeley Community Development Department	**EXPECTED COST:** Under development
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Under development, likely largely in house
PROGRESS MILESTONES: This has been identified by the city as a future zoning map change. This mitigation action item will be continued as a mitigation action item for the 2016 plan update.	

City of Greeley: Mitigate Risk to Severe Repetitive Loss Property	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: 760 71st Ave, Greeley, CO 80631. Property not within city limits	**GOALS ADDRESSED:** 1
RECOMMENDATION DATE: 2015	**OBJECTIVES ADDRESSED:** E
TARGET COMPLETION DATE: 2021	
ISSUE: This residence has severe repetitive loss history due to flooding on the Cache la Poudre River. The city of Greeley provides resources (man power, sand bags) to this property during flooding events as it is directly abuts city limits and city crews are typically mitigating road closures next to this property. The city attempted to purchase/acquire this property through the HMGP process in 2014 but was unsuccessful due to valuation discrepancies.	
RECOMMENDATION: Reduce or eliminate severe repetitive flood losses on this property.	
ACTION: Continue to work with property owner on flood mitigation efforts and consider acquisition if conditions allow and are favorable to all parties.	

LEAD AGENCY: City of Greeley Community Development Department	**EXPECTED COST:** $400,000
SUPPORT AGENCIES: City of Greeley Office of Emergency Management	**POTENTIAL FUNDING SOURCES:** CDBG, HMGP
PROGRESS MILESTONES: Program not funded; no current timeline established	

City of Greeley: Cache la Poudre , West Greeley, Colorado Project (Corps of Engineers)	
PRIORITY: High	**HAZARDS ADDRESSED:** Flooding
LOCATION: Poudre River Corridor between 83rd Avenue and 47th Avenue	**GOALS ADDRESSED:** 1
RECOMMENDATION DATE: Begin first phase construction 2016	**OBJECTIVES ADDRESSED:** E
TARGET COMPLETION DATE: 2025	
ISSUE: As a nationally significant ecosystem, portions of the Cache la Poudre River that flow through Greeley and areas adjacent to Greeley, years of channelization of the river and neglect and invasion of non-native weeds and vegetation have significantly reduced habitat loss. Restoration of wetland and riparian habitats can provide critical floodplain and river corridor connections, habitat for state-listed threatened and endangered species, and international bird habitat. The COE has identified a total of nine (9) parcels to rehabilitate, of which five (5) are identified as a first phase for improvements. Out of these 5 parcels, 1 or 2 may be addressed in the first year of a multi-year project. Although the Project doesn't specifically address flood control, a desired outcome is addressing the river channel itself and preserving/planning for the inevitable future flooding of the corridor and water flows.	
RECOMMENDATION: This Project is under review for City Council consideration to approve a Project Partner Agreement.	
ACTION: Environmental restoration and controlled recreational access	
LEAD AGENCY: DOD/Corps of Engineers	**EXPECTED COST:** Total cost = $14,379,000 (Phase I) + $12,967,000 (Phase II)
SUPPORT AGENCIES: COG	**POTENTIAL FUNDING SOURCES:** Great Outdoors Colorado (Colorado Lottery), City of Greeley Water/Sewer Dept., US Department of Defense/Corps of Engineers, Conservation Trust Fund
PROGRESS MILESTONES: Design – 2015/2016, Construction in phases starting in 2016	

City of Greeley: Poudre River Cleaning	
PRIORITY: Low	**HAZARDS ADDRESSED:** Flooding
LOCATION: City of Greeley	**GOALS ADDRESSED:** 1

RECOMMENDATION DATE: 2015	**OBJECTIVES ADDRESSED:** E
TARGET COMPLETION DATE: 2021	
ISSUE: The Cache la Poudre River is known from several studies including a 1999 Army Corps of Engineers study, to have sediment building up in it and therefore over time has been silting in and losing capacity. A program to clean the river of its sandbars, sediment and remove some vegetation is necessary to help convey flood flows through the City of Greeley. This will help especially mountain snow melt events that happen annually and fill the main channel most years and tend to cause minor to moderate flooding in many areas.	
RECOMMENDATION: To develop a program to annually evaluate maintaining the Poudre River by removing any sand bars and any unwanted vegetation that are restricting main channel flows. The program likely would take several years to work through the City limits, and then would cycle back to the beginning and evaluate the corridor continuously as needed. Bridges also need to be evaluated, but need to be done annually to ensure they are clear.	
ACTION: Clean sediment and vegetation from the Cache la Poudre main channel to restore main channel flow capacity.	
LEAD AGENCY: City of Greeley Public Works Department, 970-350-9795	**EXPECTED COST:** $1,500,000
SUPPORT AGENCIES: Army Corps of Engineers	**POTENTIAL FUNDING SOURCES:** FEMA grant and Stormwater Utility
PROGRESS MILESTONES: Removal of all sandbars, restrictions and unwanted vegetation.	

City of Greeley: Highway 85 Bridge Replacement	
PRIORITY: High	**HAZARDS ADDRESSED:** Flooding
LOCATION: City of Greeley	**GOALS ADDRESSED:** 1
RECOMMENDATION DATE: 2015	**OBJECTIVES ADDRESSED:** E
TARGET COMPLETION DATE: 2021	
ISSUE: The Cache la Poudre River floodplain model shows that the river overtops the Highway 85 bridge near the Greeley Water Pollution Control Facility. Past flooding events of less than 100 year events have also demonstrated that this bridge is easily overtopped at less than a 25 year storm event. When this bridge is overtopped all other roads except 59th Avenue that run north and south are underwater. With Highway 85 flooded greatly impedes the ability for people, commerce, and emergency vehicles to navigate the city and reach citizens on the northern area of the city. River flood events typically last for many weeks so impacts to the community can be very impactful and devastating.	
RECOMMENDATION: Replace the Highway 85 Bypass bridge over the Cache la Poudre River.	
ACTION: Replace the bridge with a higher capacity bride including some channel improvements to improve capacity of the river at this location.	

LEAD AGENCY: Colorado Department of Transportation & the City of Greeley Public Works Department, 970-350-9795	**EXPECTED COST:** $8,000,000
SUPPORT AGENCIES: Colorado Department of Transportation, Army Corps of Engineers, FEMA	**POTENTIAL FUNDING SOURCES:** FEMA grant, CDOT FASTER Funds
PROGRESS MILESTONES: Completion of bridge replacement and channel improvements.	

City of Greeley: River Bypass Channel	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: City of Greeley	**GOALS ADDRESSED:** 1
RECOMMENDATION DATE: 2015	**OBJECTIVES ADDRESSED:** E
TARGET COMPLETION DATE: 2021	
ISSUE: The Cache la Poudre River floodplain model shows that the river splits around the Greeley Water Pollution Control Facility. This isolates and floods some of the property limiting access to the plant. Additionally many businesses along east 8th Street east of Highway 85 are flooded.	
RECOMMENDATION: Channel improvements and/or a by-pass channel are needed to guide water safely around the Water Pollution Control Facility and many businesses along 8th Street east of Highway 85. This would safely control flows and route them back to the river on the eastern side of Greeley.	
ACTION: Purchase property and build a by-pass channel to route flows from the Poudre River west of Highway 85 and route them north of East 8th Street and then back into the river in eastern Greeley.	
LEAD AGENCY: City of Greeley Public Works Department, 970-350-9795	**EXPECTED COST:** $6,000,000
SUPPORT AGENCIES:, Army Corps of Engineers, FEMA	**POTENTIAL FUNDING SOURCES:** FEMA grant, Federal Block Grant Funds, Stormwater Utility
PROGRESS MILESTONES: Completion of by-pass channel improvements.	

City of Greeley: Poudre River Flood Mitigation Master Planning Project – Ash Ave to 21st Ave	
PRIORITY: High	**HAZARDS ADDRESSED:** Flooding
LOCATION: City of Greeley	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE:	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Fall 2016	
ISSUE:	

Over the past 150-years the Poudre River has been significantly modified by human activity, particularly along the reach from Fern Avenue to 47th Avenue. These modifications include channelization, encroachment, soil berms along the river banks, gravel mining, floodplain disconnection, and river relocation. As a result of these modifications, the city experiences significant flooding from small to medium sized hydrologic events, on the order of 15-30 year recurrence frequency. Most notably the floods of 1983, 1999, and 2014 have caused significant property damage to the city.

The city's largest exposure to riverine flooding is along the reach from Ash Avenue to 11th Avenue, or approximately 2.3 miles. In the spring of 2014, a large spring runoff event overtopped the 6th Avenue river berm and inundated approximately 46-acres of commercial-industrial area.

Development restrictions associated with the FEMA Special Flood Hazard Area (SFHA) encumber a significant amount of developed property between 11th Avenue and Ash Avenue. This includes residential neighborhoods, commercial businesses, and industrial businesses. It is estimated that every road along the river in this area would be flooded in a 100-year event, including the US Highway 85 Bypass. Further, there is a large flow split at the US-85 Bypass that proceeds to the east along E. 8th Street (also known as SH-263) and does not have a defined return flow-path to the river.

The Effective FEMA river model was completed in 1979. This model and map will be superseded by the Weld County Digital Flood Insurance Rate Map (DFIRM) which is anticipated to become Effective in January 2016. The DFIRM has incorporated flood map changes resulting from the 2003/2006 U.S. Army Corps of Engineers (USACE) flood study which was performed using the USACE HEC-2 model. The City also worked with the USACE on a General Investigation (GI) Study along the Poudre River through Greeley; this study occurred from 2005 – 2014. However the City did not proceed with the flood mitigation proposal presented to the City by the USACE.

Further, the Colorado Water Conservation Board (CWCB) is currently funding a re-study of the Poudre River from the confluence with South Platte River upstream through Fort Collins. This study is being performed under FEMA's RiskMap program and will incorporate the CWCB ½-foot floodway rule. The results of the RiskMap study will likely change the Flood Insurance Study (FIS) findings for the Poudre River and the RiskMap flood model may become the FEMA Effective model for the Poudre River. It is anticipated that in the future there will be a regulatory Floodway along portions of E. 8th Street.

RECOMMENDATION:

This project is intended to produce a comprehensive Poudre River flood mitigation master plan document for the following river reaches:

- Greeley Urban Reach: Specifically from the Ogilvy Ditch head structure (1,400-feet downstream from Ash Avenue) and proceeding upstream to 21st Avenue; approximately 17,600-feet along the Poudre River.
- East 8th Street Flow Split: Specifically from the flow split off the main channel at US Highway 85 then proceeding east (downstream) along 8th Street until the flow split returns to the main river channel, approximately 7,000 – 8,000-feet along E. 8th Street.

This project should produce a Master Plan along the Poudre River to guide river maintenance, reduce flood losses, and potentially remove properties from the FEMA 100-yr floodplain. The Master Plan document will be used by the City to guide a river channel maintenance program, identify and prioritize flood mitigation projects, provide scientific basis for granting opportunities (Federal, State, and Other) to fund capital projects, and facilitate the refinement of the effective FEMA river model

along the study reach. This plan shall be feasible, implementable, and provide a foundation for pursuing grant funding opportunities.	
ACTION: City-Initiated Flood Mitigation Master Planning Project	
LEAD AGENCY: City of Greeley Public Works Department	**EXPECTED COST:** $200,000 (+)
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** City of Greeley
PROGRESS MILESTONES: • Background Investigation and Baseline Hydrology and Hydraulics – 10/14/2015 - 12/23/2015 • River Assessment and Maintenance Plan - 10/14/2015 – 1/7/2016 • Alternatives Analysis – 1/25/2016 – 5/3/2016 • Conceptual Design – 6/17/2016 – 8/23/2016	

Letter of Intent to Participate

City of Greeley Colorado

August 22, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the City of Greeley is submitting this letter of intent to confirm that the City of Greeley has agreed to participate in the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the City of Greeley agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The City of Greeley understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Thomas E. Norton, Mayor, commit the City of Greeley to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 22nd day of August, 2014.

Sincerely,

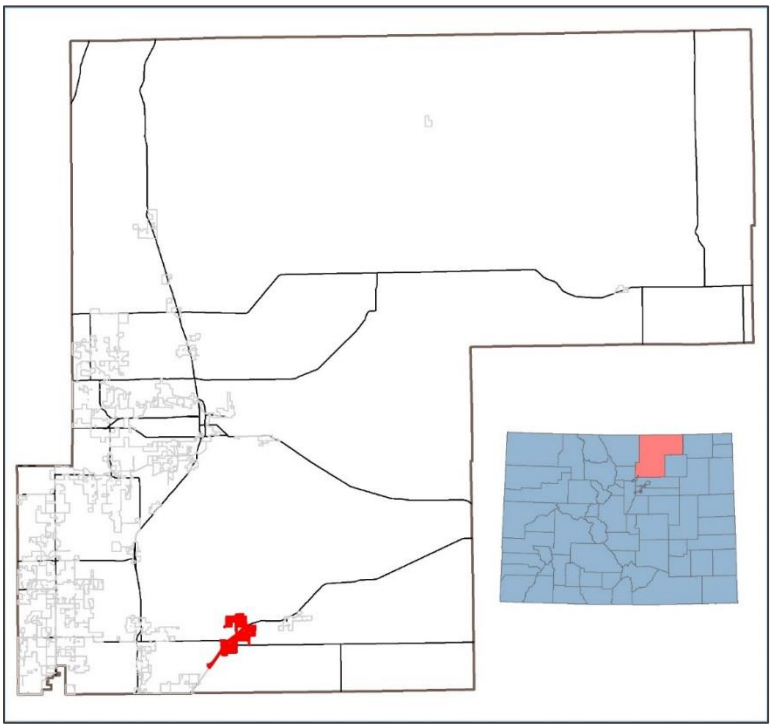
Thomas E. Norton
Mayor

City Council • 1000 10th Street, Greeley, CO 80631 • (970) 350-9770 Fax (970) 350-9828

We promise to preserve and improve the quality of life for Greeley through timely, courteous and cost-effective service.

Town of Hudson

Hudson is located in south-central Weld County approximately 30 miles northeast of downtown Denver. Located adjacent to Interstate 76, Hudson is surrounded by farms and other agricultural and energy-related industries. Additionally, the town is a "bedroom community" for persons employed in the Denver and Brighton areas. The approximately 2,569 residents value the small town atmosphere and rural setting, and have indicated in their comprehensive plan a desire to maintain those qualities as Hudson grows.



Community Profile

The table below summarizes key demographic and development related characteristics of the Town of Hudson.

Town of Hudson Statistics		
	Town of Hudson	Colorado
Population, 2014	2,569	5,355,866
Population, % change April 1, 2010 to July 1, 2014	9%	6.5%
% Population under 5 years, 2010	4.9%	6.8%
% Population under 18 years, 2010	21.1%	24.4%
% Population 65 years and over, 2010	2.9%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	26.3%	16.8%
Homeownership Rate	63%	65.4%
Persons Per Household	2.91	2.53
Persons below poverty level, %, 2009-2013	12.8%	13.2%
Median Household Income, 2009- 2013	$54,167	$58,433

Source: US Census Bureau

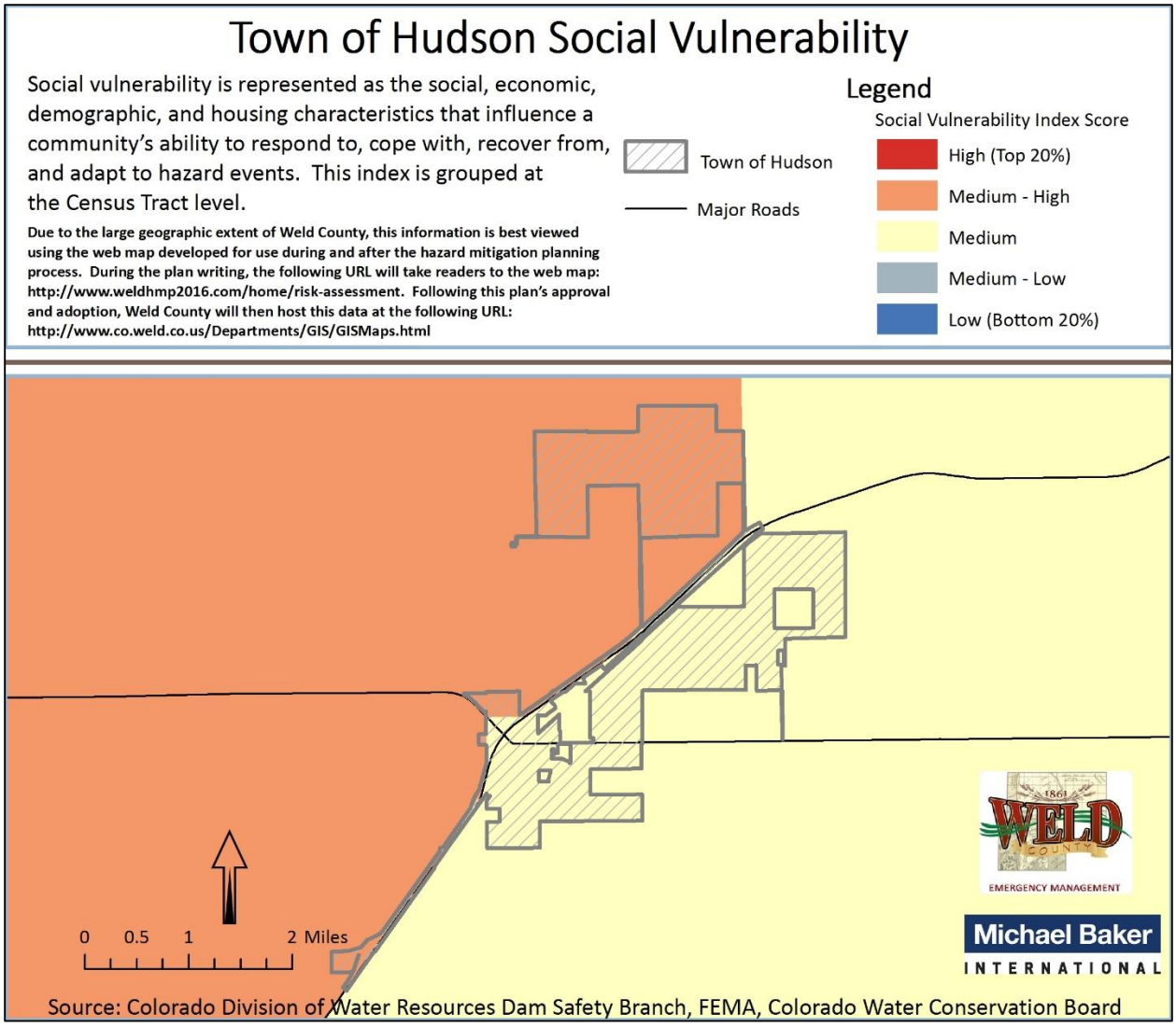
Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
HAZMAT	0.9	0.6	0.8	0.4	0.3	3.000
Severe Storm	0.9	0.6	0.8	0.1	0.3	2.700
Straight-Line Winds and Tornadoes	0.9	0.6	0.8	0.1	0.3	2.700
Prairie Fire	0.9	0.3	0.4	0.4	0.3	2.300
Extreme Temperatures	0.6	0.3	0.8	0.1	0.3	2.100
Public Health Hazards	0.6	0.6	0.4	0.2	0.3	2.100
Earthquake	0.3	0.3	0.2	0.4	0.3	1.500
Land Subsidence	0.3	0.3	0.2	0.4	0.3	1.500
Flood	0.6	0.3	0.2	0.1	0.3	1.500
Drought	0.3	0.3	0.2	0.1	0.4	1.300
HIGH RISK (2.5 or higher): HAZMAT; Severe Storm; Stright-Line Winds and Tornadoes						
MODERATE RISK HAZARD (2.0 - 2.4): Prairie Fire; Extreme Temperatures; Public Health Hazards						
Low Risk (1.9 or lower): Earthquake; Land Subsidence; Flood; Drought						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Hudson, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Hudson.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Hudson's social vulnerability map shows social vulnerability within the community.



The Town of Hudson consists of areas that range from medium social vulnerability and medium-high social vulnerability. The medium-high socially vulnerable areas are in the north western part of the community. Resources and measures to reduce the social determinates of disasters may be most effectively allocated to the northwest area of the Town. Moreover, it is critical that the town analyze the individual social vulnerability indicators that make the northwestern part of the community stand out. Through ongoing evaluation, the Town of Hudson will be able to more effectively reduce local social vulnerability and increase their resilience to hazard events.

HAZMAT

Based on data supplied by the Pipeline and Hazardous Materials Safety Administration's (PHMSA) Incident Reports Database there have been no reported HAZMAT incidents within the Town of Hudson between 1972 and 2015.

Inventory Exposed

Interstate 76 runs through the Town of Hudson and is a designated nuclear and hazardous materials transportation route. All structures, natural resources, and people located within one mile of these

transportation routes (and railways) are exposed to the impacts of a potential HAZMAT event. Structures, people, and natural resources located outside of a one mile buffer of these routes are also at risk of exposure.

Assets and people that are located within one mile of an industrial or commercial fixed site are also at risk of exposure to the impacts of a HAZMAT release.

Potential Losses

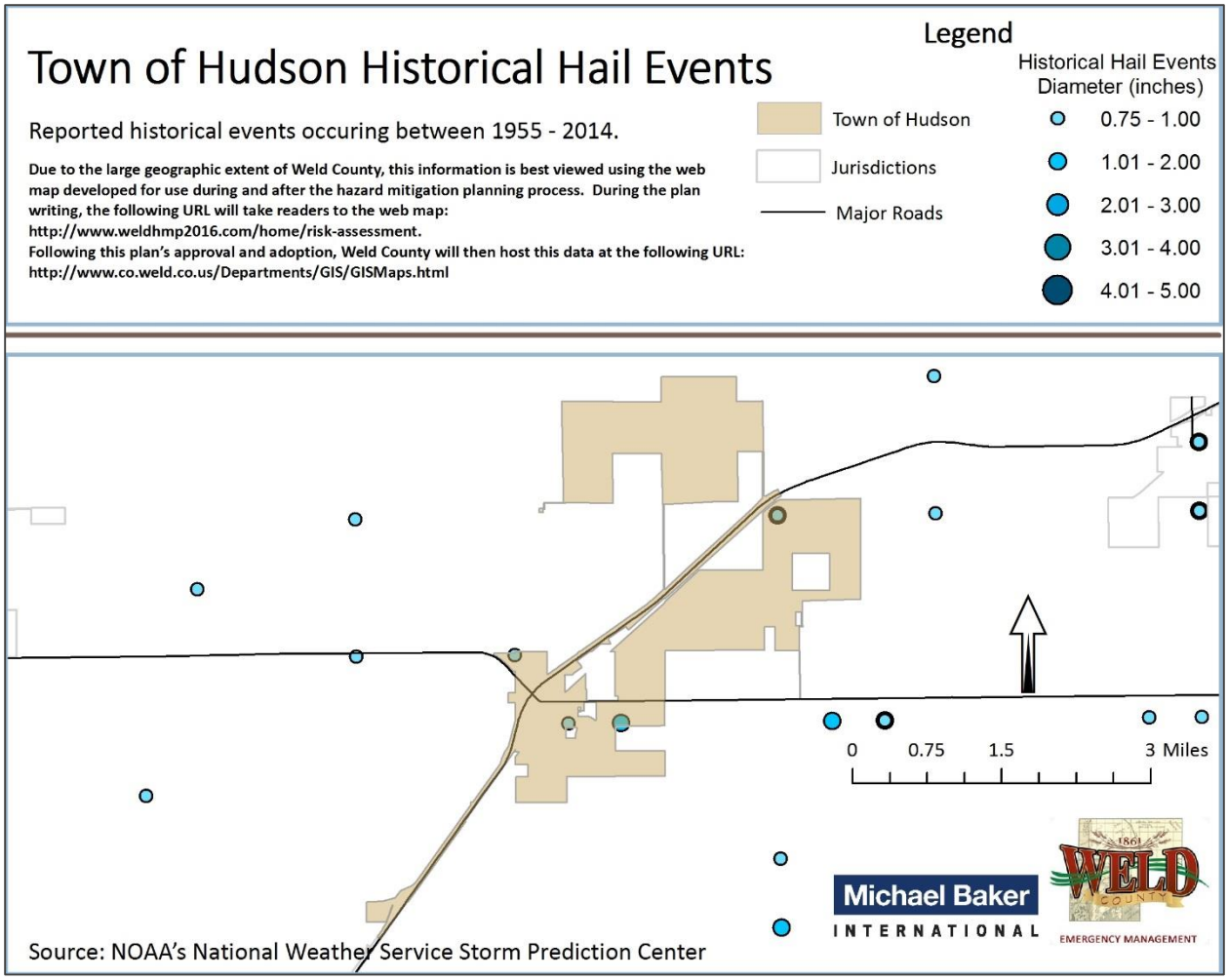
HAZMAT related events occur throughout Weld County every year. The intensity and magnitude of these incidents depend on weather conditions, the location of the event, the time of day, and the process by which the materials are released. Was it raining when the event happened? Were the hazardous materials being transported by rail when they were released or were they at a fixed facility? Did the spill happen during rush hour traffic or in the middle of the night? All of these considerations matter when determining the risk and potential damages associated with a HAZMAT incident.

HAZMAT events have the potential to threaten lives and disrupt business activity. Moreover, HAZMAT incidents can cause serious environmental contamination to air, ground, and water sources.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property, or crop damage in the Town of Hudson. There have been 7 hail event reported within the town limits and several hail events that occurred close to the town limits. Based on the historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the best available data, no injuries, deaths, or crop damage have occurred within the Town of Hudson due to Lightning. There have been 2 recorded lightning incidents between 1999 and 2000 within the town limits, causing $100,000 in property damage. Based on the historic data showing hazardous impacts on the town, there is a great potential for Lightning to occur at any given time.

Winter Storm

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the Town of Hudson from winter storm events. There have been four winter storm events reported within the town limits and several winter storm events that occurred less than one mile from the town limits. Based on historic data showing hazardous impacts on the town, there is a great potential for winter storm events to occur at any given time.

Inventory Exposed

All assets located in the Town of Hudson can be considered at risk from severe storms. This includes 2,569 people, or 100% of the town's population, and all buildings and infrastructure within the town. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most

structures, including the town's critical facilities, should be able to provide adequate protection from hail but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

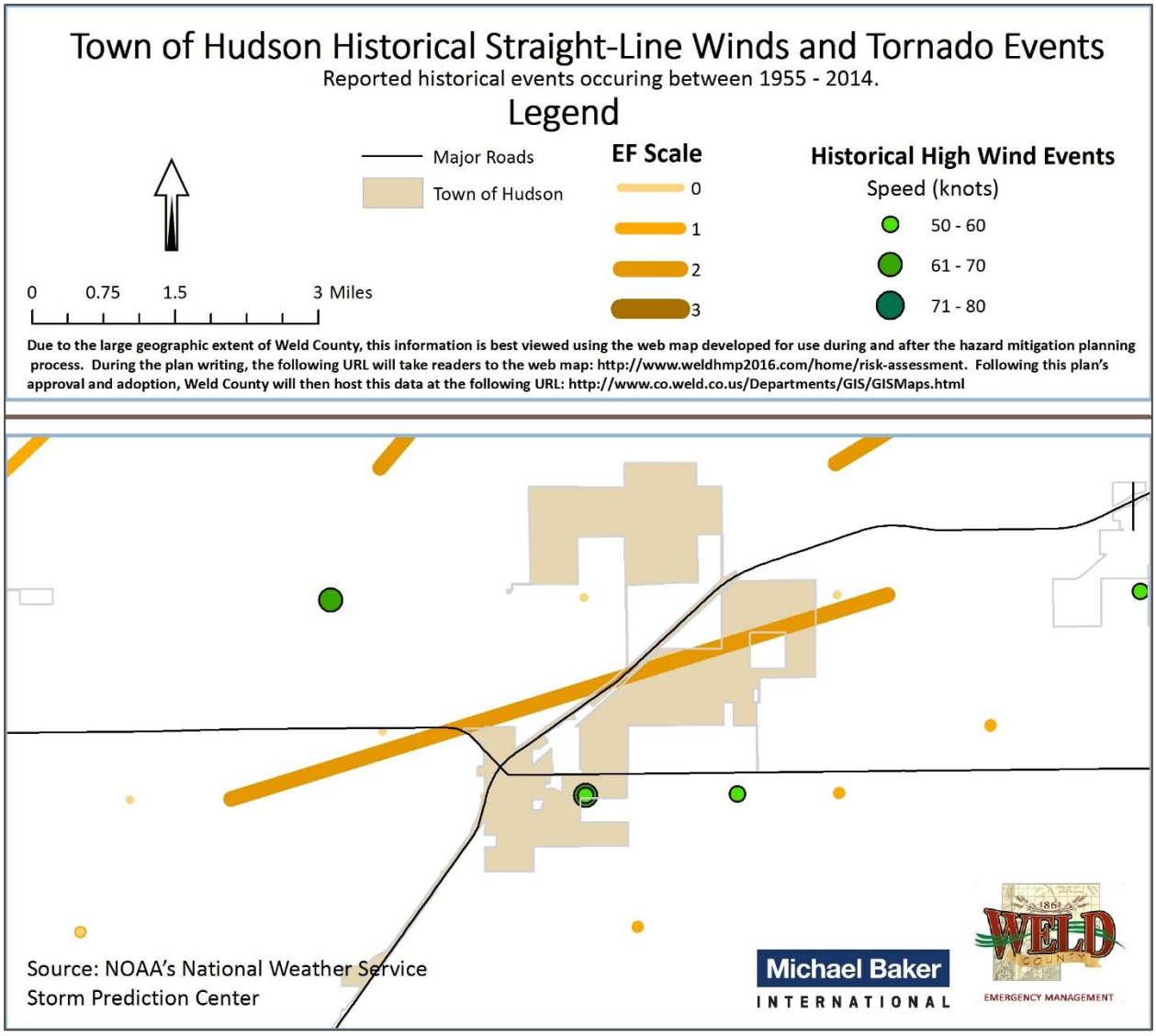
Severe storms affect the entire planning area of the Town of Hudson including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of Hudson. It is likely that lightning and hail will also be experienced in the area due to such storms.

Straight-Line Winds and Tornadoes

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Hudson due to tornadoes. There have been 2 tornadoes reported within the town limits and multiple tornadoes very close to the borders of the town limits. On June 8, 1958 a tornado was reported within the town limits that caused $3,000 in property damage. Tornadoes will remain a highly likely occurrence for the Town of Hudson.

According to the best available data, no injuries, deaths, or damages have been recorded within the Town of Hudson due to straight-line winds. There have been 2 high wind events recorded within the town limits. Straight-line winds remain a highly likely occurrence for Hudson.



Inventory Exposed

All assets located in the Town of Hudson can be considered at risk from straight-line winds and tornadoes. This includes 2,569 people, or 100% of the town's population, and all buildings and structures within the County. Most structures, including the town's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $105,540,448. Potential losses could be substantial.

Capabilities Assessment

The capability assessment examines the ability of the Town of Hudson to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the City's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager		X	
Floodplain Administrator		X	
Community Planner	X		
GIS Specialist			X
Grant Writer			X

**EM and the FPA duties are the responsibility of the Town Administrator*

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the City of Greeley's current capabilities as they relate to land use planning and codes

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	Y
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	IDK
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Hudson is in the process of updating their Comprehensive Land Use Plan, their All-Hazards Emergency Operations Plan, and their Crisis Action Guide. The town's new Fire Chief, Ken Gabrielson (Hudson Fire Protection District), and new Public Safety Director, Brent Flot (eventual Town Marshal), will be participating in the EOP / CAG / Hazard Mitigation Plan Update projects, along with the town's utility partners.

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Hudson has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

Hudson has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how Hudson will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Hudson	*Town staff, along with participation from our town's emergency first responders and overall stakeholders group (when applicable), will monitor, evaluate, and update our Emergency Operations Plan, Crisis Action Guide and Hazard Mitigation Plan on an on-going basis. Our mitigation actions will be reviewed by our Board of Trustees and Town Administration on an annual basis.* *Alterations to our Emergency Operations Plan, Crisis Action Guide and Hazard Mitigation Plan will be posted on the town's website and in the town's newsletter (when appropriate) to keep the public aware of how they can participate. Substantive alterations will be made available to our larger stakeholder group.*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Hudson did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by Hudson based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Hudson	*"The Town of Hudson is currently updating its Comprehensive Plan, Emergency Operations Plan and Crisis Action Guide. We will include the necessary information from the Hazard Mitigation Plan Update into those documents, where applicable. Any hazard mitigation issues identified as an increased risk item will be addressed accordingly. Hazard mitigation actions requiring increased attention will be integrated into our on-going Capital Improvements Plan and be given the appropriate priority status. Capital Improvement Plan projects are identified and listed in our annual budget for citizen review and Board of Trustees approval. As this is an on-going process, any hazard mitigation issues identified requiring increased prioritization will trigger notification being sent to the*

	appropriate departments, agencies and individuals having authority over the identified issue so that the appropriate action can be taken."

Mitigation Action Guides

The following Mitigation Action Guide presents a status updates on Hudson's mitigation actions that were included in the 2009 Plan.

Town of Hudson: Continued Compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED: Flooding**
LOCATION: Town of Hudson	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP, Hudson will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longs would be faced with subsidizing those potential losses	
ACTION: Continued Compliance with the NFIP	
LEAD AGENCY: local Floodplain Management officials	**EXPECTED COST:** can be accomplished with existing Town budget
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: Passed Town of Hudson Ordinance 14-01, an ordinance repealing Section 16-49 and repealing and reenacting Section 16-146 of the Hudson Municipal Code Floodplain Regulations; passed on second and final reading on February 19, 2014, and ordered published once full. Recent correspondence with FEMA prompting additional reviews and action are underway.	

The following Mitigation Action Guides profile each of Hudson's new mitigation actions that were developed for the 2016 Plan.

Town of Hudson, Colorado – Update All Hazards Emergency Operations Plan / Crisis Action Guide (to include a new section for Hazard Mitigation Planning)	
PRIORITY: High	**HAZARDS ADDRESSED: All hazards (man-made and natural)**
LOCATION: Hudson	**GOALS ADDRESSED: 1,2,3,4**
RECOMMENDATION DATE: Immediately	**OBJECTIVES ADDRESSED: A,B,C,D,E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: Comprehensive review and updating of the town's All Hazards Emergency Operations Plan (EOP) and Crisis Action Guide (CAG); a new section will be added to include the Hazard Mitigation Plan	

(HMP); upon finalization, the EOP / CAG / HMP will be integrated into the town's updated Comprehensive Plan Appendices (completion expected in 2016).	
RECOMMENDATION: Monthly meetings will be initiated during the review & project prioritization phase; meetings will be held every other month during the updating phase; quarterly meetings will be held during the implementation & education phase; process cycle will be ongoing as the EOP / CAG / HMP are "living documents".	
ACTION: Absolute involvement, integration and COMMUNICATION by all identified stakeholders; ongoing education of stakeholders, residents and business community.	
LEAD AGENCY: Town of Hudson Administration & Planning Dept. , personnel with emergency mgmt. responsibilities.	**EXPECTED COST:** Most of the effort can be accomplished within existing annual budget by funding specific line items.
SUPPORT AGENCIES: Hudson Fire Protection District, Hudson Town Marshal, Hudson Public Works Department, Hudson Utilities Department, Hudson Board of Trustees & Planning Commission, Weld County Office of Emergency Management, United Power, Atmos Energy, Weld County RE3J Public School District, and other indentified stakeholders and community response agencies as required to complete tasks.	**POTENTIAL FUNDING SOURCES:** Annual budgets and mitigation grant opportunities
PROGRESS MILESTONES: Establishment of meeting schedule; completed review of Emergency Operations Plan (EOP), Crisis Action Guide (CAG) and Hazard Mitigation Plan (HMP); completed update of EOP / CAG / HMP; implementation of defined action plan to minimize or eliminate identified deficiencies and issues; and scheduling of educational workshops and training exercises; integration into Town's Comprehensive Plan (2016).	

Town of Hudson – Integrated Community Mitigation Planning and 2015 Citizen Survey Review	
PRIORITY: Medium	**HAZARDS ADDRESSED: All hazards (man-made and natural, real or perceived)**
LOCATION: Hudson	**GOALS ADDRESSED: 1,2,3,4**
RECOMMENDATION DATE: January 2016	**OBJECTIVES ADDRESSED: A,B,D,E**
TARGET COMPLETION DATE: June 2016	
ISSUE: 2015 Annual Citizen Survey solicited feedback on a variety of topics affecting the overall community. Responses identified hazards of concern to residents. The Town of Hudson wants to Incorporate 2015 resident survey data related to hazard awareness and Integrate the hazard and risk assessment as determined in the 2016 Weld County Hazard Mitigation Plan into the Town's Comprehensive and Emergency Operations Plans.	

RECOMMENDATION: Independent review and scheduled group discussions leading to the development and integration of appropriate mitigation actions into Town of Hudson's plans. Incorporate community input into mitigation actions.	
ACTION: Interdepartmental and interagency review of 2015 Annual Citizen Survey responses; prioritize hazards (man-made and natural) identified in the hazard and risk assessment; develop actions to mitigate issues related to concerns and fears; utilize preferred tools identified in survey to communicate with community.	
LEAD AGENCY: Town of Hudson Administration	**EXPECTED COST:** Most tasks can be completed within existing annual town budget. Action Plan items may require additional funding from mitigation grant resources.
SUPPORT AGENCIES: Hudson Public Works Department, Hudson Utilities Department, Hudson Fire Protection District, Hudson Town Marshal, and other identified stakeholders and community response agencies as required to complete tasks.	**POTENTIAL FUNDING SOURCES:** Annual budget and mitigation grant opportunities.
PROGRESS MILESTONES: Completed review of the 2015 Annual Citizen Survey; Completed review of hazard and risk assessment for the Town of Hudson; establishment of a group meeting schedule; identification and prioritization of issues identified in survey; creation and implementation of an action plan.	

Town of Hudson – Develop Staff / Resident / Business Resilience, Hazard Awareness & Preparedness Education Plan	
PRIORITY: Low - Medium	**HAZARDS ADDRESSED: All hazards (man-made and natural)**
LOCATION: Hudson	**GOALS ADDRESSED: 1,3**
RECOMMENDATION DATE: January 2016	**OBJECTIVES ADDRESSED: A,B**
TARGET COMPLETION DATE: Ongoing	
ISSUE: A 2015 Annual Citizen Survey solicited feedback on a variety of topics affecting the overall community, including hazard awareness (survey garnered a 20% return rate from the community). A community education and training plan to address the issues identified is needed. To enhance our community's disaster resilience, town staff, residential and business community members need access to ongoing education about local hazards, preparedness and possible mitigation actions.	
RECOMMENDATION: Identify, promote, and host educational and training opportunities for town staff, residents and business owners. Provide opportunities for residents to participate in planning, to include mitigation and community planning activities. Incorporate hazard and risk analysis from HMP into education plan.	
ACTION: Develop a plan to provide EMI professional training for town staff; American Red Cross and equivalent "interest level" training in hazard-specific mitigation actions and individual preparedness and community resilience for residents; provide FEMA Business Ready training, as well as SBA –	

SBDC/U.S. Chamber of Commerce Business Continuity training for our entrepreneurs and start-up and established business owners.	
LEAD AGENCY: Town of Hudson Administration	**EXPECTED COST:** Existing annual budgeted line items for training and outreach.
SUPPORT AGENCIES: Hudson Fire Protection District, Hudson Town Marshal, American Red Cross, Emergency Management Institute, FEMA, SBA, SBDC, U.S. Chamber of Commerce, and other identified stakeholders and community response agencies as required to enhance overall knowledge and preparedness.	**POTENTIAL FUNDING SOURCES:** Annual budgets and mitigation grant opportunities.
PROGRESS MILESTONES: Identify appropriate educational opportunities; develop training schedule; track participants progress including any certifications obtained.	

Town of Hudson – Distribution of All Hazards Emergency Alert Radios to local community	
PRIORITY: Medium	**HAZARDS ADDRESSED: All Hazards (man-made and natural)**
LOCATION: Hudson	**GOALS ADDRESSED: 1,2**
RECOMMENDATION DATE: January 2016	**OBJECTIVES ADDRESSED: A,E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: Effectiveness of severe weather alert system (tornado sirens) has been questioned. Town limits continues to expand thereby minimizing the audible warning capacity of the existing system.	
RECOMMENDATION: Discussions with Town Board, Administration, Hudson Fire Protection District Administration / Staff, and Weld County Office of Emergency Management Staff led to a Town Board decision to authorize the purchase and distribution of All Hazards Emergency Alert Radios to community members interested in participating in the program.	
ACTION: Town will purchase All Hazards Emergency Alert Radios (250 – Phase 1) for distribution to community members. Radios will be made available through a "coupon" attached to the town's utility bill.	
LEAD AGENCY: Town Administration	**EXPECTED COST:** Midland WR120 MSRP is $49.99. Amazon prices radios around $28. Bulk purchases should help to secure a reduced rate. Town will need to budget between $7017.50 - $12,500 in our FY2016 Budget
SUPPORT AGENCIES: None	**POTENTIAL FUNDING SOURCES:** List all potential sources, be as specific as possible

PROGRESS MILESTONES: Purchase of radios; insertion of “coupons” into utility billing system; distribution of radios (participants will be logged with the purpose of having the radio returned should residents move).

Letter of Intent to Participate

TOWN OF HUDSON

557 Ash Street, P.O. Box 351, Hudson, CO 80642
Phone: (303)536-9311 Fax: (303)536-4753
www.hudsoncolorado.org

LETTER OF INTENT TO PARTICIPATE

October 7, 2015

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County's Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Hudson is submitting this letter of intent to confirm that the Town of Hudson has agreed to participate in the Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Hudson agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town of Hudson understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant

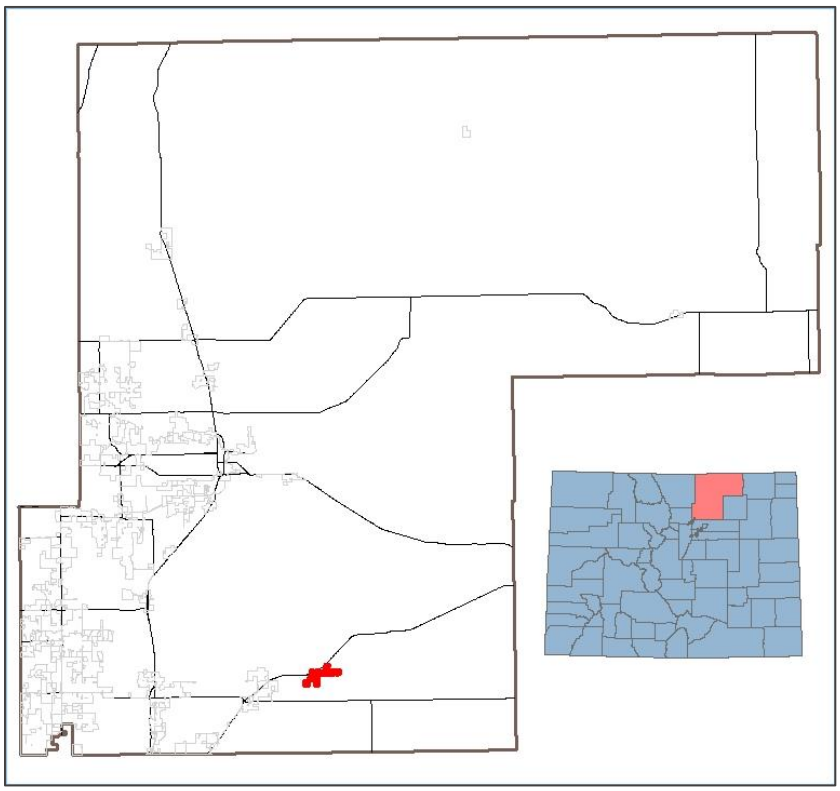
involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Weld County Office of Emergency Management and the Town of Hudson, I, Mayor Raymond Patch, commit the Town of Hudson to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 7th day of October, 2015 Raymond L Patch

Town of Keenesburg

The Town of Keenesburg is located in Southeast Weld County, approximately 25 miles southeast of the County Seat of Greeley and approximately 35 miles northeast of Denver on I-76 at exit 39. The town is 32 miles from Denver International Airport (DIA) with an elevation of 4,958 feet above sea level.



Keenesburg was incorporated in 1919. The incorporated area now includes 240 acres. The largest employers in the Town include the School District, Colorado East Bank & Trust, and Keene Market grocery store. Additionally, the town provides the surrounding agricultural community with key commercial services.

Community Profile

The table below summarizes key demographic and development related characteristics of the Town of Keenesburg.

Town of Keenesburg Statistics		
	City of Keenesburg	Colorado
Population, 2010 Census	1,127	5,029,196
Population Change 2000 – 2010, %	31.7%	16.9%
Total Households	438	1,972,868
Average Household Size	2.55	2.49
Homeownership Rate	69.9%	65.5%
% Population under 5 years, 2010	6.2%	6.8%
% Population 65 years and over, 2010	13.7%	10.7%

Speak English less than "very well," % age 5+, 2009-2013	25.5%	38.9%
Persons below poverty level, %, 2009-2013	21.1%	13.2%
Median Household Income, 2010	$45,888	$58,433

Source: US Census Bureau, Census 2010; 2009-2013 5-Year ACS

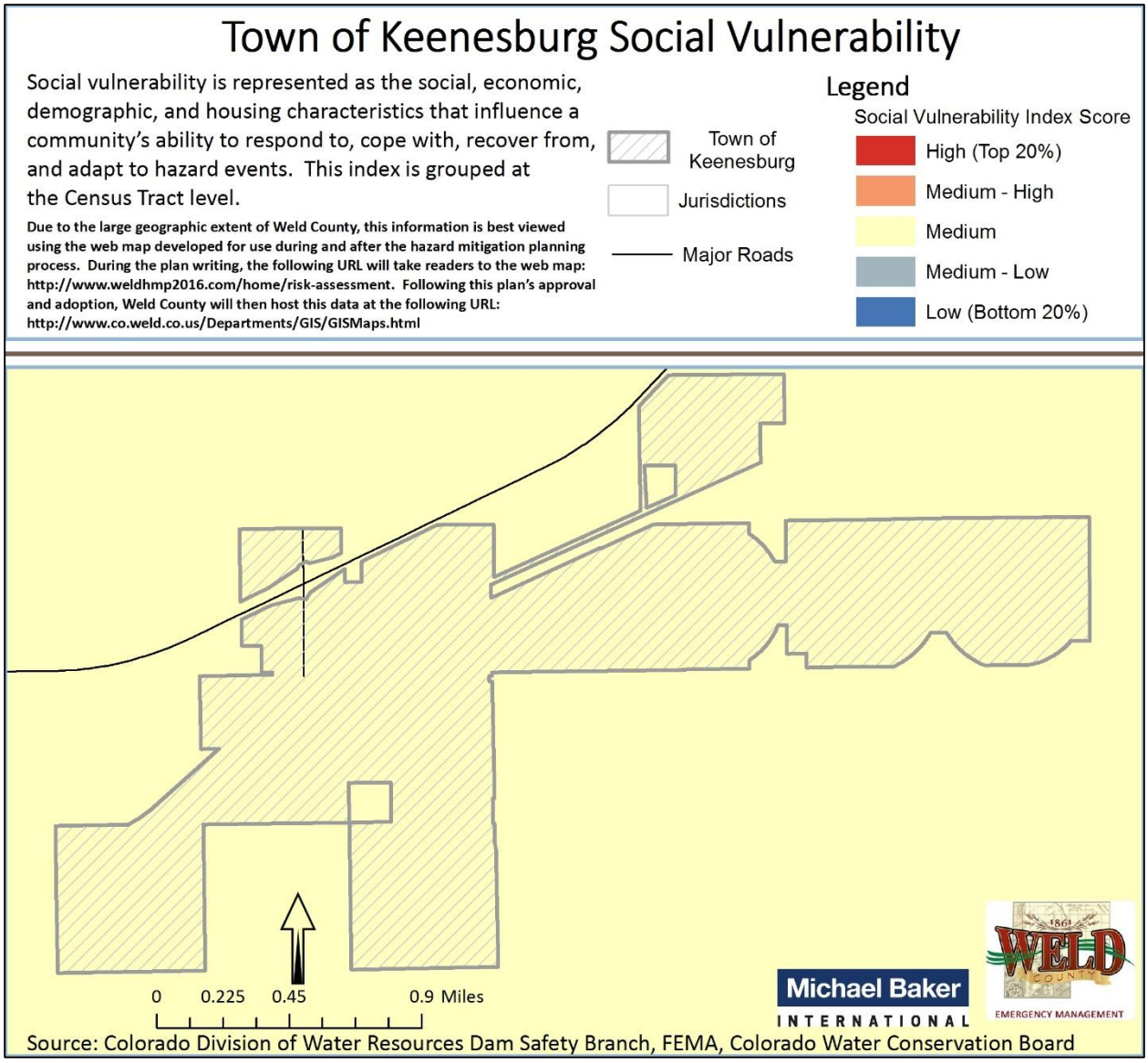
Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Straight-Line Winds & Tornadoes	0.9	1.2	0.8	0.4	0.1	3.400
Severe Storm	0.9	0.6	0.6	0.4	0.3	2.800
Earthquake	0.3	1.2	0.8	0.1	0.1	2.500
Drought	0.9	0.6	0.4	0.1	0.1	2.100
Flood	0.3	0.9	0.6	0.1	0.1	2.000
Prairie Fire	0.9	0.3	0.2	0.4	0.1	1.900
Extreme Temperatures	0.9	0.3	0.2	0.1	0.1	1.600
HAZMAT	0.3	0.3	0.2	0.4	0.1	1.300
Public Health Hazards	0.3	0.3	0.2	0.1	0.1	1.000
Land Subsidence	0.3	0.3	0.2	0.1	0.1	1.000
HIGH RISK (2.5 or higher): Straight-Line Winds & Tornadoes; Severe Storm; Earthquake						
MODERATE RISK HAZARD (2.0 - 2.4): Drought; Flood						
Low Risk (1.9 or lower): Prairie Fire; Extreme Temperatures; HAZMAT; Public Health Hazards; Land Subsidence						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Keenesburg, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Keenesburg.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). Keenesburg's social vulnerability map shows social vulnerability within the community.

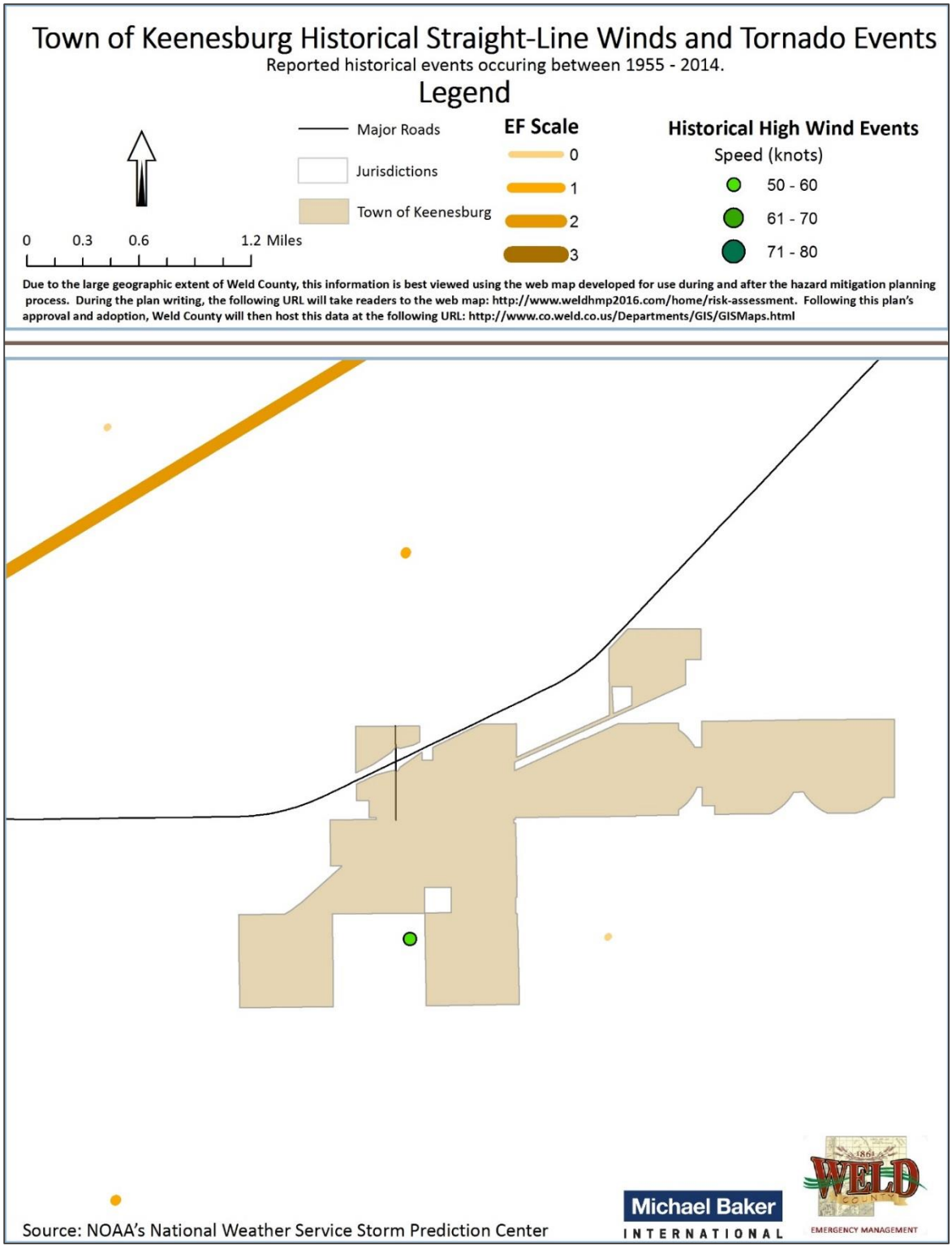


The Town of Keenesburg is characterized by a uniform level of medium social vulnerability. Although this is not a high level of vulnerability, it is important that the Town take efforts to understand what elements of the social vulnerability index contribute the most to their elevated score. In doing so, the town will be able to manage those risk factors and reduce their social vulnerability over time.

Straight-Line Winds and Tornadoes

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Keenesburg due to tornadoes. There have been tornadoes reported very close to the borders of the town limits. Tornadoes will remain a highly likely occurrence for the Town of Keenesburg.

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Keenesburg due to straight-line winds. However, straight-line winds remain a highly likely occurrence for Keenesburg.



Inventory Exposed

All assets located in the Town of Keenesburg can be considered at risk from straight-line winds and tornadoes. This includes 1,127 people, or 100% of the town's population, and all buildings and structures within the County. Most structures, including the town's critical facilities, should be able to withstand and

provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

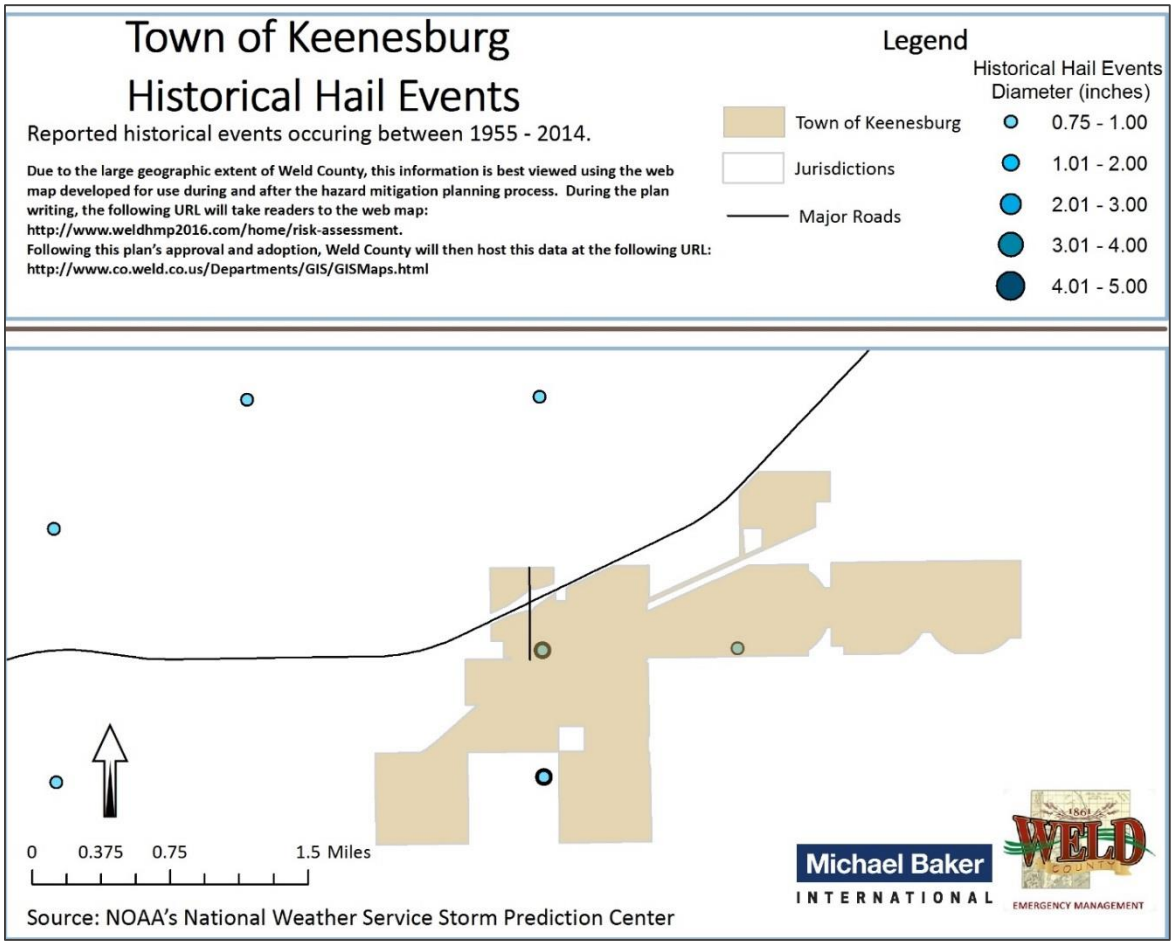
Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $42,545,735. Potential losses could be substantial.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the Town of Keenesburg. There have been four hail events reported within the town limits and several hail events that occurred less than one mile from the town limits. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the best available data, no injuries, deaths, property damage, or crop damage have occurred within the Town of Keenesburg due to Lightning. Although there is no historic data showing hazardous impacts on the town, there is still great potential for Lightning to occur at any given time.

Winter Storm

According to NOAA's Storm Events Database, the Town of Keenesburg has experienced 25 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. There were no deaths, injuries or damage to crops reported for any of these storms. The Town of Keenesburg is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the Town of Keenesburg can be considered at risk from severe storms. This includes 1,127 people, or 100% of the town's population, and all buildings and infrastructure within the town. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

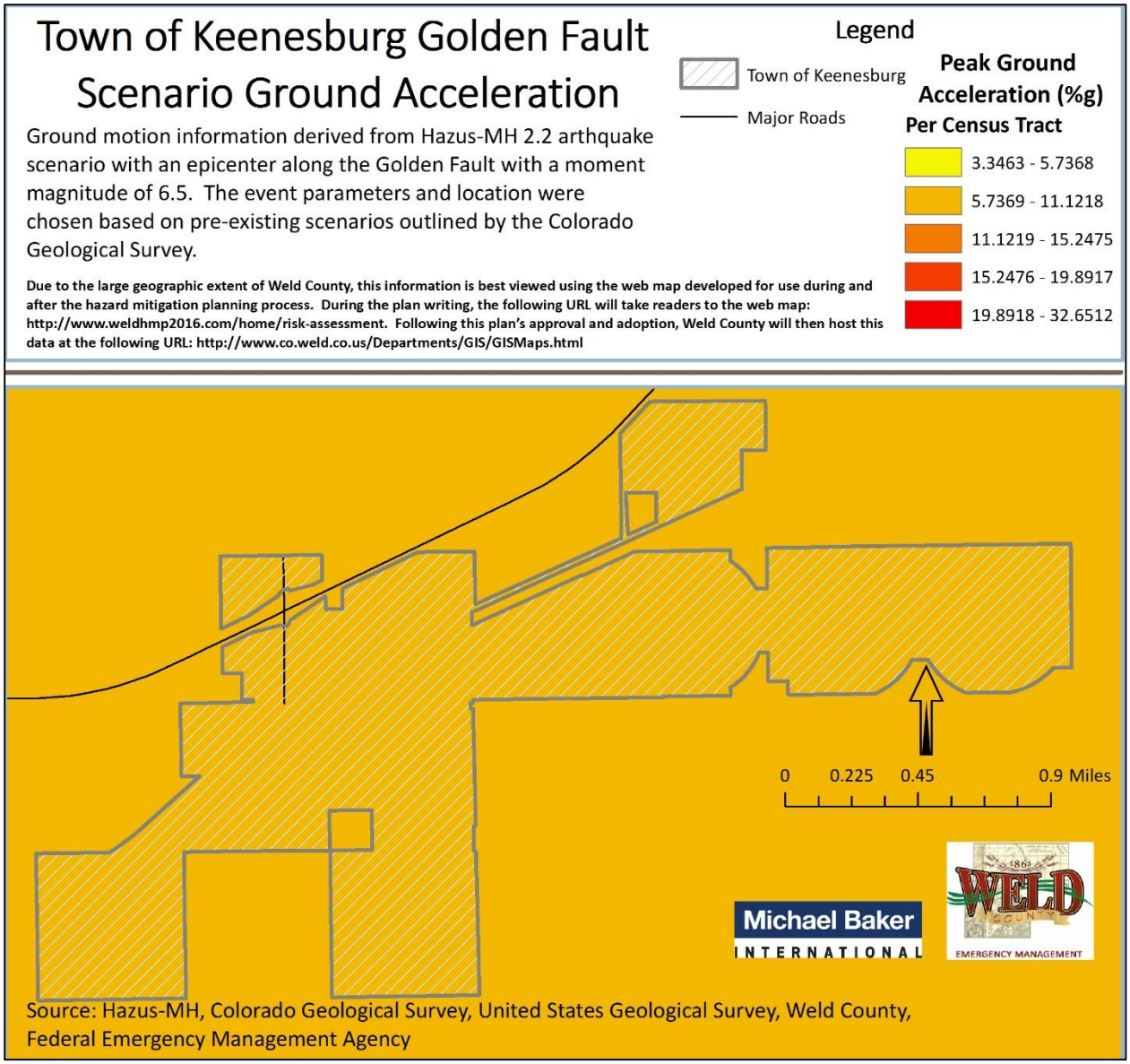
Potential Losses

Severe storms affect the entire planning area of the Town of Keenesburg including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of Keenesburg. It is likely that lightning and hail will also be experienced in the area due to such storms.

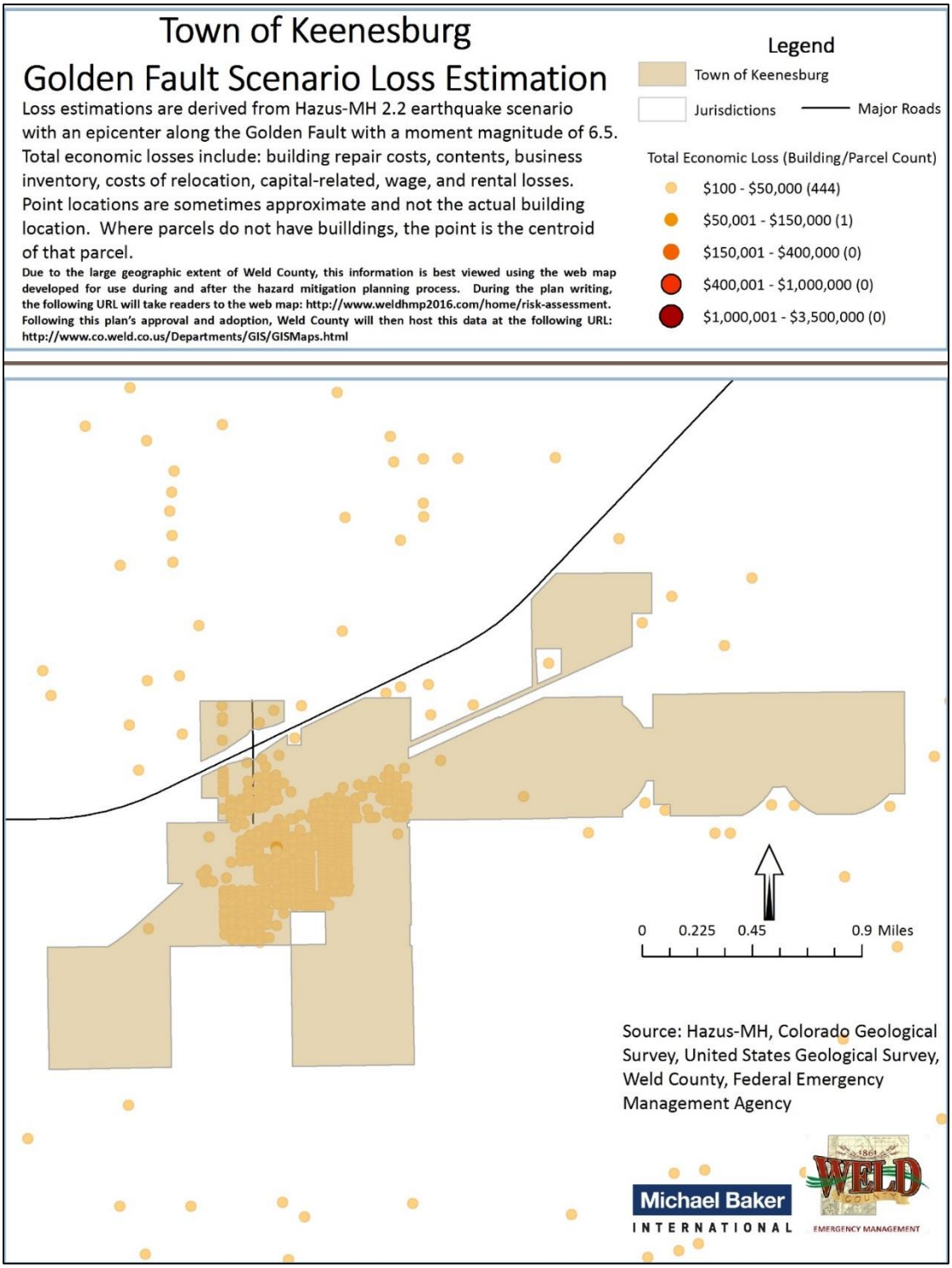
Earthquake

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Keenesburg due to earthquakes. Although there is no historic data showing hazardous impacts on the town, there is a great potential for earthquake events to occur at any given time.



Inventory Exposed

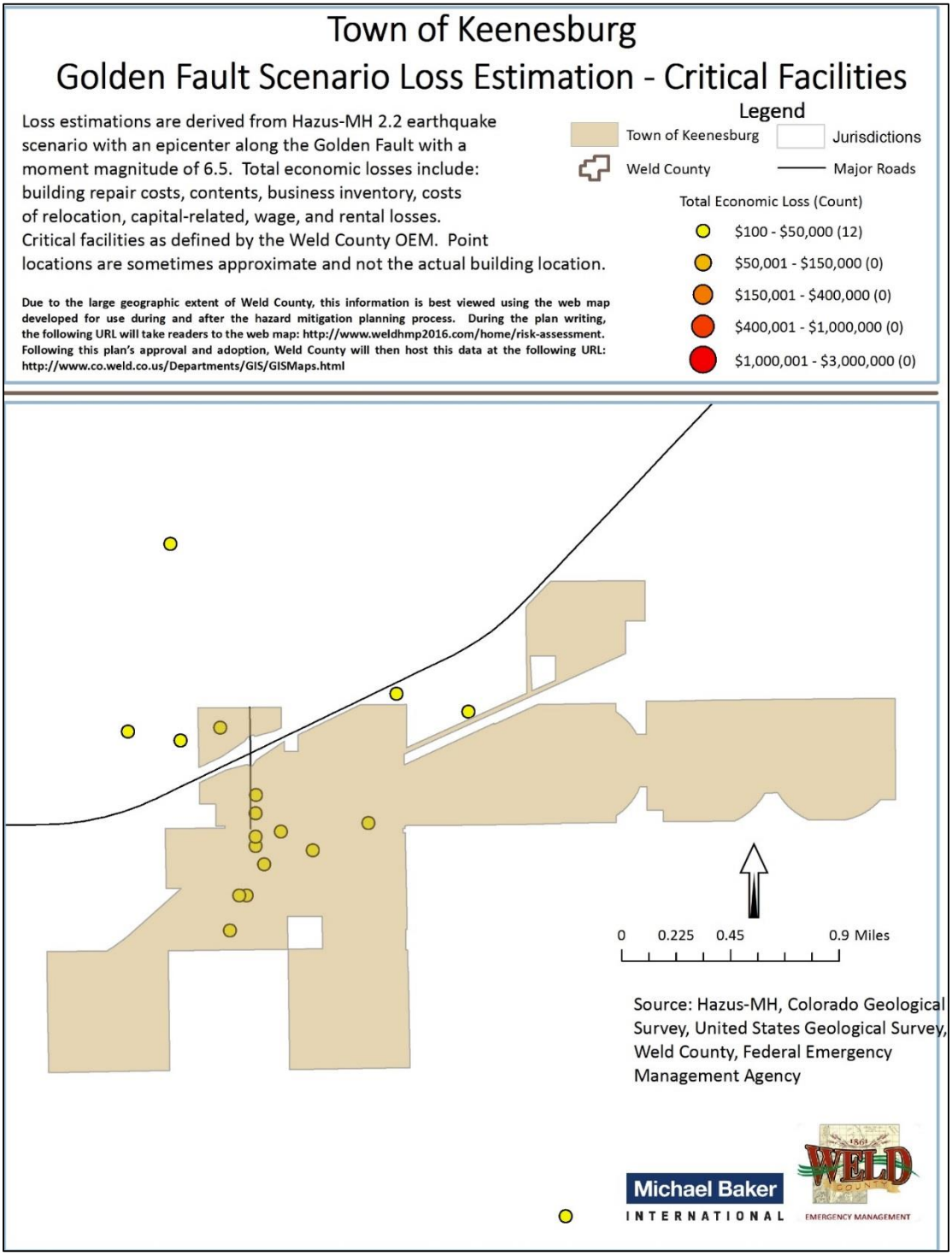
According to the Hazus inventory, there are an estimated 575 buildings in the Town of Keenesburg with a total building replacement value (excluding contents) of $42,545,735.



Potential Losses

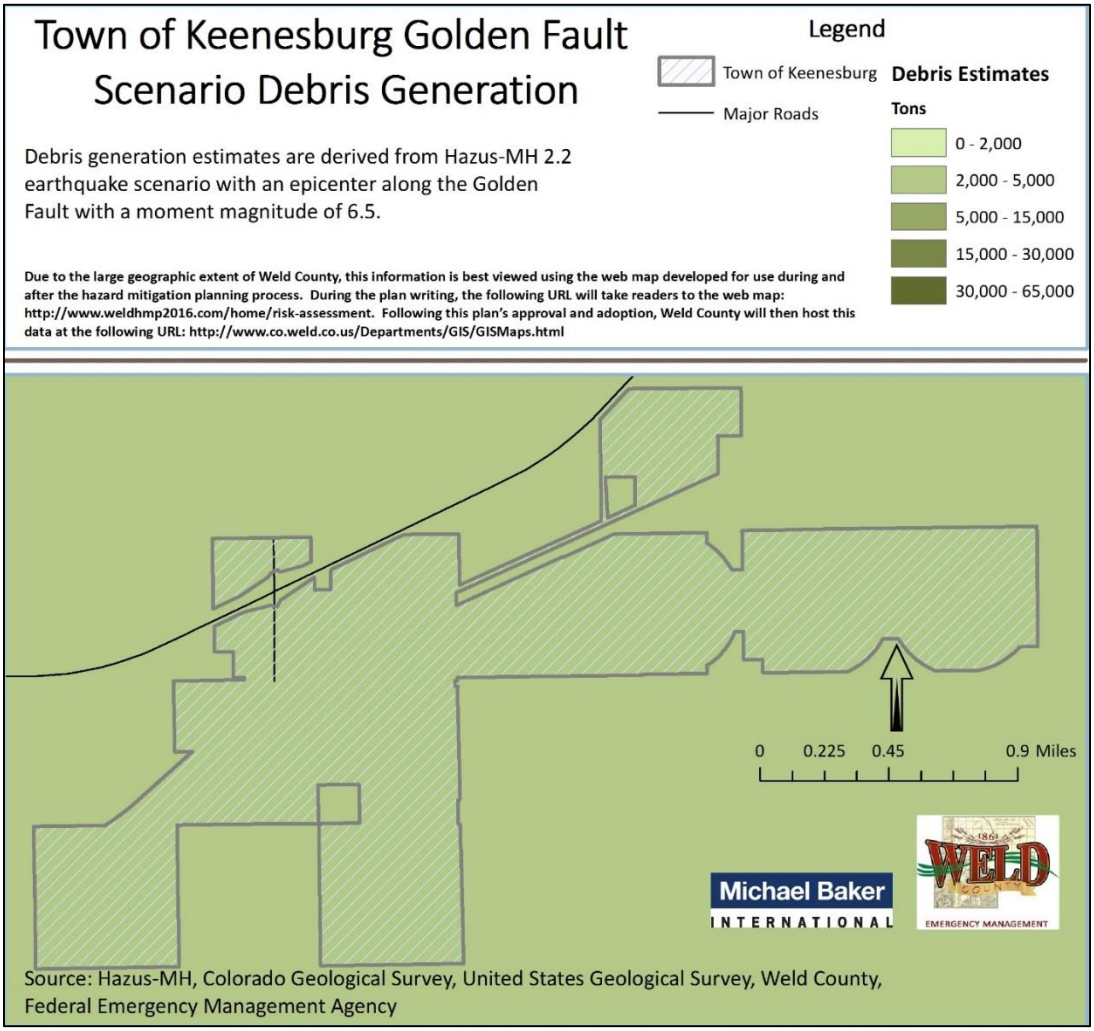
For the Golden Fault earthquake scenario, the total losses were estimated to be $1,061,750. Spatially, a majority of the worst loss areas were located in the northwestern, urban portion of the town. Generally, these are areas which are more densely/highly populated and more closely located to the Golden

epicenter. Hazus estimates 12 critical facilities with a total loss of $2,353,968. Of the 12 critical facilities, all will be over 50% functional on the first day of the event.

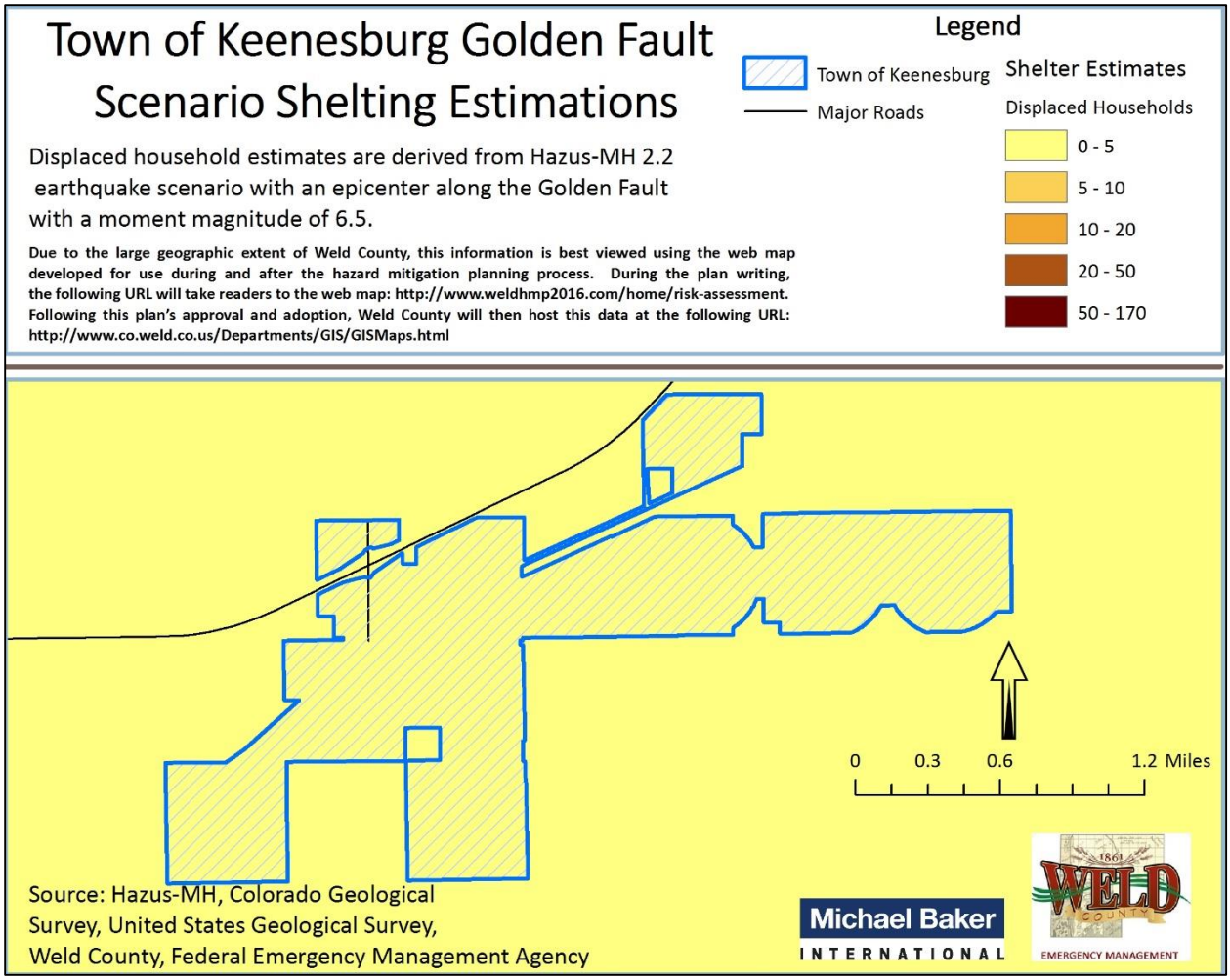


The Golden Fault scenario estimates that a total of 2.2 tons of debris will be generated from that 6.5 magnitude event. Of the total amount, brick and wood make up 41% of the total, with the remainder of the debris being reinforced concrete and steel. When the debris tonnage is converted to an estimated

number of truckloads, it will require 0.09 of a truckload (@25 tons/truck) to remove the debris generated by the earthquake.



The Golden Fault model estimates that 1.5 households will be displaced in the Town of Keenesburg due to an earthquake and less than 10 people will seek temporary shelter in public shelters.



Capabilities Assessment

The capability assessment examines the ability of the Town of Keenesburg to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

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The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the Town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager	X		
Floodplain Administrator	X		
Community Planner		X	
GIS Specialist			X
Grant Writer			X

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the Town's current capabilities as they relate to land use planning and codes

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	Y
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	N
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Keenesburg has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of Keenesburg has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Keenesburg	*The Town of Keenesburg will review and evaluate mitigation actions annually.* *As part of the plan maintenance process, the Town of Keenesburg will continue to engage the public in the process of identifying hazard risks and prioritizing mitigation actions. To do so any changes to the Town's mitigation plans will be posted on the town website, and updated on the town's facebook page for public review and comment.*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Keenesburg did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Keenesburg based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Keenesburg	*"Plan to update the town's comprehensive plan over the next five years and will integrate the mitigation actions into the comprehensive plan."*

Mitigation Action Guides

The following Mitigation Action Guide presents a status update of Keenesburg's mitigation actions that were included in the 2009 Plan.

Keenesburg: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Keenesburg	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: Ongoing	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to floodprone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continued compliance with the NFIP	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: The Town of Keenesburg is not participating in the CRS program, however we are member of the NFIP. The Town of Keenesburg has adopted the model ordinance in October of 2013 as required by the State of Colorado. The Town of Keenesburg will enforce flood plain regulation in accordance with FEMA's requirements for any annexed property that lies within a mapped flood zone.	

The following Mitigation Action Guides each of the community's new mitigation actions that were developed for the 2016 Plan.

Town of Keenesburg: Floodplain training	
PRIORITY: Low	**HAZARDS ADDRESSED: Flood**
LOCATION: Town of Keenesburg	**GOALS ADDRESSED: 1-4**
RECOMMENDATION DATE: 10/09/2015	**OBJECTIVES ADDRESSED: A,B D, E**
TARGET COMPLETION DATE: Ongoing with annual review	
ISSUE: Staff is small with many varied responsibilities and no experience with reading FIRM's	
RECOMMENDATION: Staff training of flood plain rules and regulation in general, as well as direction and instruction in reading maps and determining elevation requirements. Careful review of any annexations in conjunction with the FIRM's for determination of the any existing flood plain zone.	
ACTION: Careful review of building permit applications, and location of project to determine if within a possible flood plain, as the Town of Keenesburg has not been mapped, importance placed on	

annexations and determining if any annexations lie within a flood zone. The Town of Keenesburg is not participating in the CRS program, however we are member of the NFIP. The Town of Keenesburg has adopted the model ordinance in October of 2013 as required by the State of Colorado. The Town of Keenesburg will enforce flood plain regulation in accordance with FEMA's requirements for any annexed property that lies within a mapped flood zone. Have a different staff member attend flood plain training on an annual basis	
LEAD AGENCY: Town of Keenesburg	**EXPECTED COST:** Staff Time
SUPPORT AGENCIES: Colorado Water Conservation Board	**POTENTIAL FUNDING SOURCES:** N/A
PROGRESS MILESTONES: Assistant Town Manager attended a Floodplain Management training course on September 9, 2015	

Town of Keenesburg: Notify traveling public about shelter locations	
PRIORITY: High	**HAZARDS ADDRESSED: Severe Weather**
LOCATION: Community-wide	**GOALS ADDRESSED: 1, 4**
RECOMMENDATION DATE: 10/09/2015	**OBJECTIVES ADDRESSED: A, D**
TARGET COMPLETION DATE: 12/31/2015	
ISSUE: Traveling public not aware of help available if stranded due to severe weather and or the closure of the I-76	
RECOMMENDATION: Place a notice at entry to town (existing kiosk) providing contact information	
ACTION: Create signage to be located at kiosk, motel, and gas station all located on Market Street just off of I-76 containing contact information for anyone seeking shelter due to severe weather and or closure of I-76.	
LEAD AGENCY: Town of Keenesburg	**EXPECTED COST:** Staff Time
SUPPORT AGENCIES: Southeast Weld Fire Protection District	**POTENTIAL FUNDING SOURCES:** N/A
PROGRESS MILESTONES: Complete once signage is in place.	

Town of Keenesburg: Tornado warning system education for residents	
PRIORITY: Medium	**HAZARDS ADDRESSED: Tornado**
LOCATION: Town of Keenesburg	**GOALS ADDRESSED: 1, 2, and 3**
RECOMMENDATION DATE: 10/09/2015	**OBJECTIVES ADDRESSED: A, B, and E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As new residents move into town many do not know what to do when the siren sounds.	
RECOMMENDATION: Outreach and education of the public to identify the action that should be taken when the siren sounds	
ACTION: We will post educational information about what to do in the event of a tornado and specifically what it means when the siren sounds on the town's facebook page, and website, as well as place different articles in the local newspaper every month during tornado season	
LEAD AGENCY: Town of Keenesburg	**EXPECTED COST:** Staff time
SUPPORT AGENCIES: N/A	**POTENTIAL FUNDING SOURCES:** N/A
PROGRESS MILESTONES: Education outreach will begin in March of 2016, with an article in the newspaper, on our website, as well as on the town's facebook page.	

Letter of Intent to Participate

TOWN OF KEENESBURG
FOUNDED JULY, 1906
A MUNICIPAL CORPORATION SINCE JULY, 1919

November 21, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Keenesburg is submitting this letter of intent to confirm that the Town of Keenesburg has agreed to participate in the Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Keenesburg agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town of Keenesburg understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Danny Kipp, commit the Town of Keenesburg to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

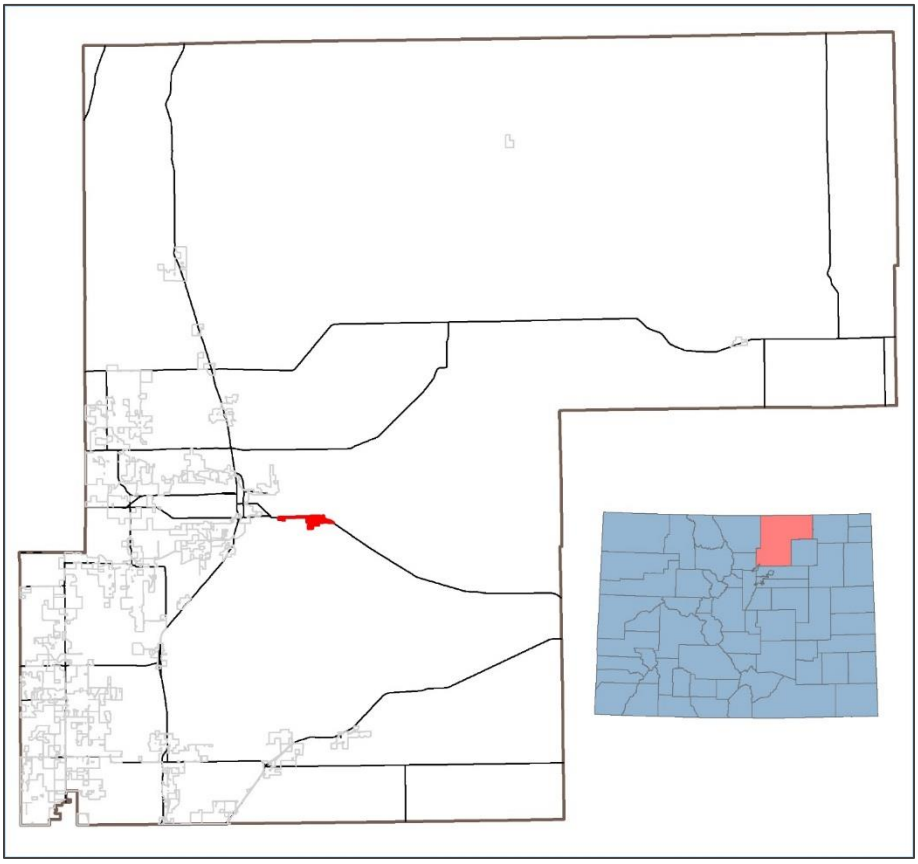
Executed this 21st day of November, 2014 _____

140 SOUTH MAIN P.O. BOX 312 KEENESBURG, COLORADO 80643
PHONE 303-732-4281 FAX 303-732-0599

Town of Kersey

Community Profile

Kersey is conveniently located on U.S. Highway 34, just 6 miles east of Greeley. The town is located just east of the foothills of the Rocky Mountains and south of the Pawnee Buttes.



The table below summarizes key demographic and development related characteristics of the Town of Kersey.

Town of Kersey Statistics		
	Town of Kersey	Colorado
Population, 2014	1,560	5,355,866
Population, % change April 1, 2010 to July 1, 2014	6.8%	6.5%
% Population under 5 years, 2010	6.2%	6.8%
% Population under 18 years, 2010	36%	24.4%
% Population 65 years and over, 2010	9.4%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	21.5%	16.8%
Homeownership Rate	75.9%	65.4%
Persons Per Household	2.87	2.53
Persons below poverty level, %, 2009-2013	17.1%	13.2%
Median Household Income, 2009- 2013	$48,438	$58,433

Source: US Census Bureau

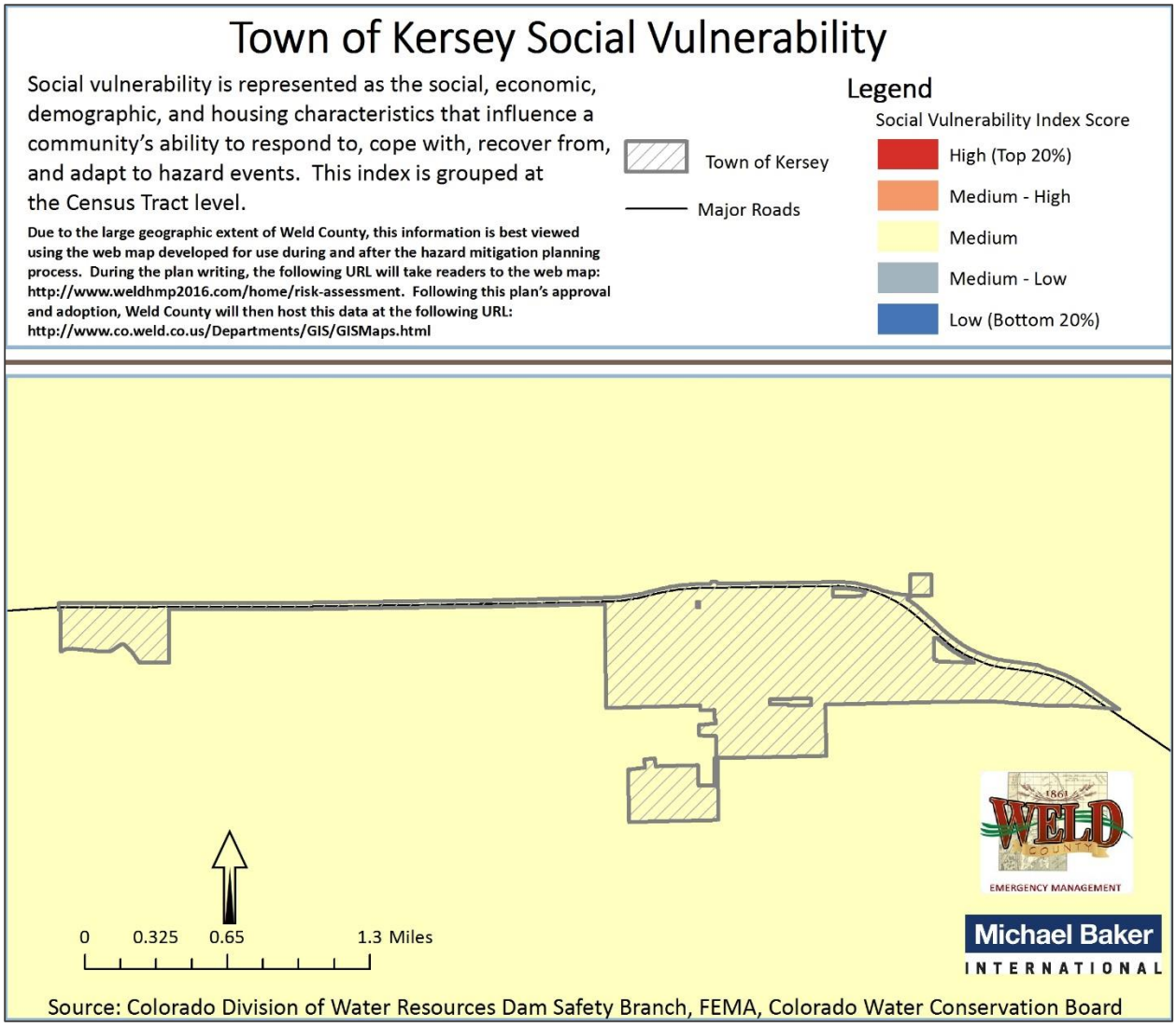
Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Severe Storm	1.2	0.3	0.2	0.4	0.2	2.300
Straight-Line Winds & Tornadoes	0.9	0.3	0.2	0.4	0.4	2.200
HAZMAT	0.9	0.3	0.2	0.4	0.1	1.900
Flood	0.9	0.3	0.2	0.3	0.4	2.100
Extreme Temperatures	0.6	0.3	0.2	0.1	0.3	1.500
Drought	0.6	0.3	0.4	0.1	0.1	1.500
Public Health Hazards	0.6	0.3	0.2	0.1	0.1	1.300
Prairie Fire	0.9	0.3	0.2	0.4	0.4	2.200
Land Subsidence	0.6	0.3	0.2	0.1	0.1	1.300
Earthquake	0.3	0.3	0.2	0.1	0.1	1.000
HIGH RISK (2.5 or higher): NONE						
MODERATE RISK HAZARD (2.0 - 2.4): Prairie Fire, Flood; Straight-Line Winds and Tornadoes; Severe Storm						
Low Risk (1.9 or lower): Earthquake; Land Subsidence; Public Health Hazards; Drought; Extreme Temperatures; HAZMAT						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Kersey. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to Town of Kersey.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Kersey's social vulnerability map shows social vulnerability within the community.



The Town of Kersey is characterized by medium level of social vulnerability. Currently, the social vulnerability indicators that contribute to higher vulnerability to hazards in the town are lower than they are in the majority of Weld County. This does not mean, however, that there a not any vulnerable populations living in Kersey. Over time, the town should continue to monitor their social vulnerability as demographic, economic, and housing related conditions change.

Capabilities Assessment

The capability assessment examines the ability of the Town of Kersey to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager			X
Floodplain Administrator			X
Community Planner		X	
GIS Specialist			X
Grant Writer		X	

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	IDK
Local building codes	Y
A comprehensive plan / master plan	IDK
A Capital Improvements Plan	IDK
A Stormwater Plan	IDK
A Continuity of Operations Plan (COOP)	IDK
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	IDK
Participates in the NFIP	N

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. Town of Kersey has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of Kersey has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Kersey	*The Town Administrator and the Emergency Manager will review the Mitigation Actions annually.*

	In order to ensure that the public can be informed and participate in decision-making and planning related to hazard mitigation, Kersey will post recommended changes to the Mitigation Plan at required Town Board meetings.

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Kersey did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Kersey based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Kersey	*"Our Mitigation actions will be incorporated into required documents and other plans as necessary"*

Mitigation Action Guides

The following Mitigation Action Guide presents a status update of Kersey's mitigation action that was included in a past Plan.

Kersey: Communities with NSFHA or Never Mapped should consider joining NFIP for the availability of insurance, especially if growing/annexing rapidly.	
PRIORITY: HIGH	**HAZARDS ADDRESSED:** Flooding
LOCATION: Kersey	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: Kersey has never been mapped for flood hazards and has no SFHA. As such, they chose not to join the NFIP. Currently, because they do not participate in the NFIP, flood insurance is unavailable to building owners. However, as communities grow and annex land from the County, they may be acquiring land that is flood prone or subject to drainage problems. A community can join the NFIP by adopting an ordinance and agreeing to regulate development in flood prone areas, as indicated on a FEMA-provided map. Where there is no map, no enforcement is necessary ---- but ---- having adopted the ordinance will allow building owners to purchase flood insurance if they so choose.	
RECOMMENDATION: Communities should contact the CWCB and ask to join the NFIP	
ACTION: : Communities with NSFHA or Never Mapped should consider joining NFIP for the availability of insurance, especially if growing/annexing rapidly. In cases where there is a known watercourse within the existing or expanding community boundaries, the community should request CWCB and/or FEMA to develop a floodplain map that can be used for regulatory and insurance purposes.	
LEAD AGENCY: Communities	**EXPECTED COST:** Staff time only for initial inventory and discussion of protection methods, and cost-benefit analysis.
SUPPORT AGENCIES: CWCB, FEMA	**POTENTIAL FUNDING SOURCES:** There is no cost for the initial inventory and decision-making. Protective measures should be taken where cost-effective.
PROGRESS MILESTONES: Deferred: At this time Kersey does not plan to join the NFIP, but will reevaluate this decision in the future as potential growth and annexations occur.	

The following Mitigation Action Guide presents the community's new mitigation actions that were developed for the 2016 Plan.

Town of Kersey: Community Preparedness Education	
PRIORITY: High	**HAZARDS ADDRESSED: Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat**
LOCATION: Town of Kersey	**GOALS ADDRESSED: 1,3**
RECOMMENDATION DATE: 10.06.2015	**OBJECTIVES ADDRESSED: A, B**
TARGET COMPLETION DATE: 10.06.2020	
ISSUE: There are many emergency management issues that need to be reinforced with public education so that citizens know what risks they face, what protective actions they can take, and what government programs are in place to assist them.	
RECOMMENDATION: The potential for saving just one life, and providing time for individuals and businesses to take effective protective actions, outweighs the potential cost of the public education program. Public Education may be the most effective and least-expensive way to reduce disaster losses by changing human behavior to promote appropriate actions	
ACTION: Establish an ongoing or annual Public Education campaign regarding Hazards and Emergency Management	
LEAD AGENCY: Town of Kersey	**EXPECTED COST:** $2,500 for printing and distribution costs
SUPPORT AGENCIES: County Emergency Management, First Responder Agencies, State DHSEM, FEMA	**POTENTIAL FUNDING SOURCES** HMPG, SHSG, Local budgets and private partner cost share.
PROGRESS MILESTONES: Since 2009, Weld County OEM and many participating jurisdictions have continued to make public preparedness outreach and education a priority. The Town of Kersey will continue to work with Weld County OEM on community preparedness education and hazard identification.	

Jurisdiction or Organization: Town of Kersey	
PRIORITY: High	**HAZARDS ADDRESSED: Flood, Severe Storm,**
LOCATION: Kersey	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 12.1.2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 12.1.2016	
ISSUE: : Identify issues related to flood control by updating and developing a new Comprehensive Plan for the town of Kersey.	

RECOMMENDATION: The Town of Kersey has significantly improved it's ability to reduce and mitigate hazardous situations within the community and surrounding area during recent years. To continue this process the Town of Kersey will take on the development of a new Comprehensive Plan that will address flood control in the community.	
ACTION: Develop a new Comprehensive Plan, hold public meetings and utilize the Hazard Mitigation Plan to address natural hazards that effect the town of Kersey. The Town will also incorporate the Utility Master Plan developed in 2015 into the Comprehensive Plan.	
LEAD AGENCY: Town Administration	**EXPECTED COST:** 62,400.00
SUPPORT AGENCIES: Public Works, Planning, Police, Fire District.	**POTENTIAL FUNDING SOURCES:** General Fund, State and Federal Funding Sources.
PROGRESS MILESTONES: Continued planning process in the development of the Comprehensive plan, public meeting and workshops to provide public input. Identify social and economic strengths to help with the ongoing growth in the community.	

Letter of Intent to Participate

Town of Kersey
Est. 1908

332 3rd Street P.O. Box 657 Kersey, CO 80644
Office-970-353-1681 Fax-970-353-2197

LETTER OF INTENT TO PARTICIPATE

December 10, 2015

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR 201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Kersey is submitting this letter of intent to confirm that the Town of Kersey has agreed to participate in the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Kersey agrees to meet the requirements for mitigation plans identified in 44 CFR 201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town of Kersey understands that it must engage in the following planning process, as more fully described in FEMA's Local Mitigation Planning Handbook dated March 2013 including, but not limited to:

1. Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
2. The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;

Town of Kersey
Est. 1908

332 3rd Street P.O. Box 657 Kersey, CO 80644
Office-970-353-1681 Fax-970-353-2197

3. The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
4. Demonstration that has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, ect.
5. Documentation of an effective process to maintain and implement the plan;
6. Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

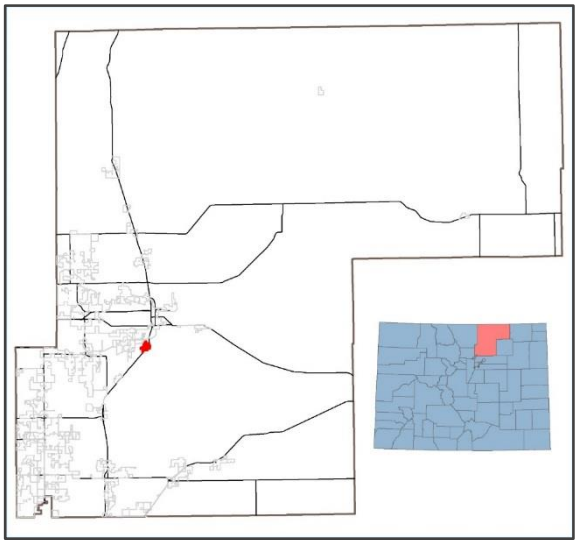
Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Brett Bloom, commit the Town of Kersey to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

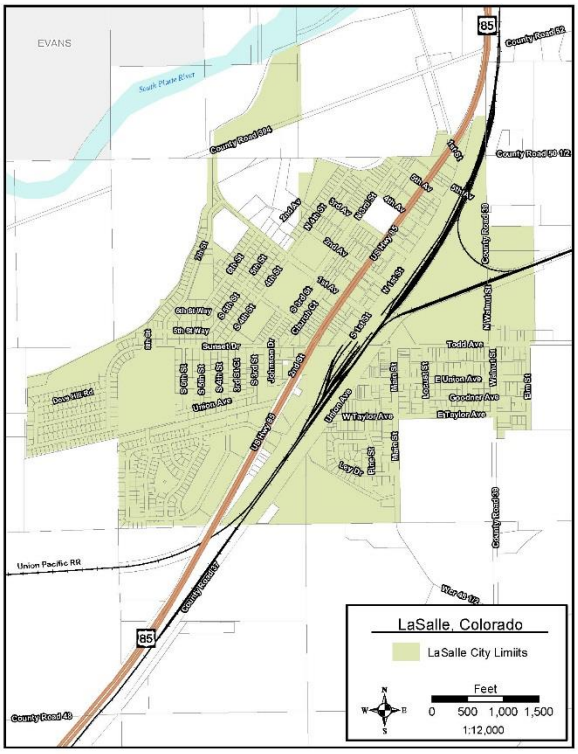
Executed this 10th day of December, 2015 _____

Town of LaSalle

Community Profile

The Town of LaSalle is a Statutory Town in Weld County, Colorado, United States. The town population was 1,955 at the 2010 United States Census.





The table below summarizes key demographic and development related characteristics of the Town of LaSalle.

Town of LaSalle Statistics		
	Town of LaSalle	Colorado
Population, 2014	2,047	5,355,866
Population, % change April 1, 2010 to July 1, 2014	4.5%	6.5%
% Population under 5 years, 2010	7.0%	6.8%
% Population under 18 years, 2010	30.3%	24.4%
% Population 65 years and over, 2010	12.7%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	19.6%	16.8%
Homeownership Rate	75.1%	65.4%
Persons Per Household	3.16	2.53
Persons below poverty level, %, 2009-2013	13.4%	13.2%
Median Household Income, 2009- 2013	$48,095	$58,433

Source: US Census Bureau

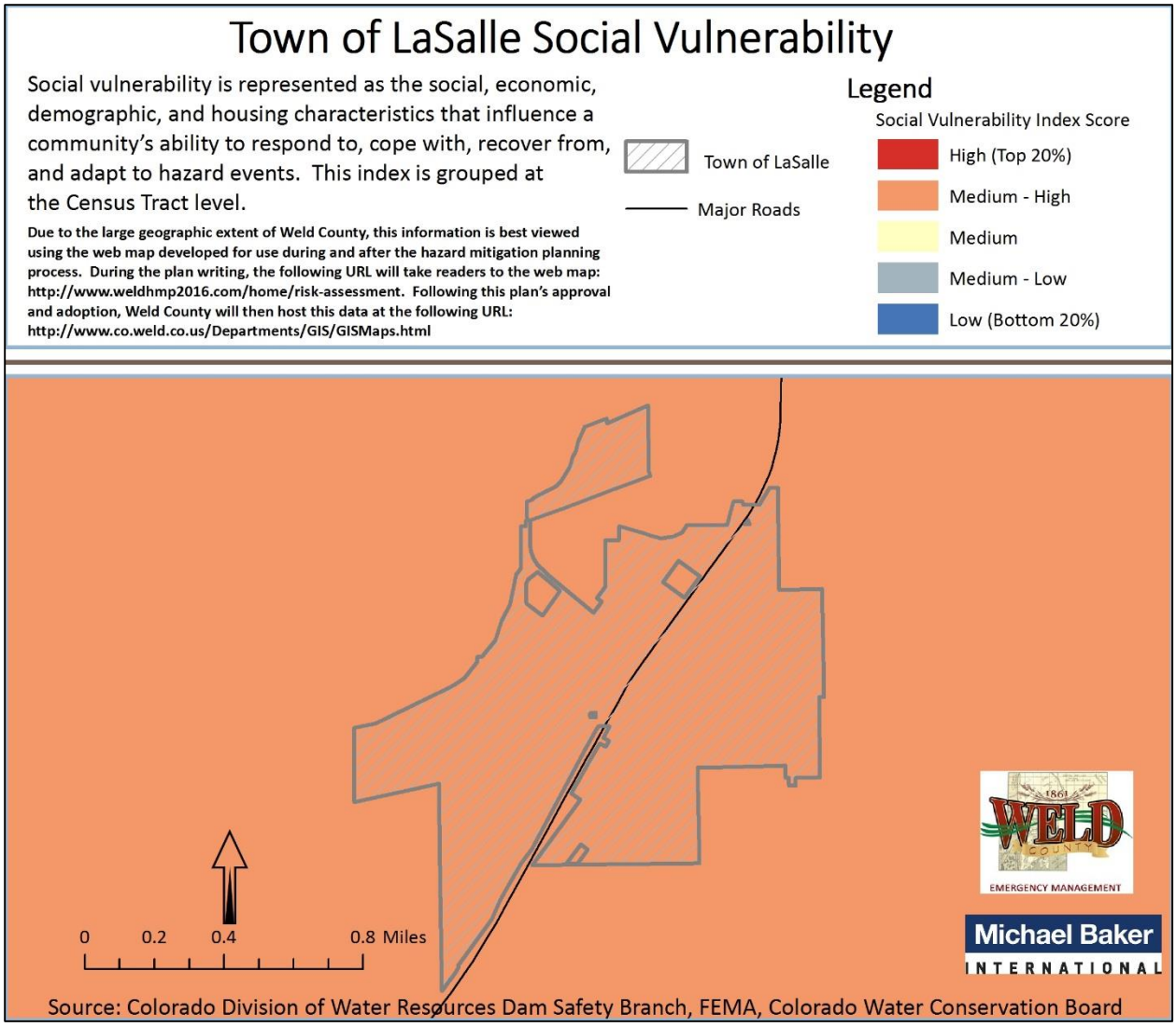
Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Drought	0.9	0.6	0.8	0.2	0.4	2.900
Extreme Temperatures	0.9	0.6	0.8	0.2	0.4	2.900
Public Health Hazards	0.9	0.6	0.8	0.2	0.4	2.900
Severe Storm	0.9	0.6	0.8	0.2	0.4	2.900
HAZMAT	0.9	0.6	0.8	0.2	0.4	2.900
Straight-Line Winds and Tornadoes	0.9	0.6	0.8	0.2	0.2	2.700
Flood	0.9	0.3	0.6	0.2	0.4	2.400
Earthquake	0.3	0.6	0.8	0.2	0.1	2.000
Land Subsidence	0.6	0.3	0.6	0.2	0.2	1.900
Prairie Fire	0.6	0.3	0.4	0.2	0.2	1.700
HIGH RISK (2.5 or higher): Drought; Extreme Temperatures; Public Health Hazards; Severe Storm; HAZMAT; Straight-Line Winds and Tornadoes						
MODERATE RISK HAZARD (2.0 - 2.4): Flood; Earthquake						
Low Risk (1.9 or lower): Land Subsidence; Prairie Fire						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of LaSalle, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to Town of LaSalle.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of LaSalle's social vulnerability map shows social vulnerability within the community.



The Town of LaSalle is characterized by medium-high levels of social vulnerability. Over time, it is critical that the town monitor their social vulnerability levels and work to decrease the factors that play a role in elevated risk and vulnerability to hazards. A closer analysis of the individual social vulnerability indicators within the town will give local emergency managers, planners, and stakeholders a clear idea of which social vulnerability factors have the largest negative effect on the community and it resiliency.

Drought

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of LaSalle due to drought. There are four reports of drought in southern Weld County. The four drought events all occurred in April of 2002 and March of 2011. There is a great potential for a drought event to occur at any given time.

Inventory Exposed

Drought will have little to no direct impact on critical facilities or structures in the Town of LaSalle. Should a drought affect the water available for public water systems or individual wells, the availability of clean

drinking water could be compromised. This situation would require emergency actions and could possibly overwhelm local capacities and financial resources.

Potential Losses

Although it is unlikely that drought conditions will affect existing buildings, infrastructure, and critical infrastructure, economic livelihoods in the Town of LaSalle could be negatively impacted due to crop loss, water shortages, and wildfires as a result of drought. Possible losses/impacts to critical facilities include the loss of critical function due to low water supplies.

As LaSalle continues to grow, it will consider water-saving mitigation activities that will decrease local vulnerability to drought.

Extreme Temperatures

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of LaSalle due to extreme temperatures. There are two reports of extreme cold temperatures in central and southern Weld County on December 16-17, 1996. There is a great potential for extreme temperature events to occur at any given time.

Inventory Exposed

Due to the regional nature of extreme temperatures hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of extreme temperatures. This includes places with high numbers of elderly residents, low income families and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to extreme temperatures. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, a high poverty rate and/or large numbers of rental properties can plan accordingly to provide appropriate services and mitigation assistance during extreme temperature events.

Populations Vulnerable to Extreme Temperatures			
	Age: 65 and Over (%)	**Persons Below Poverty Level (%)**	**Renter-occupied housing units (%)**
Colorado	10.9	12.9	34.5
Town of LaSalle	12.7	13.4	24.9

The Town of LaSalle has a higher percentage of elderly residents than does the state of Colorado. This is also true for the percentage of people living below poverty level in the Town. A slight larger percentage of LaSalle residents own their homes than the general population of Colorado. Based on these statistics, LaSalle residents (in general) do not appear to be acutely vulnerable to the impacts of extreme temperatures. That said, future mitigation efforts related to extreme temperature should focus on reaching those residents who are elderly, live in poverty or are homeless, or are renters.

Potential losses

Because there is no defined geographic boundary for extreme temperature hazards, all of the people and infrastructure within the Town of LaSalle are exposed to extreme temperatures. Those with elevated risk and potential loss are the homeless, infirm, elderly, and low income families. Given the lack of historical data and limited likelihood of structural losses in the Town of LaSalle resulting from extreme heat or cold,

and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the Town of LaSalle due to extreme temperatures are currently considered unquantifiable.

Public Health Hazards

Public health hazards, including epidemics and pandemics, have the potential to cause serious illness and death, especially among those who have compromised immune systems due to age or underlying medical conditions. During the 2015 planning process, pandemic flu was identified as the key public health hazard in the county.

Inventory Exposed

Due to the regional nature of public health hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of public health hazards. This includes places with high numbers of elderly residents, young children, low income families, and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to public health hazards. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, young children, and a high poverty rate can plan accordingly to provide appropriate services and mitigation assistance during public health hazards outbreaks.

Populations Vulnerable to Public Health Hazards			
	Age: 65 and Over (%)	**Age: 5 and under (%)**	**Persons Below Poverty Level (%)**
Colorado	10.9	6.8	12.9
Town of LaSalle	12.7	7.0	13.5

The Town of LaSalle has a slightly lower percentage of elderly residents than the state of Colorado. A slightly larger percentage of LaSalle residents are under the age of 5 than the general population of Colorado. There is a slightly greater percentage of people living below poverty level than the state. Based on these statistics, LaSalle residents (in general) do not appear to be acutely vulnerable to the impacts of public health hazards. That said, future mitigation efforts related to public health hazards should focus on reaching those residents who are elderly, young children, live in poverty, or are homeless.

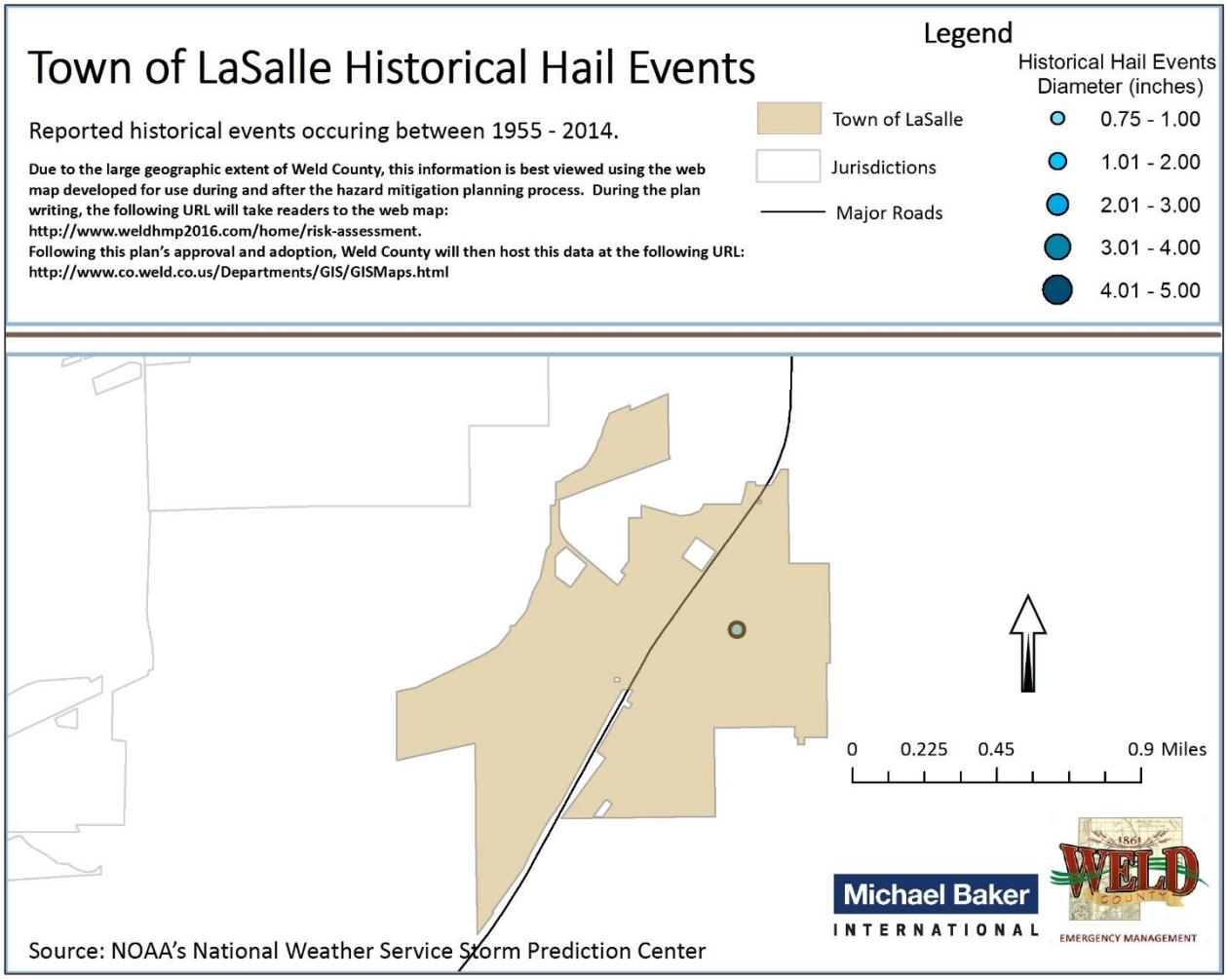
Potential Losses

Because there is no defined geographic boundary for public health hazards, all of the people and infrastructure within the Town of LaSalle are exposed to public health hazards. Those with elevated risk and potential loss are the homeless, infirm, elderly, young and low income families. Given the lack of historical data in the Town of LaSalle resulting from public health hazards, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the Town of LaSalle due to public health hazards are currently considered unquantifiable.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, or damage in the Town of LaSalle. There have been 3 hail events reported within the town limits. Based on the historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the best available data, no injuries, no deaths, or crop damage have occurred within the Town of LaSalle due to Lightning. There has been 1 recorded lightning incident on June 8, 1996 within the town limits, causing $1,000 in property damage. Based on the historic data showing hazardous impacts on the town, there is a great potential for Lightning to occur at any given time.

Winter Storm

According to the best available data, the Town of LaSalle has experienced 25 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. There were no deaths, injuries or damage to crops reported for any of these storms. The Town of LaSalle is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the Town of LaSalle can be considered at risk from severe storms. This includes 2,047 people, or 100% of the town's population, and all buildings and infrastructure within the city. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

Severe storms affect the entire planning area of the Town of LaSalle including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of LaSalle. It is likely that lightning and hail will also be experienced in the area due to such storms.

HAZMAT

Based on data supplied by the Pipeline and Hazardous Materials Safety Administration's (PHMSA) Incident Reports Database there have been 8 reported HAZMAT incidents within the Town of LaSalle between 1972 and 2015.

Inventory Exposed

US 85 runs through the Town of LaSalle and is a designated nuclear and hazardous materials transportation route. All structures, natural resources, and people located within one mile of these transportation routes (and railways) are exposed to the impacts of a potential HAZMAT event. Structures, people, and natural resources located outside of a one mile buffer of these routes are also at risk of exposure.

Assets and people that are located within one mile of an industrial or commercial fixed site are also at risk of exposure to the impacts of a HAZMAT release.

Potential Losses

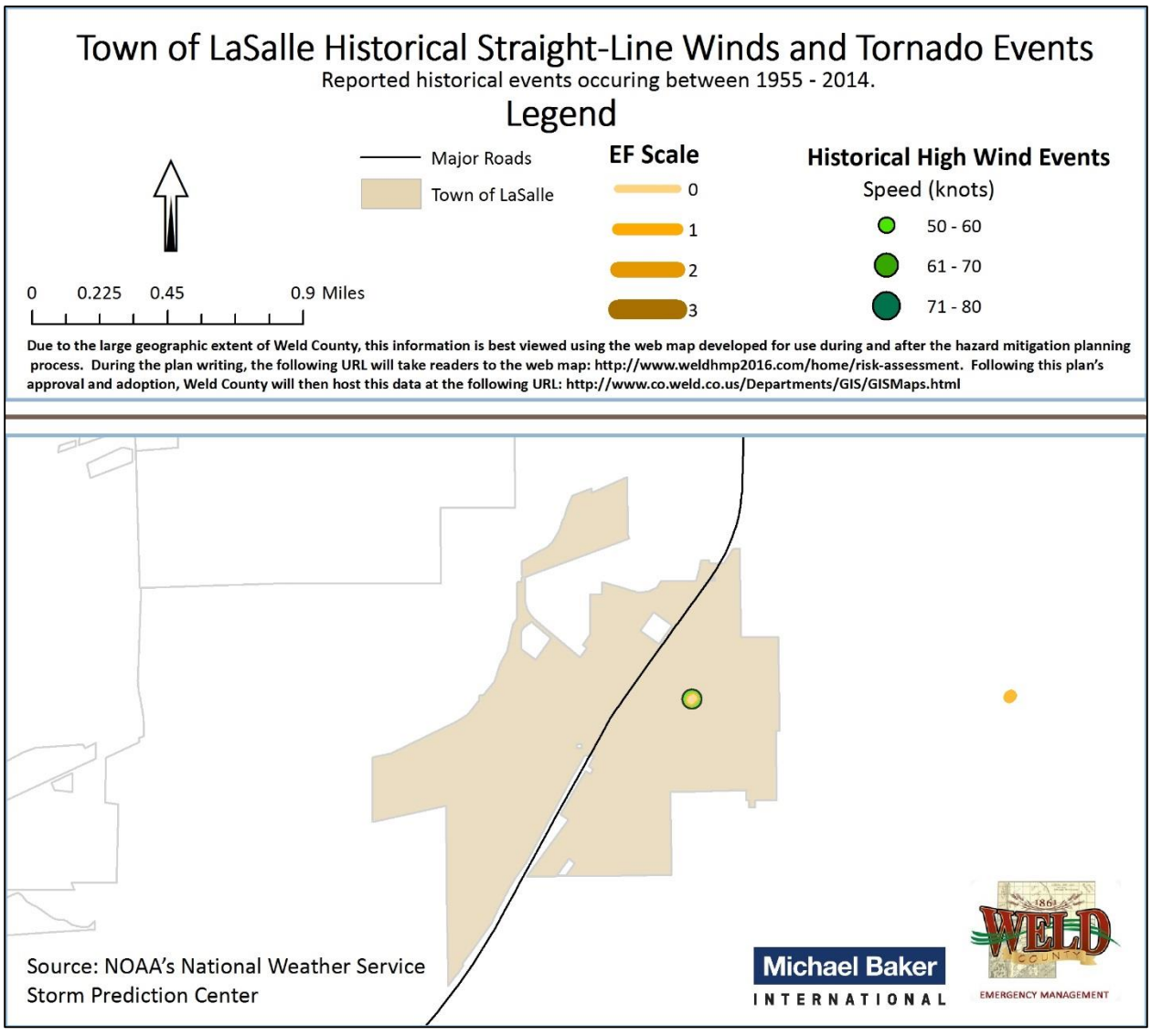
HAZMAT related events occur throughout Weld County every year. The intensity and magnitude of these incidents depend on weather conditions, the location of the event, the time of day, and the process by which the materials are released. *Was it raining when the event happened? Were the hazardous materials being transported by rail when they were released or were they at a fixed facility? Did the spill happen during rush hour traffic or in the middle of the night?* All of these considerations matter when determining the risk and potential damages associated with a HAZMAT incident.

HAZMAT events have the potential to threaten lives and disrupt business activity. Moreover, HAZMAT incidents can cause serious environmental contamination to air, ground, and water sources.

Straight-Line Winds and Tornadoes

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of LaSalle due to tornadoes. There is record of 2 tornadoes reported within the town limits between 1976 and 1984. On August 1, 1984 a tornado caused $3,000 in property loss. There have been tornadoes reported close to the borders of the town limits as well. Tornadoes will remain a highly likely occurrence for the Town of LaSalle.

According to the best available data, no injuries, deaths, or damages have been recorded within the Town of LaSalle due to straight-line winds. There have been 2 reported high wind events between 1956 and 2013 within the town limits. Straight-line winds remain a highly likely occurrence for the Town of LaSalle.



Inventory Exposed

All assets located in the Town of LaSalle can be considered at risk from straight-line winds and tornadoes. This includes 2,047 people, or 100% of the town's population, and all buildings and structures within the city. Most structures, including the town's critical facilities, should be able to withstand and provide

adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $69,447,406. Potential losses could be substantial.

Capabilities Assessment

The capability assessment examines the ability of the Town of LaSalle to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager		X	
Floodplain Administrator		X	
Community Planner		X	
GIS Specialist			X
Grant Writer		X	

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	Y
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	N
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	N

An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	Y
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. Town of LaSalle has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of LaSalle has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of LaSalle	*The town will pass resolutions with annual review* *Public comments will be solicited on an annual basis or whenever changes to mitigation actions and/or priorities occur*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of LaSalle did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of LaSalle based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of LaSalle	*"The town will do "anything we need to" in order to integrate the actions identified in the HMP with existing planning efforts. This includes updating its zoning, ordinances, and building codes on a regular schedule in order to address high risk hazards."*

Mitigation Action Guides

The following Mitigation Action Guide presents a status update of LaSalle's mitigation action that was included in the 2009 Plan.

Town of LaSalle: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Town of LaSalle	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continued compliance with the NFIP	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES:	

The following Mitigation Action Guides present each of the community's new mitigation actions that were developed for the 2016 Plan.

Town of LaSalle: Community Preparedness Education	
PRIORITY: High	**HAZARDS ADDRESSED: Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat**
LOCATION: Town of LaSalle	**GOALS ADDRESSED: 1,3**
RECOMMENDATION DATE: 10.06.2015	**OBJECTIVES ADDRESSED: A, B**
TARGET COMPLETION DATE: 10.06.2020	
ISSUE: There are many emergency management issues that need to be reinforced with public education so that citizens know what risks they face, what protective actions they can take, and what government programs are in place to assist them.	
RECOMMENDATION: The potential for saving just one life, and providing time for individuals and businesses to take effective protective actions, outweighs the potential cost of the public education program. Public Education may be the most effective and least-expensive way to reduce disaster losses by changing human behavior to promote appropriate actions	
ACTION: Establish an ongoing or annual Public Education campaign regarding Hazards and Emergency Management	

LEAD AGENCY: Town of LaSalle	**EXPECTED COST:** $2,500 for printing and distribution costs
SUPPORT AGENCIES: County Emergency Management, First Responder Agencies, State DHSEM, FEMA	**POTENTIAL FUNDING SOURCES** HMPG, SHSG, Local budgets and private partner cost share.
PROGRESS MILESTONES: Since 2009, Weld County OEM and many participating jurisdictions have continued to make public preparedness outreach and education a priority. The Town of LaSalle will continue to work with Weld County OEM on community preparedness education and hazard identification.	

Town of LaSalle: Develop Upkeep Schedule for Emergency Power System	
PRIORITY: Medium	**HAZARDS ADDRESSED: Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado**
LOCATION: Project location LaSalle	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 10.06.15	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: In Colorado, there are a number severe weather events that could cause a power outage to the Town Offices and facilities. In case of an emergency, there are several town employees who need to stay connected to town networks and communication systems. Town offices are also used for command posts, damage assessment data collection points and information points for citizens	
RECOMMENDATION: The Town has a generator for backup power, continued maintenance to keep the generator operation will allow the town to stay operational during emergencies.	
ACTION: Town staff will test and maintain the operational condition of the generator.	
LEAD AGENCY: LaSalle Town Staff	**EXPECTED COST:** Annual budget will meet this need.
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES annual budget**
PROGRESS MILESTONES: funding will be included in annual budgets.	

Jurisdiction or Organization: Town of LaSalle	
PRIORITY: Ongoing Program	**HAZARDS ADDRESSED: Flood, Severe Storm,**
LOCATION: Project location	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 12.1.2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 12.1.2018	
ISSUE: the Town of LaSalle has a current Storm Water Plan that has identified North 1st Street as a drainage improvement area that is necessary to Mitigate the flooding of business and streets from floods and storm water. The Town of LaSalle has its own storm water utility program which generates	

revenue to manage storm water issues. As this is an ongoing program, 1st Street has been determined by the Town Board as the first project for the storm water program. Once this project is completed in 2016 the Board will again address the next issue in the 2017 budget.	
RECOMMENDATION: The Town of LaSalle intends, over time, to implement on ongoing plan of storm water improvements, including, but not limited to valley pans, storm boxes, storm piping and manhole lids with proper language on polluting the rivers. This program may include most of the town over the next few years, however the Town has not prioritized the program past the budget year 2016.	
ACTION: Implement the high priority actions of the town's storm water plan.	
LEAD AGENCY: Town of LaSalle Public Works	**EXPECTED COST:** Storm water improvements on 1st Street on 2015-2016 is 80,000.00
SUPPORT AGENCIES: Be specific	**POTENTIAL FUNDING SOURCES:** Storm water utility fees, general fund and in-kind labor serve as match for grants.
PROGRESS MILESTONES: Improvements to 1st Street has been started in 2015 with the majority of that project completed. Completion to be accomplished in 2016, The Town Board will identify and prioritize addition projects.	

Letter of Intent to Participate

LETTER OF INTENT TO PARTICIPATE
Town of LaSalle

September 2, 2015

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

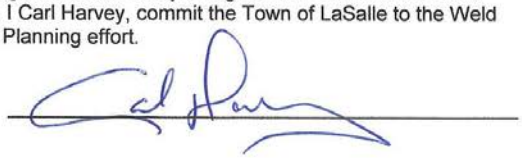
In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of LaSalle is submitting this letter of intent to confirm that the Town of LaSalle has agreed to participate in the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Town of LaSalle agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

Town of LaSalle understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

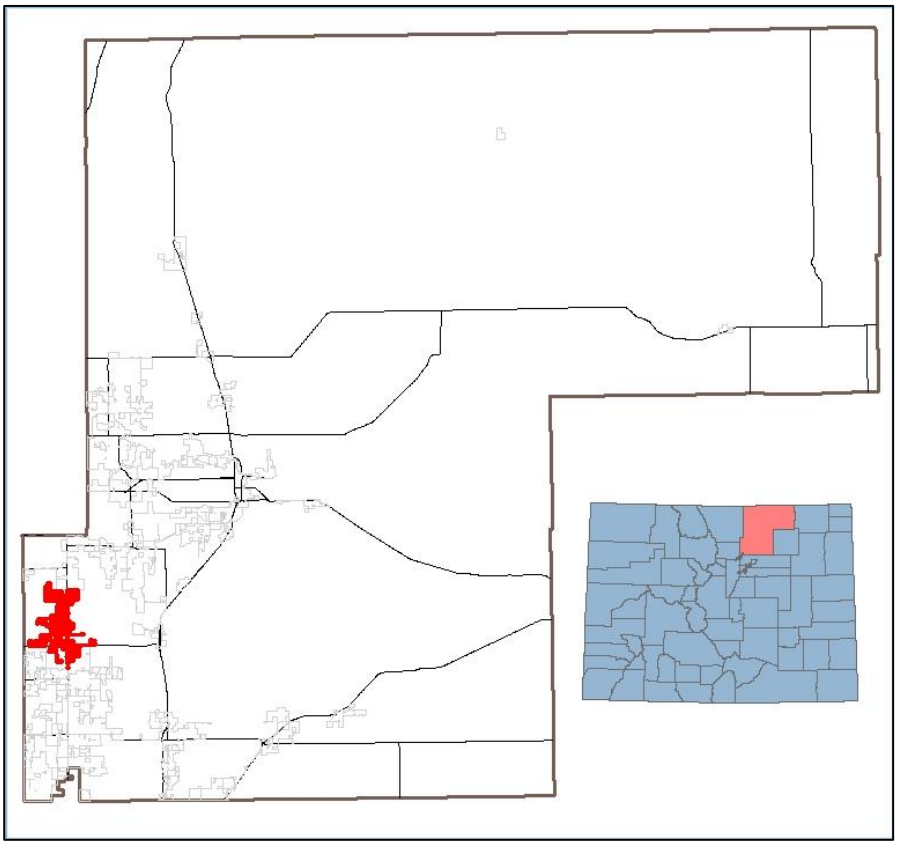
- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Carl Harvey, commit the Town of LaSalle to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 2nd day of September, 2015 

Town of Mead

The Town of Mead is located just east of Interstate 25 on the western edge of Weld County. The town sits approximately 35 miles north of the State Capital in Denver at an elevation of 5,003 feet above sea level. The town's total area is 4.4 square miles. Mead was established in 1908 when the Great Western Railroad built a feeder line from Longmont to Johnstown to gather and take sugar beet harvest to a refinery in Longmont.



Community Profile

The table below summarizes key demographic and development related characteristics of the Town of Mead.

Town of Mead Statistics		
	Town of Mead	Colorado
Population, 2010	3405	5,029,196
2000-2010 Population Change, %	40.7%	14.5%
% Population under 5 years, 2010	7.3%	6.8%
% Population under 19 years, 2010	25.1%	20.3
% Population 65 years and over, 2010	6.3%	10.9%
Language other than English spoken at home, % age 5+, 2009-2013	5.9%	15.9%
Homeownership Rate 2010	88.3%	65.5%

Persons Per Household 2010	2.9	2.57
Persons below poverty level, %, 2013	4.7%	13.2%
Median Household Income, 2013	$87,132	$58,433

Source: US Census Bureau

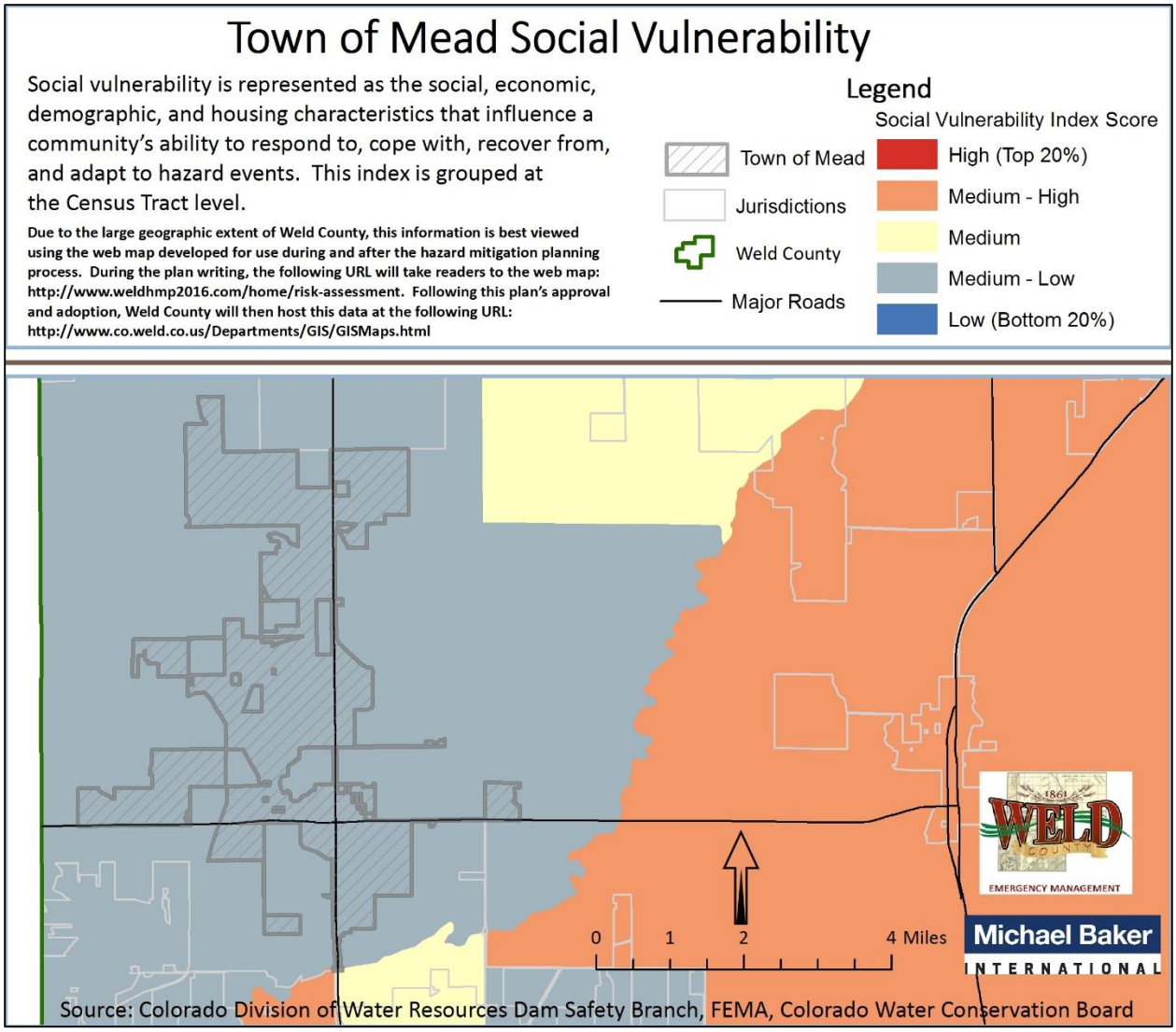
Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Severe Storm	0.90	0.90	0.60	0.40	0.10	**2.90**
Straight-Line Winds & Tornadoes	0.90	0.60	0.60	0.40	0.10	**2.60**
HAZMAT	0.90	0.60	0.40	0.40	0.10	**2.40**
Flood	0.60	0.60	0.40	0.40	0.10	**2.10**
Extreme Temperatures	0.90	0.30	0.60	0.10	0.10	**2.00**
Drought	0.60	0.30	0.40	0.10	0.40	**1.80**
Public Health Hazards	0.60	0.60	0.40	0.10	0.10	**1.80**
Prairie Fire	0.30	0.30	0.20	0.40	0.10	**2.00**
Land Subsidence	0.60	0.30	0.20	0.10	0.10	**1.30**
Earthquake	0.30	0.30	0.40	0.10	0.10	**1.20**
HIGH RISK (2.5 or higher) : Severe Storm; Straight-Line Winds & Tornadoes						
MODERATE RISK HAZARD (2.0 - 2.4): Prairie Fire; Extreme Temperatures; Flood; HAZMAT						
Low Risk (1.9 or lower): Earthquake; Land Subsidence; Public Health Hazards; Drought						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Mead, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to Town of Mead.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Mead's social vulnerability map shows social vulnerability within the community.

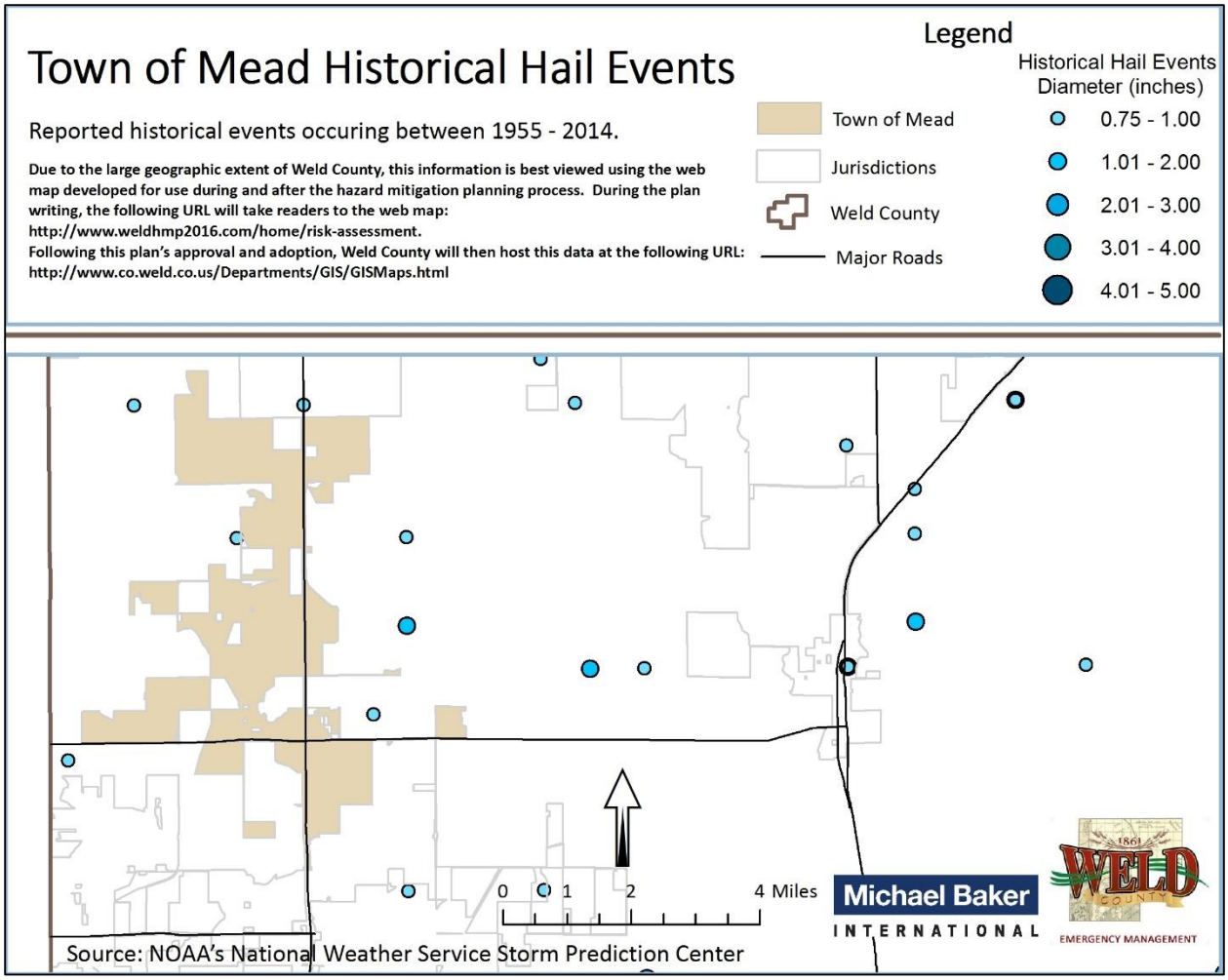


The Town of Mead is characterized by medium-low levels of social vulnerability. Currently, the social vulnerability indicators that contribute to higher vulnerability to hazards in the town are lower than they are in the majority of Weld County. This does not mean, however, that there a not any vulnerable populations living in Mead. Over time, the town should continue to monitor their social vulnerability as demographic, economic, and housing related conditions change.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to NOAA's Storm Events Database there have been no reported injuries, deaths, property damage, or crop damage due to hail events in the Town of Mead. There were several hail events that occurred less than one mile from the town limits, none of which reported injuries, deaths, property damage, or crop damage. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

NOAA's Storm Events Database reports no injuries, deaths, property damage, or crop damage caused by lightning in the Town of Mead. Although there is no historic data showing hazardous impacts on the town, there is a great potential for lightning to occur at any given time.

Winter Storm

According to NOAA's Storm Events Database, the Town of Mead has experienced 25 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. There were no deaths, injuries or damage to crops reported for any of these storms. The Town of Mead is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the Town of Mead can be considered at risk from severe storms. This includes 3,405 people, or 100% of the town's population and all buildings and infrastructure within the Town. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail

but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

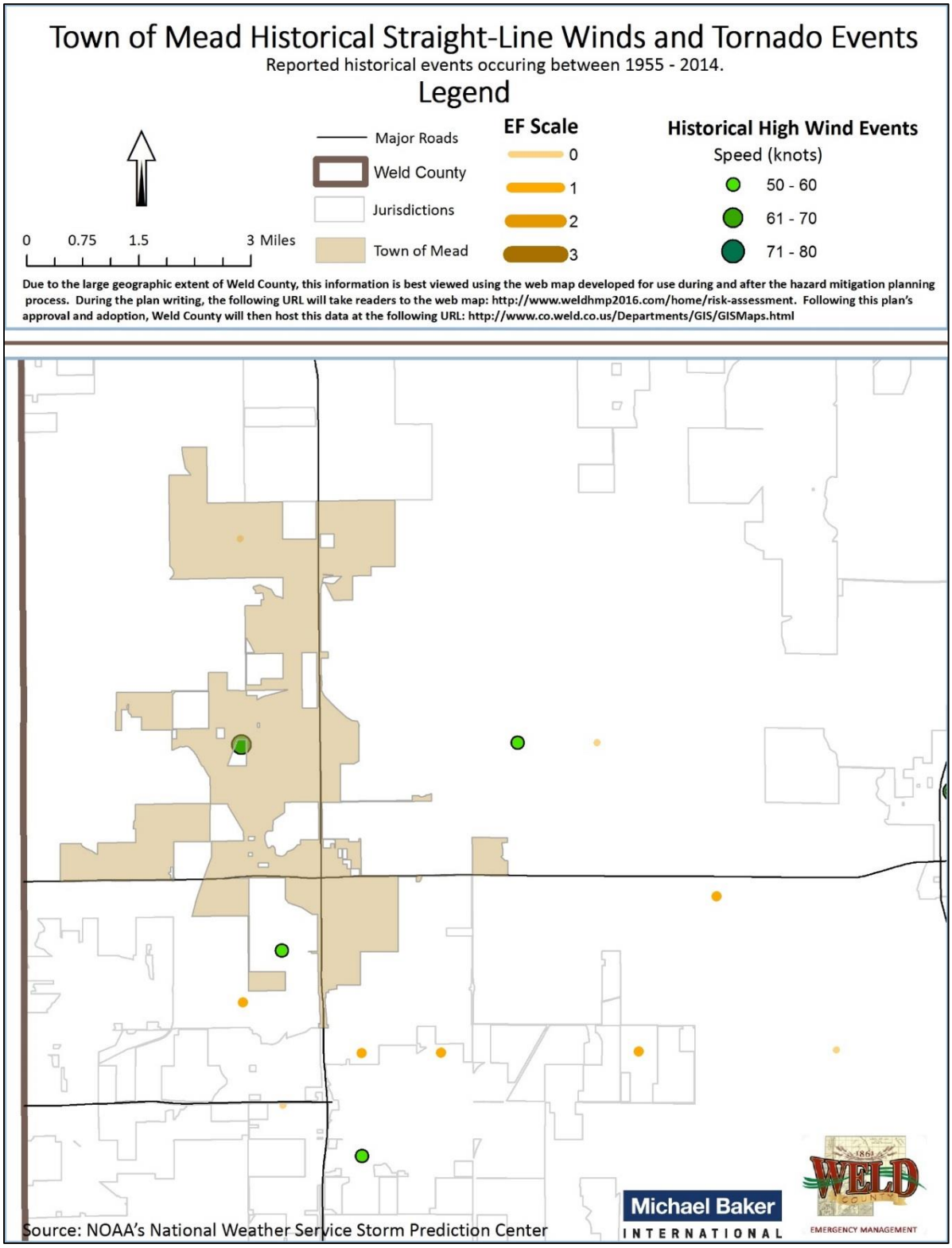
Severe storms affect the entire planning area of the Town of Mead including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of Mead. It is likely that lightning and hail will also be experienced in the area due to such storms.

Straight-Line Winds & Tornadoes

According to NOAA's Storm Events Database, no injuries, deaths, property damage, or crop damages have been recorded within the Town of Mead due to tornadoes. On May 8, 2003 there was a tornado within the town of Meads corporate limits. There have been tornadoes reported very close to both the eastern and southern borders of the Town limits. Tornadoes will remain a highly likely occurrence for the Town of Mead.

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Mead due to straight-line winds. On June 12, 1994 there were high winds reported within the town limits that incurred property damages. Straight-line winds will remain a highly likely occurrence for the Town of Mead.



Inventory Exposed

All assets located in the Town of Mead can be considered at risk from straight-line winds and tornadoes. This includes 3,405 people, or 100% of the Town's population and all buildings and structures within the

County. Most structures, including the town's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $340,245,966. Potential losses could be substantial.

Capabilities Assessment

The capability assessment examines the ability of the Town of Mead to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager		X	
Floodplain Administrator			X
Community Planner		X	
GIS Specialist			X
Grant Writer		X	

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	IDK
Local building codes	Y

A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	N

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Mead has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of Mead has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Mead	*"Our mitigation action plan will be reviewed and updated if needed by our Town Manager and Public Works Operations Manager on an annual basis. The Board of Trustees will review the plan anytime it is changed and anytime a new Trustee joins the Board."* *"Any change to the plan will be posted to our website and at Town Hall in the Board Packet for the meeting at which the changes will be considered. Members of the community may contact staff before the meeting or speak up during the time for public comment at the Board of Trustees meeting."*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Ault did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Mead based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Mead	*"We will identify hazards when we update our comprehensive plan and integrate mitigation actions into our operations, maintenance, and strategic development plans."*

Mitigation Action Guides

The following Mitigation Action Guide presents a status update of Mead's mitigation action that was included in previous hazard mitigation plans.

Town of Mead: Communities with NSFHA or Never Mapped should consider joining NFIP for the availability of insurance, especially if growing/annexing rapidly.	
PRIORITY: HIGH	**HAZARDS ADDRESSED:** Flooding
LOCATION: Mead	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 2004/2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: Mead has never been mapped for flood hazards. As such, they chose not to join the NFIP. Currently, because they do not participate in the NFIP, flood insurance is unavailable to building owners. However, as communities grow and annex land from the County, they may be acquiring land that is flood prone or subject to drainage problems. A community can join the NFIP by adopting an ordinance and agreeing to regulate development in flood prone areas, as indicated on a FEMA-provided map. Where there is no map, no enforcement is necessary ---- but ---- having adopted the ordinance will allow building owners to purchase flood insurance if they so choose.	
RECOMMENDATION: Communities should contact the CWCB and ask to join the NFIP	
ACTION: Communities with NSFHA or Never Mapped should consider joining NFIP for the availability of insurance, especially if growing/annexing rapidly. In cases where there is a known watercourse within the existing or expanding community boundaries, the community should request CWCB and/or FEMA to develop a floodplain map that can be used for regulatory and insurance purposes.	
LEAD AGENCY: Communities	**EXPECTED COST:** Staff time only for initial inventory and discussion of protection methods, and cost-benefit analysis.
SUPPORT AGENCIES: CWCB, FEMA	**POTENTIAL FUNDING SOURCES:** There is no cost for the initial inventory and decision-making. Protective measures should be taken where cost-effective.
PROGRESS MILESTONES: Updated 10/8/2015: Mead adopted floodplain management policies in its municipal code: Section 16-12. The Town has not joined the NFIP.	

The following Mitigation Action Guides each of the community's new mitigation actions that were developed for the 2016 Plan.

Town of Mead: Policy Group Training for Elected Officials	
PRIORITY: High - 26	**HAZARDS ADDRESSED: All**
LOCATION: Mead or Weld County	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 10/7/2015	**OBJECTIVES ADDRESSED: B, C**
TARGET COMPLETION DATE: 12/31/2016	

ISSUE: The Town of Mead does not currently have an emergency preparedness plan. While many of the tactical and strategic decisions will be handled by partner agencies, such as Mountain View Fire and Protection District, Weld County OEM, and Weld County Sheriff's Office, the Town of Mead Board of Trustees must be prepared to make policy decisions and must undergo training to understand what a Policy Group is and what its roles are and are not in an emergency.	
RECOMMENDATION: Offer Policy Group training to the Town of Mead Board of Trustees.	
ACTION: Weld County OEM is considering offering Policy Group training in the winter of 2015/2016. If they do hold this training, Town of Mead Trustees should attend. If Weld County does not hold this training, the Town of Mead should invite Dave Burns, City of Evans Emergency Manager, to lead a training specific to the Town.	
LEAD AGENCY: Town of Mead	**EXPECTED COST:** Food, travel expenses, < $350
SUPPORT AGENCIES: Weld County OEM	**POTENTIAL FUNDING SOURCES:** Existing training budget
PROGRESS MILESTONES:	

Town of Mead: Acquire Back-up Power for Public Works	
PRIORITY: High - 28	**HAZARDS ADDRESSED: All**
LOCATION: Town of Mead Public Works	**GOALS ADDRESSED: 1, 2, 4**
RECOMMENDATION DATE: 10/7/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 12/31/2016	
ISSUE: While the Town of Mead Public Works building has a generator for back-up power, it does not have the capability to connect the generator to the building so that it is effective. If a disaster affects the power grid, the Public Works building, which is also the main headquarters for all tactical responses from the Town of Mead, will be rendered useless.	
RECOMMENDATION: Use money appropriated to Public Works in the Town of Mead 2016 budget to equip the Public Works building with access to back-up power.	
ACTION: Supply and install 200 amp transfer switch and receptacle for the existing generator to plug into. This will power the Public Works building in the event of a power outage.	
LEAD AGENCY: Town of Mead	**EXPECTED COST:** $2,455.
SUPPORT AGENCIES: None	**POTENTIAL FUNDING SOURCES:** Public Works budget for 2016
PROGRESS MILESTONES:	

Mead: Update Policies and Plans with Mitigation Principles	
PRIORITY: High	**HAZARDS ADDRESSED: All**
LOCATION: Mead	**GOALS ADDRESSED: 1, 2, 4**

RECOMMENDATION DATE: 12/3/2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 12/31/2016	
ISSUE: The current drainage master plan is out-of-date, and there is no current Wastewater Master Plan. The Town's Comprehensive Plan also needs updating. Several area disasters have affected the surrounding region since the last plans were created, including floods and tornadoes, and the Town has grown in population, creating new risks and changing the impact of those risks that might have been previously considered.	
RECOMMENDATION: Incorporate mitigation principles into policy documents and plans.	
ACTION: Incorporate Town of Mead's hazard and risk assessment as determined in the 2016 Weld County Hazard Mitigation Plan into the Town's Comprehensive Plan Update scheduled for 2016, as well as into the Drainage Master Plan and Wastewater Master Plan. Consider especially actions that can be taken to mitigate the high risk hazards of storm, winds, and tornado, as well as the moderate risks of prairie fire, extreme temperatures, flood, and HAZMAT spills.	
LEAD AGENCY: Town of Mead	**EXPECTED COST:** Drainage Master Plan: $70,000 Wastewater Master Plan: $50,000 Comprehensive Plan: $120,000
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Town of Mead General Fund, Drainage Fund, and Sewer Enterprise Fund. Comprehensive plan: Department of Local Affairs Grant
PROGRESS MILESTONES:	

Letter of Intent to Participate

November 24, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Mead is submitting this letter of intent to confirm that Town of Mead has agreed to participate in the Weld County's] Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Town of Mead agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

Town of Mead understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Town of Mead • 441 Third Street • P. O. Box 626 • Mead, Colorado 80542-0626 • 970-535-4477 • www.townofmead.org

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Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Dan Dean, Town Manager, commit the Town of Mead to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 24th day of November, 2014

Dan Dean, Town Manager

Town of Milliken

Based on Milliken's recent comprehensive plan update, *Envision Milliken*, the town's vision for growth and future development is based on eight "guiding principles." These principles serve as a framework for organizing planning, goals, policies, and recommended actions to help the community implement its vision over time. The town's guiding principles are as follows:

- A strong, diversified economic base
- A vibrant downtown that functions as the heart of the community
- A complete and highly accessible system of parks, open space, trails, and recreational opportunities
- A distinct community identity that reflects Milliken's cultural, archaeological, historical, and agricultural resources
- A fiscally sustainable pattern of development
- A diverse mix of housing types to meet the needs of residents of all ages, incomes, and abilities
- A safe and disaster resilient community
- A well-connected community

Milliken is committed to becoming a safer and more disaster resilient community—building on the strength and resolve demonstrated by Town residents and many community partners in the wake of the September 2013 flooding. The Town will continue its ongoing efforts to recover and rebuild from the 2013 flooding, while also seeking to minimize risk to life and property in light of possible future natural or human-caused disasters. Ongoing collaboration and communication with first responders and residents and a focus on designing new infrastructure to more readily withstand potential hazard events will increase the Town's ability to respond to and recover from future events.
– Envision Milliken, Town of Milliken Comprehensive Plan

Community Profile

The Town of Milliken was incorporated in 1910. Milliken is approximately 5.7 square miles with no large bodies of water. The town is primarily a farming community and sits six miles east of Interstate 25 in the western part of Weld County between the Town of Mead and the City of Greeley.

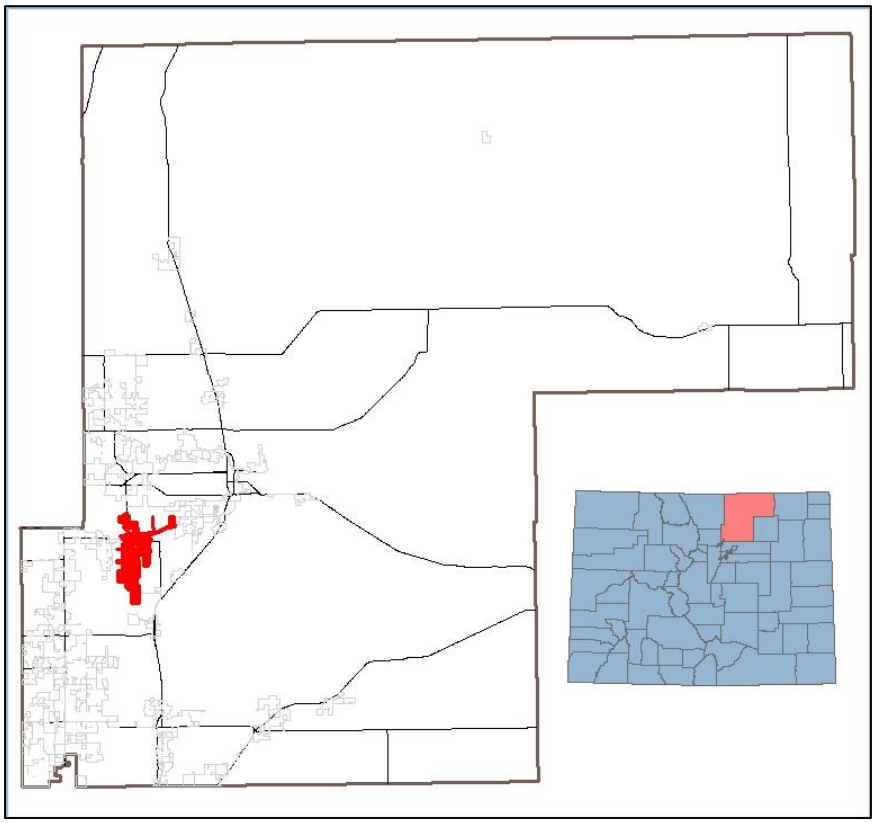
A large part of Milliken's planning area is part of a single Planned Unit Development (PUD)—the Centennial Master Plan—that is being developed incrementally over time. Currently, some portions of the original PUD are now being rezoned from industrial to multifamily residential use. Agricultural uses make up a large portion of the overall land use mix in the Town. Preserving and protecting Milliken's agricultural heritage continues to be a major priority for the community. As the town continues to grow, it will be important to balance the need for more land for greenfield development with preserving and protecting agricultural landscapes and uses.

Some of Milliken's key planning concerns include:

- **Population growth**: Milliken has seen large amounts of growth since the 1990s, the majority of which occurred between 1998 and 2005, as the Town increased in population from around 2,000

residents to over 5,200. This growth is predicted to continue in the future, which raises questions about whether the town has the land, infrastructure, and resources necessary to support a projected population increase of approximately 4,000 people in the next 15 years.

- **A young, but aging population**: Milliken is a relatively young community compared to the rest of Weld County and to Colorado. Overall, the Town has a larger population of young people and a smaller population of older adults. The majority of Milliken's population is under the age of 19. However, the residents of Milliken are getting older, as growth in new residents decreases and the existing population ages.
- **Growing Hispanic & Latino community**: While the majority of the population identifies as being white, there is a high concentration of residents of Hispanic or Latino origin living in Milliken. Efforts are being made to ensure members of this often under-represented community are included in planning processes and local governance.



The table below summarizes key demographic and development related characteristics of the Town of Milliken.

Town of Milliken Statistics		
	Town of Milliken	Colorado
Population, 2014	6,091	5,355,866
Population, % change April 1, 2010 to July 1, 2014	8.5%	6.5%
% Population under 5 years, 2010	9.6%	6.8%
% Population under 18 years, 2010	32.7%	24.4%
% Population 65 years and over, 2010	6.8%	10.7%

Language other than English spoken at home, % age 5+, 2009-2013	11.0%	16.8%
Homeownership Rate	78.5%	65.4%
Persons Per Household	3.19	2.53
Persons below poverty level, %, 2009-2013	3.4%	13.2%
Median Household Income, 2009- 2013	$66,134	$58,433

Source: US Census Bureau

Hazard Identification and Risk Assessment

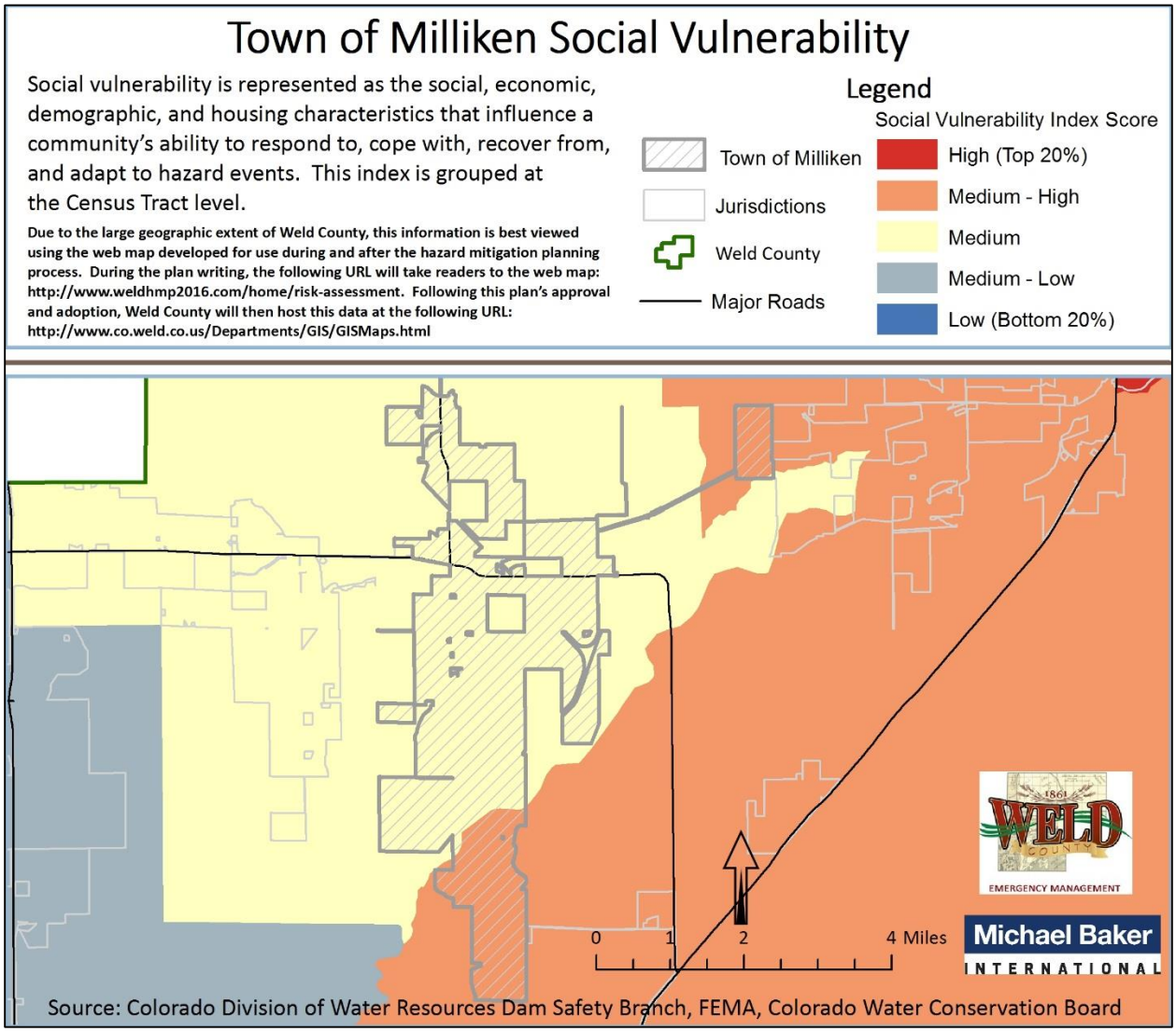
NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Straight-Line Winds & Tornadoes	0.90	0.90	0.60	0.40	0.20	**3.00**
Flood	0.90	0.90	0.60	0.20	0.30	**2.90**
Severe Storm	1.20	0.60	0.40	0.40	0.20	**2.80**
Prairie Fire	0.90	0.60	0.40	0.40	0.30	**2.60**
Land Subsidence	0.60	0.60	0.40	0.40	0.40	**2.40**
Extreme Temperatures	0.90	0.60	0.40	0.10	0.30	**2.30**
Drought	0.90	0.30	0.40	0.10	0.40	**2.10**
HAZMAT	0.60	0.60	0.20	0.40	0.20	**2.00**
Earthquake	0.90	0.30	0.20	0.40	0.10	**1.90**
Public Health Hazards	0.30	0.30	0.20	0.10	0.10	**1.30**
HIGH RISK (2.5 or higher): Straight-Line Winds & Tornadoes; Flood; Severe Storm; Prairie Fire						
MODERATE RISK HAZARD (2.0 - 2.4): Land Subsidence; Extreme Temperatures; Drought; HAZMAT						
Low Risk (1.9 or lower): Earthquake; Public Health Hazards						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Milliken, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Milliken.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the

county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Milliken's social vulnerability map shows social vulnerability within the community.

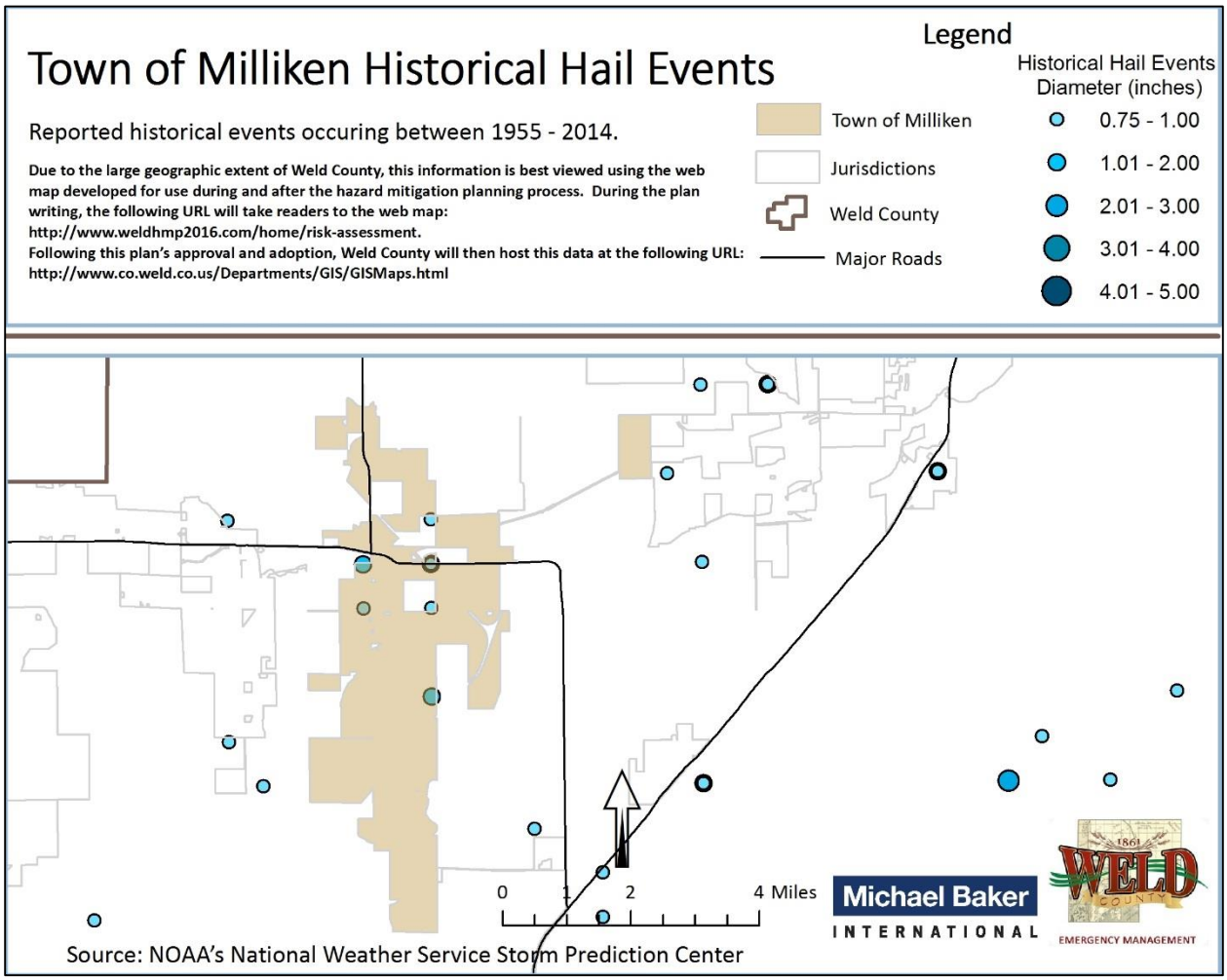


The Town of Milliken is characterized by medium and medium-high levels of social vulnerability. The southern area of the town has higher levels of social vulnerability to disasters than the rest of the community. There is also a pocket of highly socially vulnerable residents in the north east portion of the town. A closer look at the individual social vulnerability indicators within Milliken will give local emergency managers, planners, and stakeholders an even clearer picture of where resources should be prioritized in order to reduce vulnerability in the town. Over time, the town should continue to monitor their social vulnerability as demographic, economic, and housing related conditions change.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the Town of Milliken. There were several hail events that occurred within the town limits as well as several events less than one mile from the town limits, none of which reported injuries, deaths, property damage, or crop damage. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the National Climatic Data Center Storm Event Database the last recorded lightning strike in Milliken was on July 30, 2004. There were no injuries, deaths, property damage, or crop damage reported. Despite limited reporting of lightning strike events, there is potential for lightning to occur at any given time within the Town of Milliken.

Winter Storm

According to the best available data, the Town of Milliken has experienced 25 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. There were no deaths, injuries or damage to crops reported for any of these storms. The Town of Milliken is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the Town of Milliken can be considered at risk from severe storms. This includes 6,091 people, or 100% of the Town's population and all buildings and infrastructure within the town. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

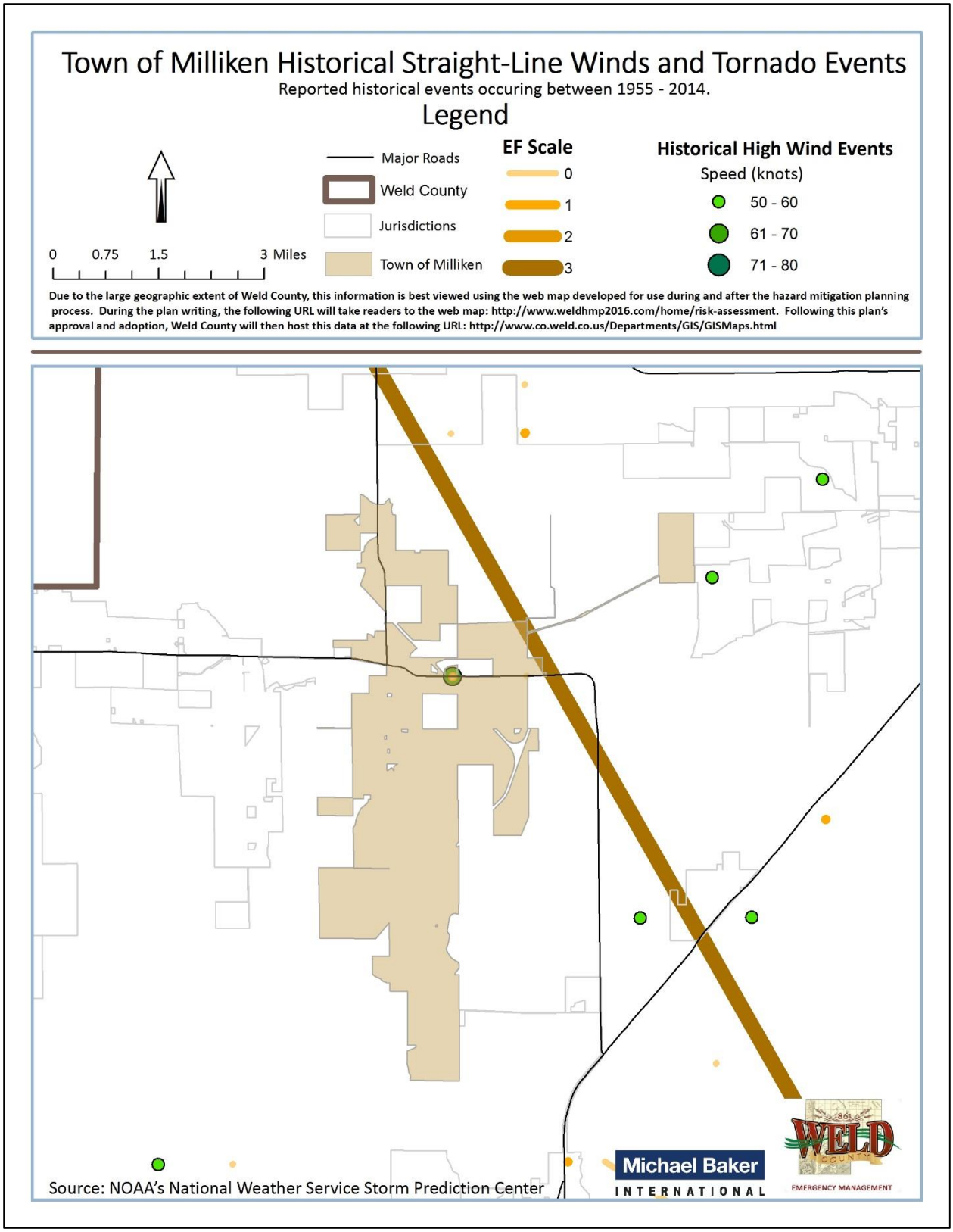
Severe storms affect the entire planning area of the Town of Milliken including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of Milliken. It is likely that lightning and hail will also be experienced in the area due to such storms.

Straight-Line Winds & Tornadoes

According to the best available data, 78 injuries, one death, $147,000 property damage, and no crop damages have been recorded within and near the Town of Milliken due to tornadoes. There have been 5 tornadoes in the Town of Milliken between 1991 and 2008. The most severe being a tornado that occurred on May 22, 2008. This tornado traveled in a path north to south east and caused damage to not only the Town of Milliken but also the towns of Windsor, Platteville, Gilcrest, Timnath, and the City of Greeley. There have been tornadoes reported very close to the Northern, eastern and southern borders of the Town limits as well. Tornadoes will remain a highly likely occurrence for the Town of Milliken.

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Milliken due to straight-line winds. On July 23, 1981 there were high winds reported within the town limits. There have been straight-line winds reported very close to the Northern, eastern and southern borders of the Town limits as well. Straight-line winds will remain a highly likely occurrence for the Town of Milliken.



Inventory Exposed

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All assets located in the Town of Milliken can be considered at risk from straight-line winds and tornadoes. This includes 6,091 people, or 100% of the town's population and all buildings and structures within the County. Most structures, including the town's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

Potential Losses

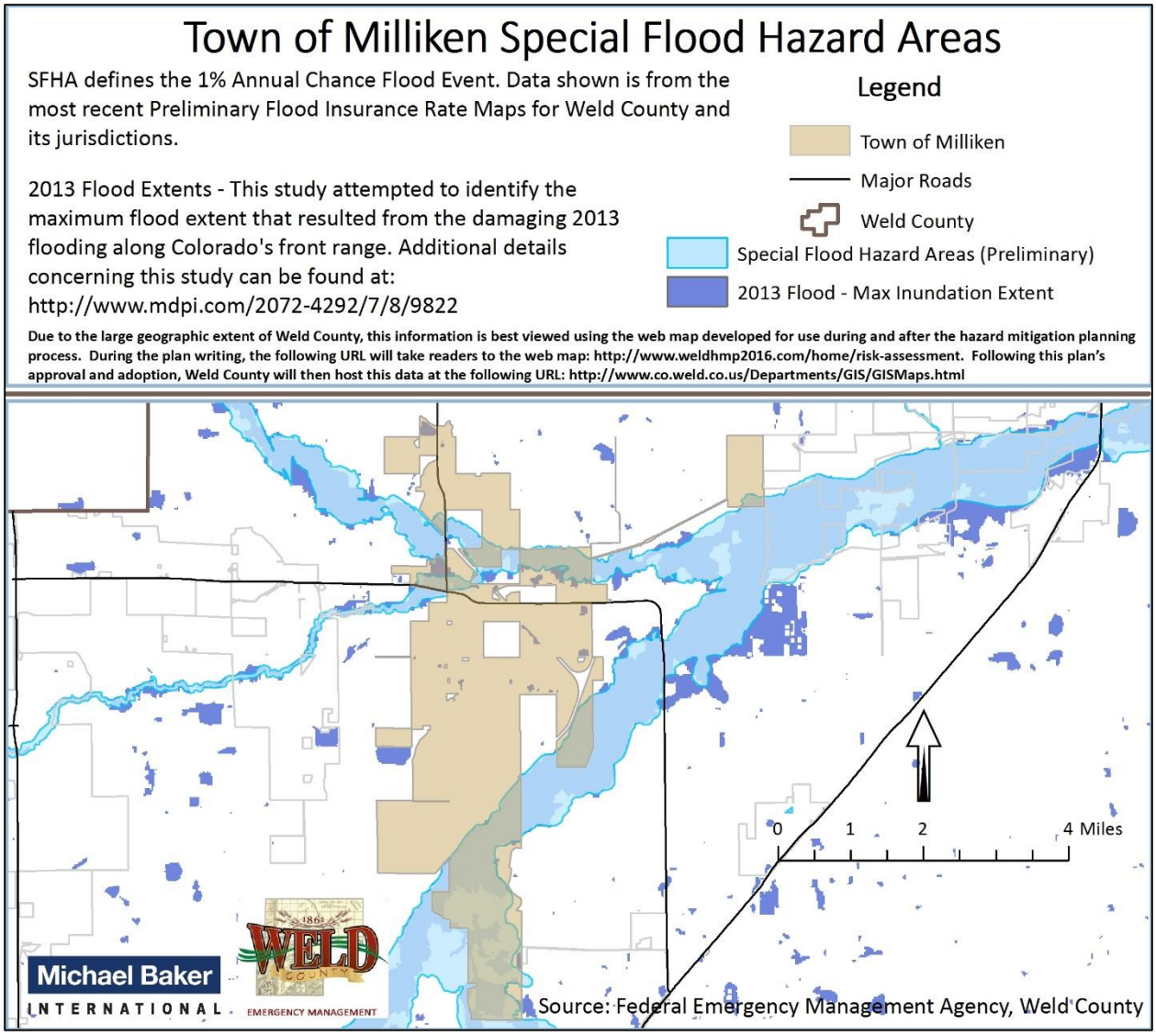
Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $265,987,214. Potential losses could be substantial.

Flood

In September 2013, Milliken experienced a devastating flooding event. Fifteen inches of rain fell in the region within a two-day period. This caused the town's three rivers, the Little and Big Thompson Rivers and the South Platte River, to reach flood stage levels. Below is a summary of the flood event provided by the town:

"The flooding impacted a large section of town, and forced the evacuation of residents of a number of neighborhoods, including the town's two mobile home parks. Forty three of the mobile homes were destroyed or severely damaged. The town submitted grant applications to acquire both mobile home parks, but no funding has been awarded at this point. The floodwaters also damaged important roadways. During the floods, Milliken was essentially surrounded by water, making leaving or entering the town by road impossible. Sections of CR 23 and CR 46 were severely damaged and have yet to be fully repaired. Fortunately, no fatalities were reported in town as a result of the flooding. Sewer backups and failures occurred as a result of the flooding, both of which have since been replaced or retrofitted."

The map below shows special flood hazard areas (SFHA) within the town of Milliken. The maximum inundation extent boundary from the 2013 flood is also depicted on the SFHA map. There is a high potential for flood events to occur within Milliken at any given time.



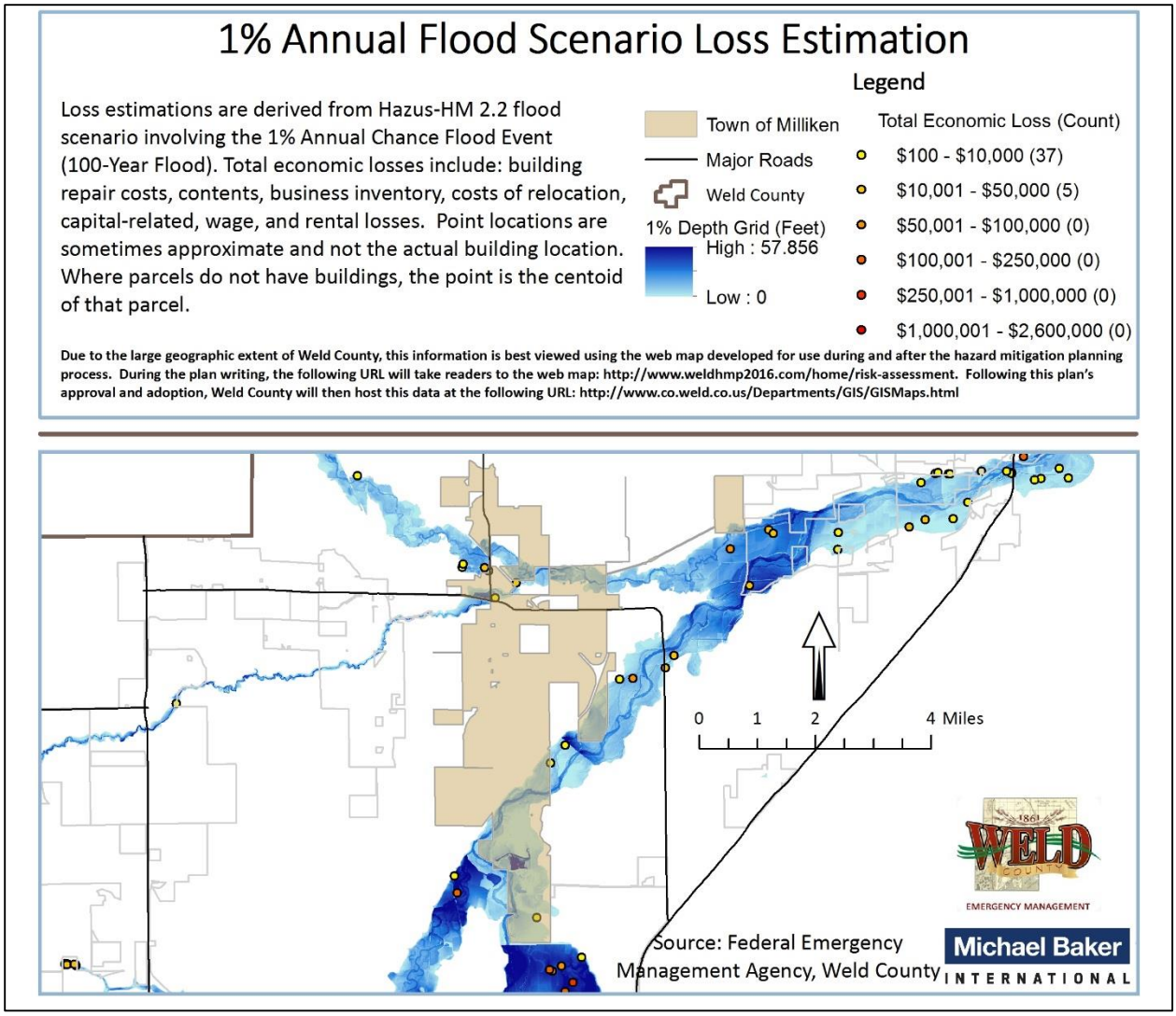
Inventory Exposed

The Hazus-based critical facility and structure exposure analysis estimates that there are no critical facilities and 2 structures in the Town of Milliken that are flood prone (not including the total miles of flood prone infrastructure). The appraised value of these exposed structures is approximately $661,639.

Potential Losses

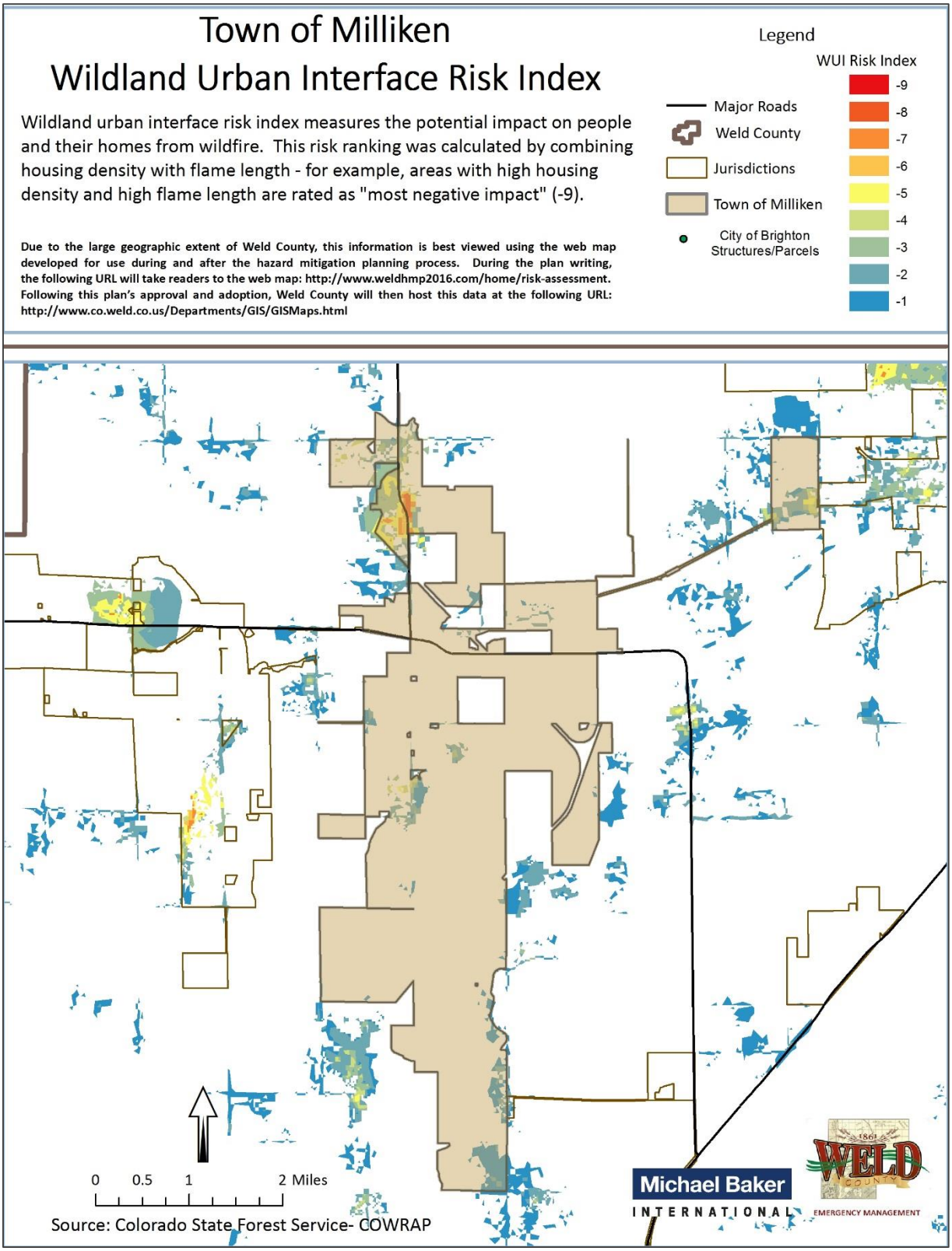
Hazus estimates for the Town of Milliken that for a 100-year flood event, approximately 2 buildings will experience flood damage. The total economic loss estimated for the 100-year flood is approximately $8,576.

Hazus estimates the total building losses for the 100-year flood event to be approximately $1,819. Building content losses are estimated to be higher, at approximately $3,242. Inventory losses are estimated to be approximately $3,514.



Prairie Fire

There are a number of areas in the northern region of the town that are within the medium to highest level on the WUI Risk Index Scale. This means that the potential impact on people and homes from a prairie fire in those areas is medium to high in relationship to the rest of Weld County. This level of risk is derived by combining housing density with predicted flame length.



Inventory Exposed

Fires can extensively impact the economy of an affected area, including the agricultural, recreation and tourism industries, water resources, and the critical facilities upon which the Town of Milliken depends.

There are no identified critical facilities, structures or parcels located in areas with the highest wildfire threat area.

Potential Losses

Currently, there is no method for estimating wildfire loss. In most cases, the emergency management community equates potential losses to assets exposed to wildfire as a method of quantifying and comparing potential losses across communities. The exposure data provided in the previous section (Inventory Assets Exposed) provides the clearest picture of potential losses to wildfire in the Town of Milliken.

Capabilities Assessment

The capability assessment examines the ability of Milliken to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the Town's current capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager			X
Floodplain Administrator		X	
Community Planner	X		
GIS Specialist		X	
Grant Writer	X		

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the Town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	Y
Local building codes	Y

A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Milliken has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

The Town of Milliken has had previous experience receiving, administering, and applying for grants for mitigation and planning-related activities or projects. These include:

- Grants: HMP, PDM, Public Assistance;
- Technical Assistance: CDBG-DR Planning Grant;
- Other Funding Opportunities: CDBG-DR, Natural Disaster Infrastructure

Plan Maintenance and Implementation

The Town of Milliken has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Milliken	*Our mitigation actions will be reviewed by Town Staff and the Town Board on an annual basis.* *The Town will publicly announce changes to the Mitigation Plan and Updates on the Town's Website and Newsletter.*

Integrating Hazard Mitigation into Local Planning

Since the Town of Milliken's comprehensive plan was last updated in 2010, the community was heavily impacted by the 2013 flood. In response to the flood and other growth related issues, the Town kicked off a Comprehensive Plan and Resiliency Update process ("Envision Milliken") in early 2015. The Envision

Milliken process provided an opportunity to check in and ensure the updated plan is aligned with the community's interests and overall vision for the town, as well as to identify priorities for implementation.

Envision Milliken builds on the 2010 Comprehensive Plan, as well as a number of other plans and studies completed by the town, including the Downtown Design Guidelines (2014); Housing Needs Assessment (2014); Transportation Master Plan (2008); A Plan for the South Platte River Corridor (2013); Water and Sanitary Sewer Master Plan Update (2014); and Johnstown-Milliken Park, Trails, Recreation & Open Space Master Plan (2003). The risk assessment used in the Weld County Hazard Mitigation Plan was also leveraged during the comprehensive planning process.

To further illustrate the town's commitment to the integration of hazards and land use planning, Milliken's Comprehensive Plan articulates the following focus areas in its plan element related to creating a "Safe and Disaster Resilient Community":

- Directing future growth and investment away from hazard prone areas
- Minimizing risk and the effects of future hazard events on essential infrastructure
- Promoting emergency preparedness
- Improving communication
- Increasing community awareness of potential risks

In response to the 2013 Colorado floods, Milliken convened a committee known as BOOST (Building on our Strengths and Traditions) to consider the town's long-term flood recovery needs. At the end of a nearly year-long process, the committee released recommendations in four categories: economic development, emergency preparedness, housing and infrastructure, and parks, education, recreation, and culture. To date, these recommendations have not been considered or approved by the Town Board. Instead, they are being incorporated into the update of the comprehensive plan, so that the document can better address and promote the resilience of Milliken and its community.

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The table below lists the specific integration strategies, in addition to the integration of the Weld County Hazard Mitigation Plan with Envision Milliken, identified by the town based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Milliken	*"The Town will continue to update its zoning ordinances and floodplain regulations to address our highest risk areas in the community."* *"The Town will continue to use its Stormwater Master Plan as a guide to place Stormwater Projects into its Capital Improvements Plan."*

Mitigation Action Guides

The following Mitigation Action Guide presents a status update on the mitigation action that Milliken included in the 2009 Plan.

Milliken: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Milliken	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continued compliance with the NFIP	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: The Town of Milliken is not participating in the CRS program, however we are a member of NFIP in good standing. Milliken adopted the model ordinance in April of 2014 as required by the State of Colorado. The Town of Milliken enforces the floodplain regulations in accordance with FEMA's requirements. The Town also conducted an hydrology and hydraulics study to update the Town's local floodplain map to include areas that were impacted by the 2013 flood event.	

The following Mitigation Action Guides profile each of the community's new mitigation actions that were developed for the 2016 Plan.

Milliken: Josephine Storm Sewer Improvements Project	
PRIORITY: #1	**HAZARDS ADDRESSED: Flood Hazard**
LOCATION: Town of Milliken	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 8/28/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 12/29/2017	
ISSUE: Josephine Storm Sewer Improvements Project	
RECOMMENDATION: Construction of storm sewer pipe, culverts, and channels	
ACTION: Solve storm water flooding issues in Central Milliken	

LEAD AGENCY: Town of Milliken Public Works	**EXPECTED COST:** $1,700,000
SUPPORT AGENCIES: FEMA, Colorado Division of Homeland Security and Emergency Management	**POTENTIAL FUNDING SOURCES:** FEMA HMGP 75%, CDHSEM HMGP 12.5%.
PROGRESS MILESTONES: A FEMA HMGP Application was submitted on 8/28/2014, State Request for Information was submitted on 3/26/2015. The Town is still working with FEMA and the State to get through the approval process.	

Milliken: Acquisition of Flood Prone Lands and Structures	
PRIORITY:#2	**HAZARDS ADDRESSED: Flood Hazard and Other Hazards**
LOCATION: Structures at-risk to the flood hazard throughout Milliken, including the town's two mobile home parks located at 103 and 106 Josephine Avenue	**GOALS ADDRESSED:** 2
RECOMMENDATION DATE: 8/28/2015	**OBJECTIVES ADDRESSED:** E
TARGET COMPLETION DATE: 12/31/2017	
ISSUE: Various structures at risk for flooding throughout Milliken, including the Evergreen and Martin Mobile Home Parks that are at risk of flooding from the Little Thompson River	
RECOMMENDATION: Acquisition of structures at-risk to the flood hazard, including the Town's two mobile home parks, debris removal, and the relocation of tenants	
ACTION: Acquisition of structures at risk to flooding throughout Milliken, including the town's two mobile home parks, debris removal, and the relocation of tenants	
LEAD AGENCY: Town of Milliken Administration Dept.	**EXPECTED COST:** $2,500,000
SUPPORT AGENCIES: FEMA HMGP, CDHSEM	**POTENTIAL FUNDING SOURCES:** FEMA HMGP 75%, CDHSEM 12.5%

Progress Milestones: FEMA HMGP Application was submitted on 8/28/2014. The State Request for Information was submitted on 3/26/2015. The FEMA Request for Information was submitted on 9/19/2015.	

Milliken: Procurement and Installation of Tornado Sirens	
PRIORITY: #3	**HAZARDS ADDRESSED: Tornado/Wind Hazard**
LOCATION: Town of Milliken	**GOALS ADDRESSED:** 1
RECOMMENDATION DATE: 9/1/2015	**OBJECTIVES ADDRESSED:** E
TARGET COMPLETION DATE: 12/29/2017	
ISSUE: Warn public regarding pending tornadoes and high wind events	
RECOMMENDATION: Install additional warning sirens within Milliken to increase Tornado Warnings capabilities	
ACTION: Install additional tornado sirens throughout Milliken	
LEAD AGENCY: Town of Milliken Police and Fire Department	**EXPECTED COST:**$60,000 -$100,000
SUPPORT AGENCIES: FEMA, Colorado Division of Homeland Security and Emergency Management	**POTENTIAL FUNDING SOURCES:** FEMA HMGP 75%, CDHSEM HMGP 12.5%.
PROGRESS MILESTONES: The Town of Milliken identified several proposed locations for the placement of warning sirens on 9/1/2015	

Milliken: Generators for Public Buildings	
PRIORITY: #4	**HAZARDS ADDRESSED: Tornado/Wind/Flood/Winter Storm Hazards**
LOCATION: Town of Milliken	**GOALS ADDRESSED:** 1
RECOMMENDATION DATE: 9/1/2015	**OBJECTIVES ADDRESSED:** E
TARGET COMPLETION DATE: 12/29/2017	
ISSUE: Ensure public buildings, shelters, and critical facilities remain operational in the event of power failure post disaster	
RECOMMENDATION: Determine required size/wattage and install generators for public buildings, shelters, and critical facilities	
ACTION: Prioritize, determine required size/wattage and install generators for public buildings, shelters, and critical facilities	
LEAD AGENCY: Town of Milliken Public Works and Milliken Police Department	**EXPECTED COST:** Varies depending upon the facility
SUPPORT AGENCIES: FEMA, Colorado Division of Homeland Security and Emergency Management	**POTENTIAL FUNDING SOURCES:** FEMA HMGP 75%, CDHSEM HMGP 12.5%.
PROGRESS MILESTONES: The Town of Milliken is in the process of prioritizing public buildings, shelters, and critical facilities that require a generator 9/1/2015.	

Milliken: Storm Water Improvements Throughout Milliken	
PRIORITY: #5	**HAZARDS ADDRESSED: Flood Hazard**
LOCATION: Town of Milliken	**GOALS ADDRESSED:** 2
RECOMMENDATION DATE: 9/1/2015	**OBJECTIVES ADDRESSED:** E
TARGET COMPLETION DATE: 12/29/2017	
ISSUE: Identify storm drainage problem areas throughout the Town of Milliken	
RECOMMENDATION: Prioritize and identify storm drainage problem areas throughout Milliken	
ACTION: Construct storm drainage improvements throughout Milliken	
LEAD AGENCY: Town of Milliken Public Works	**EXPECTED COST:** $20,000,000
SUPPORT AGENCIES: FEMA, Colorado Division of Homeland Security and Emergency Management, Colorado Water Board	**POTENTIAL FUNDING SOURCES:** FEMA HMGP, CDHSEM HMGP 12.5%.
PROGRESS MILESTONES: The Town adopted a Strom Drainage Plan on November 25, 2014 that identified over $20,000,000 in storm drainage projects for the Town of Milliken. The Town of Milliken also established a Storm Water Utility Fee on December 10, 2014 to ensure the community has adequate money set aside to address its storm drainage needs.	

Milliken: Tornado Shelters in Public Buildings and Parks	
PRIORITY: #6	**HAZARDS ADDRESSED: Tornado/Wind Hazard**
LOCATION: Town of Milliken	**GOALS ADDRESSED:** 1
RECOMMENDATION DATE: 9/1/2015	**OBJECTIVES ADDRESSED:** E
TARGET COMPLETION DATE: 12/29/2020	
ISSUE: Protect the public and prevent the loss of life from tornadoes/wind hazard events	
RECOMMENDATION: Construct tornado shelters in existing or new public buildings, parks, schools, etc.	
ACTION: Construct tornado shelters in heavily utilized public buildings or parks to prevent the loss of life.	
LEAD AGENCY: Town of Milliken	**EXPECTED COST:**$500,000 - $2,000,000
SUPPORT AGENCIES: FEMA, Colorado Division of Homeland Security and Emergency Management	**POTENTIAL FUNDING SOURCES:** FEMA HMGP 75%, CDHSEM HMGP 12.5%.
Progress Milestones: The Town of Milliken is currently assessing possible locations for tornado shelters. The Town shall also assess the possibility of constructing tornado shelters in newly constructed public buildings.	

EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

Letter of Intent to Participate

August 27, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in the Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Milliken is submitting this letter of intent to confirm that the Town of Milliken has agreed to participate in the Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Milliken agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town of Milliken understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Mayor, Milt Tokunaga, commit The Town of Milliken to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 27 day of August, 2014

Milt Tokunaga, Mayor, Town of Milliken

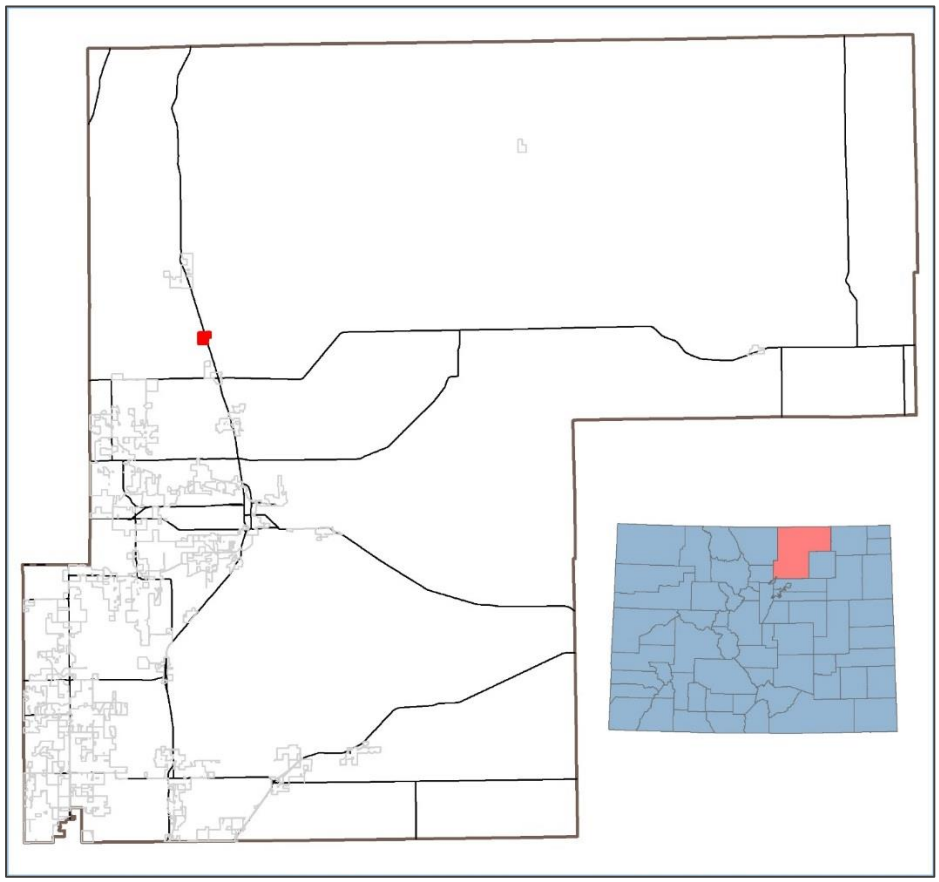
Town Hall, 1101 Broad Street, Drawer 290 ▪ Milliken, Colorado 80543 ▪ (970) 587-4331 ▪ (970) 587-2678 Fax

EMERGENCY MANAGEMENT

Town of Pierce

Community Profile

The Town of Pierce was incorporated in 1918. As a key railroad stop, it became a local shipping point for cattle, sheep, potatoes, beans, and sugar beets. Pierce was the second station in Weld County on the Denver Pacific Railroad in 1869 and had a section house, water tank and siding. The town was named after General John Pierce who was the surveyor general for the Colorado Territory who later became the 4th President of the D.P.R.R. Today, Pierce is described as a rural agricultural community along U.S Highway 85, north of Greeley.



The table below summarizes key demographic and development related characteristics of the Town of Pierce.

Town of Pierce Statistics		
	Town of Pierce	Colorado
Population, 2014	871	5,355,866
Population, % change April 1, 2010 to July 1, 2014	4.3%	6.5%
% Population under 5 years, 2010	6.7%	6.8%
% Population under 18 years, 2010	29.1%	24.4%
% Population 65 years and over, 2010	12.7%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	11.1%	16.8%

Homeownership Rate	78.8%	65.4%
Persons Per Household	2.67	2.53
Persons below poverty level, %, 2009-2013	4.0%	13.2%
Median Household Income, 2009- 2013	$54,185	$58,433

Source: US Census Bureau

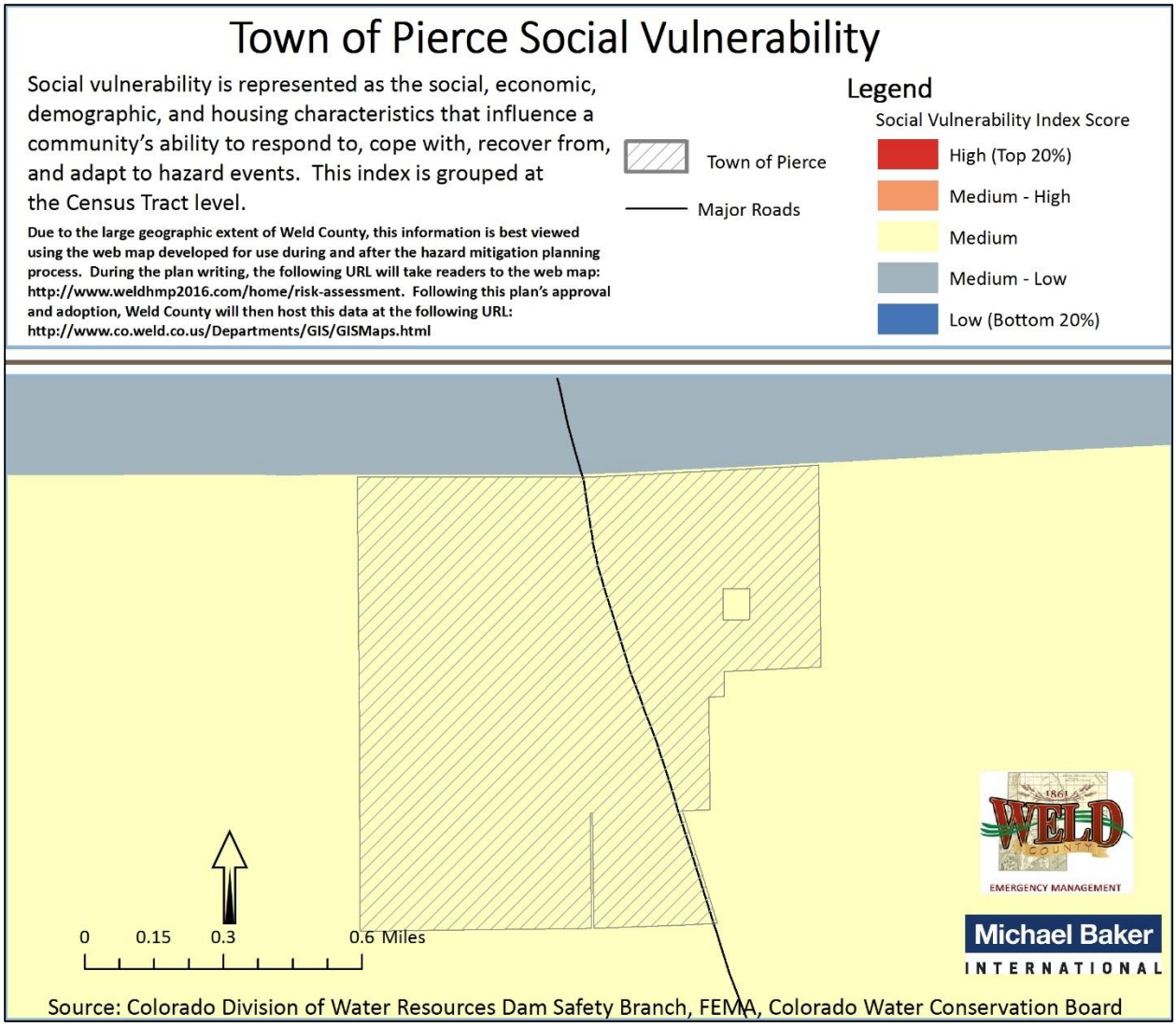
Hazard Identification and Risk Assessment

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Severe Storm	1.2	0.3	0.3	0.4	0.2	2.400
Straight-Line Winds and Tornadoes	0.7	0.3	0.2	0.4	0.4	2.000
Prairie Fire	0.5	0.3	0.2	0.4	0.4	1.800
Extreme Temperatures	0.9	0.3	0.2	0.1	0.3	1.800
Flood	0.5	0.3	0.2	0.3	0.4	1.700
Drought	0.6	0.3	0.4	0.1	0.1	1.500
HAZMAT	0.5	0.3	0.2	0.4	0.1	1.500
Public Health Hazard	0.6	0.3	0.2	0.1	0.1	1.300
Land Subsidence	0.6	0.3	0.2	0.1	0.1	1.300
Earthquake	0.3	0.3	0.2	0.1	0.1	1.000
HIGH RISK (2.5 or higher): NONE						
MODERATE RISK HAZARD (2.0 - 2.4): Straight-Line Winds and Tornadoes; Severe Storm						
Low Risk (1.9 or lower): Prairie Fire; Extreme Temperatures; Flood; Drought; HAZMAT; Public Health Hazard; Land Subsidence; Earthquake						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Pierce. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Town of Pierce.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Pierce's social vulnerability map shows social vulnerability within the community.



The Town of Pierce is characterized by a uniform level of medium social vulnerability. Although this is not a high level of vulnerability, it is important that the town take efforts to understand what elements of the social vulnerability index contribute the most to their slightly elevated score. In doing so, the town will be able to manage those risk factors and reduce their social vulnerability over time.

Capabilities Assessment

The capability assessment examines the ability of the Town of Pierce to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager			X
Floodplain Administrator		X	
Community Planner		X	
GIS Specialist			X
Grant Writer		X	

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	N
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	N
A Stormwater Plan	IDK
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	N
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. Town of Pierce has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of Pierce has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Pierce	*The plan and mitigation actions will undergo periodic board review; we will form a public safety committee to review mitigation action progress over time.* *We will ensure continued public participation through the formation of Pierce Public Safety Committee, website updates, a town board review*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Pierce did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Pierce based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Pierce	*"We will continue to adhere to FEMA flood zone restrictions."*

Mitigation Action Guides

The following Mitigation Action Guide presents a status update of Pierce's mitigation action that was included in the 2009 Plan.

Town of Pierce: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Town of Pierce	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continued compliance with the NFIP	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: The town of Pierce adopted the model ordinance in 2014, and enforces floodplain regulations in accordance with FEMA's requirements.	

The following Mitigation Action Guide profiles the community's new mitigation action that was developed for the 2016 Plan.

Town of Pierce: Community Preparedness Education	
PRIORITY: High	**HAZARDS ADDRESSED:** Drought, Earthquake, Land Subsidence, Extreme Temperatures, Flood, Severe Storm, Wind & Tornado, Fire, Public Health, Hazmat
LOCATION: Town of Pierce	**GOALS ADDRESSED:** 1,3
RECOMMENDATION DATE: 10.06.2015	**OBJECTIVES ADDRESSED:** A, B
TARGET COMPLETION DATE: 10.06.2020	
ISSUE: There are many emergency management issues that need to be reinforced with public education so that citizens know what risks they face, what protective actions they can take, and what government programs are in place to assist them.	
RECOMMENDATION: The potential for saving just one life, and providing time for individuals and businesses to take effective protective actions, outweighs the potential cost of the public education program. Public Education may be the most effective and least-expensive way to reduce disaster losses by changing human behavior to promote appropriate actions	
ACTION: Establish an ongoing or annual Public Education campaign regarding Hazards and Emergency Management	
LEAD AGENCY: Town of Pierce	**EXPECTED COST:** $2,500 for printing and distribution costs
SUPPORT AGENCIES: County Emergency Management, First Responder Agencies, State DHSEM, FEMA	**POTENTIAL FUNDING SOURCES** HMPG, SHSG, Local budgets and private partner cost share.
PROGRESS MILESTONES: Since 2009, Weld County OEM and many participating jurisdictions have continued to make public preparedness outreach and education a priority. The Town of Pierce will continue to work with Weld County OEM on community preparedness education and hazard identification.	

Jurisdiction or Organization: Town of Pierce Drainage County road 88/Hwy 85	
PRIORITY: high	**HAZARDS ADDRESSED: Flood, Storm water**
LOCATION: Pierce	**GOALS ADDRESSED: 1,2,3,4**
RECOMMENDATION DATE: 1/1/2016	**OBJECTIVES ADDRESSED: D,E**
TARGET COMPLETION DATE: 2020	
ISSUE: The Town of Pierce has a Comprehensive Plan identifying storm drainage issues and goals. The primary goal is to preserve flood plains and natural drainage ways in the Pierce planning area. Drainage at County Road 88 and Highway 85 requires a larger engineered culvert to prevent standing water on the street and nearby properties.	

RECOMMENDATION : The Town of Pierce is working jointly with Weld County to engineer a larger culvert to drain storm water under County Road 88 and allow it to flow down the natural drainage area. Agreements with the State of Colorado, City of Thornton and Collins Lateral may be necessary to help direct the drainage to the proper natural areas.	
ACTION: This is a high priority currently being planned in conjunction with Weld County to engineer a culvert large enough to drain storm water and direct it to a ditch system approximately ¾ mile away.	
LEAD AGENCY: Town of Pierce	**EXPECTED COST:** Storm drainage improvements in the vicinity of US85 and County Road 88. Installation, agreements, and engineered design directing the flow to a ditch system approximately ¾ mile. $500,000
SUPPORT AGENCIES: Weld County	**POTENTIAL FUNDING SOURCES:** Pierce charges drainage fees.
PROGRESS MILESTONES	

Letter of Intent to Participate

TOWN OF PIERCE
144 Main, PO Box 57
Pierce, CO 80650
Phone: 970-834-2851
Fax: 970-834-2755
townofpierce.org

December 8, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Pierce is submitting this letter of intent to confirm that Town of Pierce has agreed to participate in the Weld County's] Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning,Town of Pierce agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

Town of Pierce understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Town of Platteville

"The Platteville community seeks orderly and sustainable growth, while preserving Town traditions and the small town lifestyle. The community is committed to fostering a strong local economy and wishes to develop into a full-service community given its easy access to DIA and I-25."
— Town of Platteville Comprehensive Plan (2015)

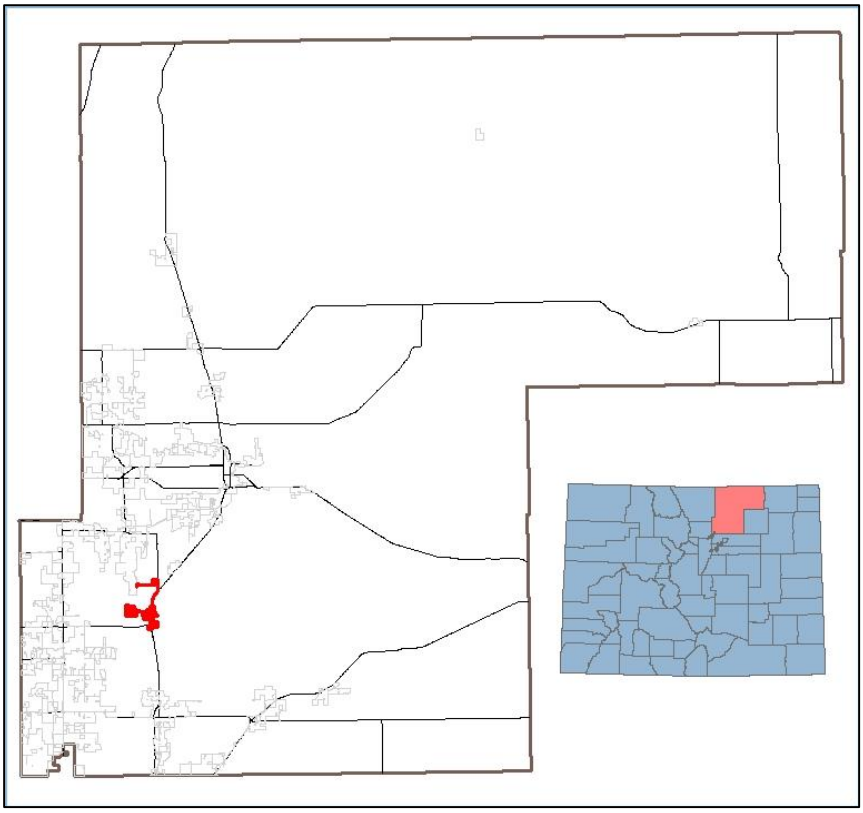
Platteville wishes to foster its reputation as a Town where citizens can live, work, and run a business in a safe environment. The old town area serves as a vital center for the community, providing churches, parks, ball fields, library, museums, and Town Hall. For a town of its size, there are ample recreational opportunities for all ages, which the community wishes to enhance as it develops.

The public and private sectors have an interest in assuring that the Town grows in an orderly and efficient manner. Currently, the 2015 Comprehensive Plan outlines a path forward for achieving efficiency in growth. It identifies existing and projected community issues, focuses public resources through its principles and policies, and outlines a course of action that provides the Town with a 'road map' to accommodate growth and community change.

Community Profile

Platteville is one of the oldest communities in Weld County. It is located along the east bank of the South Platte River at the intersection of US Highway 85 and Colorado Highway 66. Located at an elevation of 4,825 feet, Platteville is approximately 1.48 square miles in size. Platteville was founded in 1871, after the Denver Pacific Railroad reached the area. The town's origins are traced back to Fort Vasquez, an important 1830's fur trading post. The Platte River's fertile valley has long been known for its livestock and poultry, with over 200 farms now located in the surrounding area. The Town of Platteville is best described as a community that cherishes its small town atmosphere.[23] The physical attributes that contributes to the small town atmosphere, as defined by residents of Platteville, include "a variety of distinct neighborhoods, the South Platte River Corridor, abundant open space, opportunities for additional parks and trails particularly next to the existing ball field and along the South Platte River."

[23] Town of Platteville Comprehensive Plan (2015)



Town of Platteville Statistics		
	Town of Platteville	Colorado
Population, 2010	2,485	5,029,196
2000-2010 Population Change, %	4.6%	14.5%
% Population under 5 years, 2010	8%	6.8%
% Population under 19 years, 2010	25.9%	20.3
% Population 65 years and over, 2010	9.5%	10.9%
Language other than English spoken at home, % age 5+, 2009-2013	23.7%	15.9%
Homeownership Rate 2010	74.2%	65.5%
Persons Per Household 2010	2.9	2.57
Persons below poverty level, %, 2013	16%	13.2%
Median Household Income, 2013	$55,052	$58,433

Source: US Census Bureau

Hazard Identification and Risk Assessment

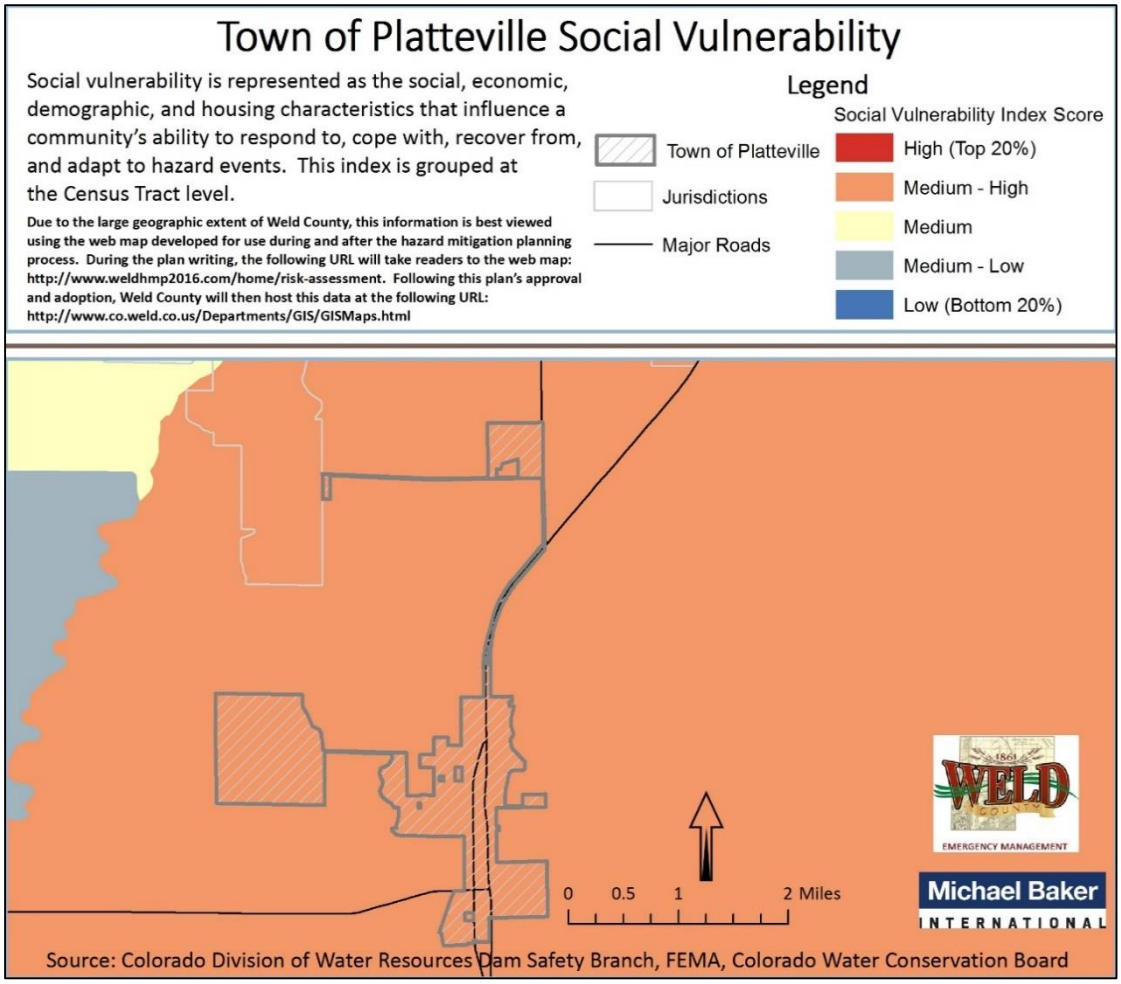
NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Severe Storm	0.90	0.90	0.40	0.40	0.30	2.90
Straight-Line Winds & Tornadoes	0.90	0.90	0.60	0.40	0.10	2.90

HAZMAT	0.90	0.60	0.40	0.40	0.10	2.40
Prairie Fire	0.90	0.60	0.40	0.40	0.10	2.40
Public Health Hazards	0.60	0.60	0.60	0.40	0.10	2.30
Extreme Temperatures	0.90	0.60	0.40	0.10	0.10	2.10
Flood	0.60	0.60	0.40	0.20	0.10	1.90
Drought	0.90	0.30	0.400	0.10	0.10	1.80
Land Subsidence	0.30	0.30	0.200	0.30	0.10	1.20
Earthquake	0.30	0.30	0.200	0.10	0.10	1.00
HIGH RISK (2.5 or higher): Severe Storm; Straight-Line Winds & Tornadoes						
MODERATE RISK HAZARD (2.0 - 2.4): HAZMAT; Prairie Fire; Public Health Hazards; Extreme Temperatures						
Low Risk (1.9 or lower): Flood; Drought; Land Subsidence; Earthquake						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Platteville, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Platteville.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Platteville's social vulnerability map shows social vulnerability within the community.

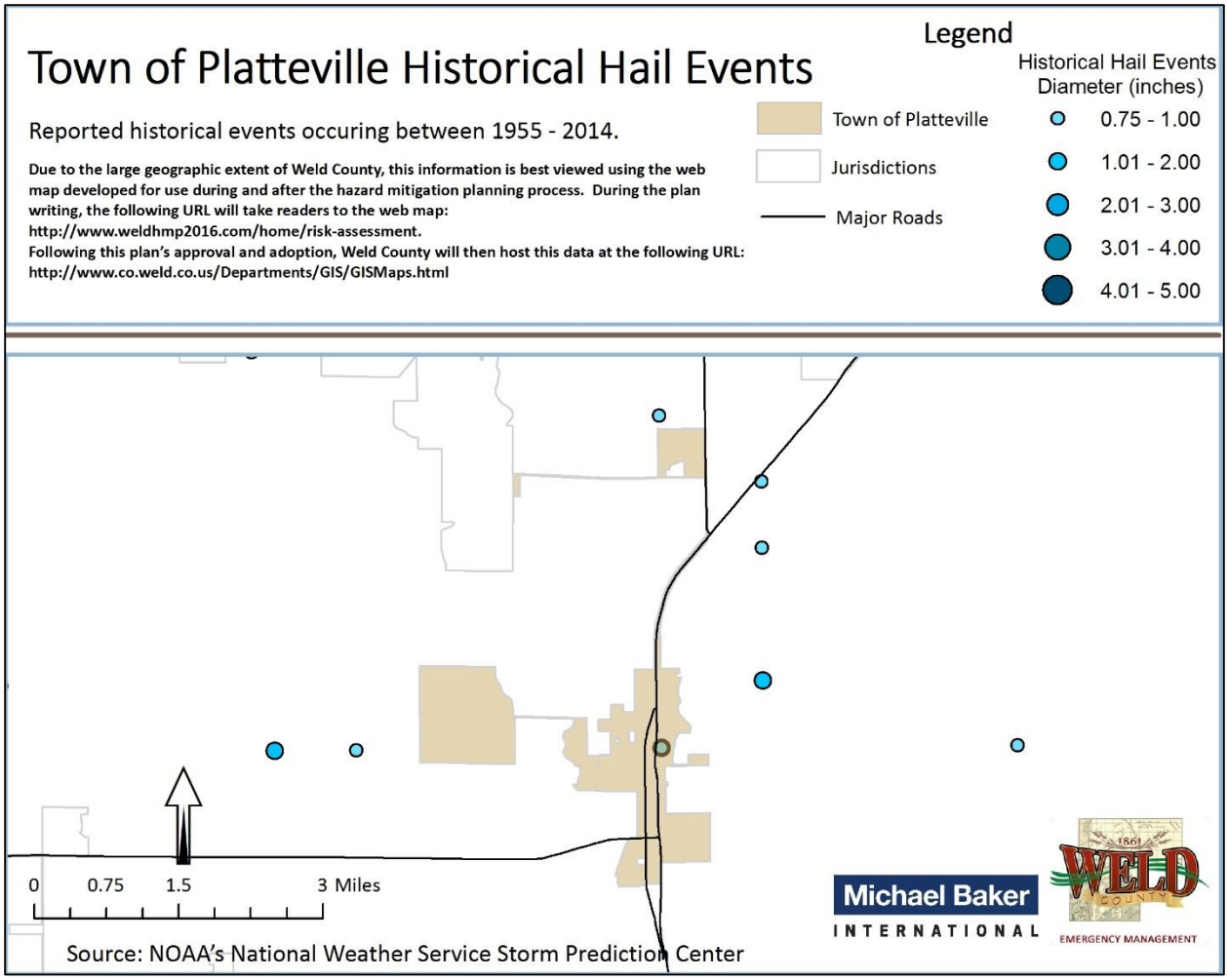


The Town of Platteville is characterized by medium-high levels of social vulnerability. Currently, the socioeconomic indicators that contribute to elevated vulnerability to disasters are higher in Platteville than they are in the majority of Weld County. These conditions warrant a closer look at the individual social vulnerability indicators within the town. This will give local emergency managers, planners, and stakeholders a clearer picture of where resources should be allocated in order to better manage the challenge of high social vulnerability to hazards. Additionally, the Town of Platteville should continue to monitor their progress as demographic, economic, and housing related conditions change over time.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to NOAA's Storm Events Database there have been no reported injuries, deaths, property damage, or crop damage in the Town of Platteville from hail events. There were three hail events reported within the town limits as well as several hail events that occurred less than one mile from the town limits, none of which reported injuries, deaths, property damage, or crop damage. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time within the town's jurisdictional boundaries.



Lightning

According to NOAA's Storm Events Database there have been no reported injuries, deaths, property damage, or crop damage in the Town of Platteville from lightning. However, there still exists great potential for Lightning to occur at any given time within the Town of Platteville.

Winter Storm

According to NOAA's Storm Events Database, the Town of Platteville has experienced 25 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. There were no deaths, injuries or damage to crops reported for any of these storms. The Town of Platteville at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the Town of Platteville can be considered at risk from severe storms. This includes 2,485 people, or 100% of the town's population and all buildings and infrastructure within the Town. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail

but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

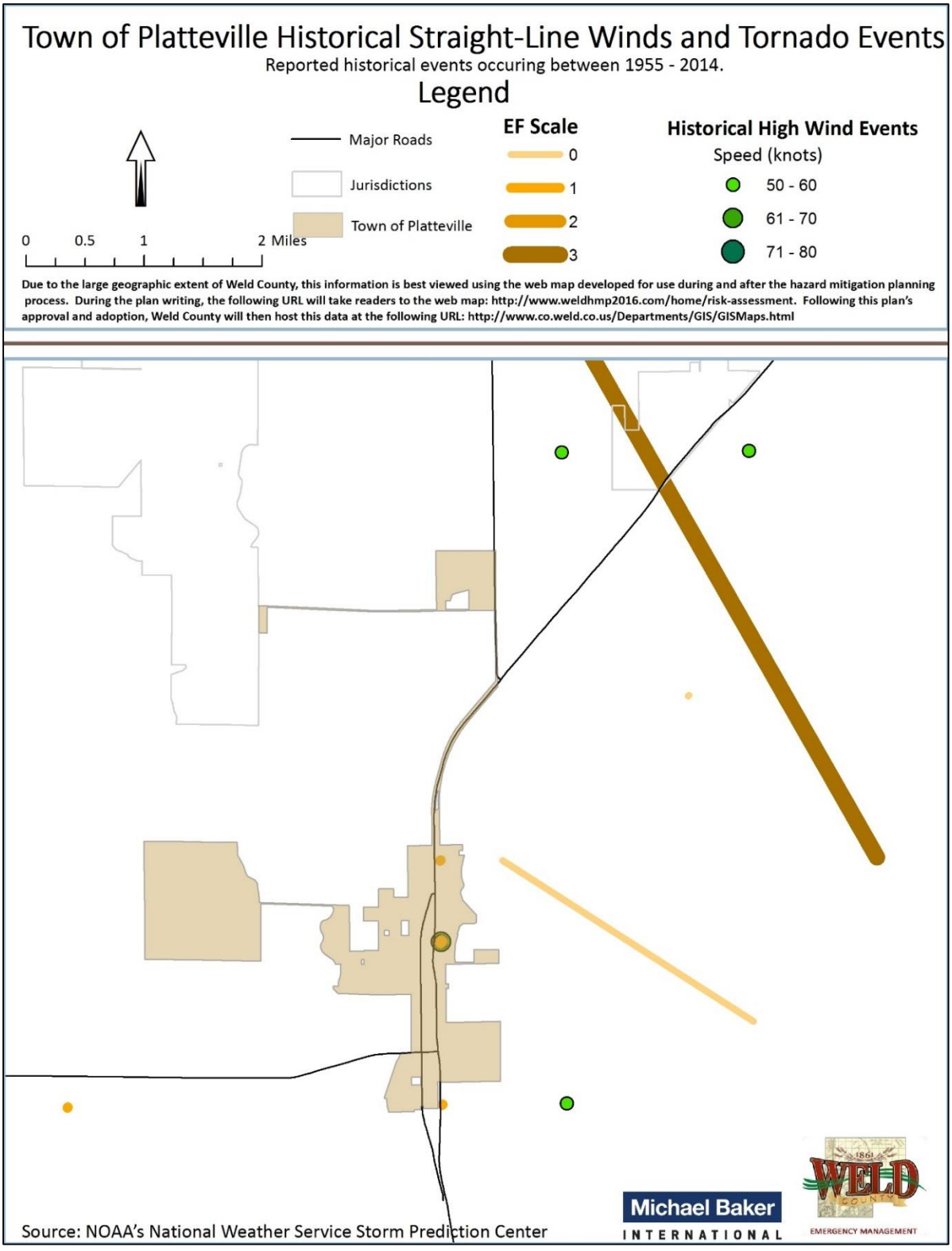
Severe storms affect the entire planning area of the Town of Platteville including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of Platteville. It is likely that lightning and hail will also be experienced in the area due to such storms.

Straight-Line Winds & Tornadoes

According to the best available data, no injuries, no death, $8,000 worth of property damage, and no crop damages have been recorded within the Town of Platteville due to tornadoes. There have been 6 tornadoes in the Town of Platteville between 1976 and 1999. Moreover, there have been tornadoes reported very close to the northern, eastern, southern, and western borders of the Town limits. Based on historical data, tornadoes will remain a highly likely occurrence for the Town of Platteville.

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Platteville due to straight-line winds. There were three high wind events reported within the town limits between 1976 and 1994. There have been straight-line winds reported very close to the northern, western and southern borders of the town limits as well. Straight-line winds will remain a highly likely occurrence for the Town of Platteville.



Inventory Exposed

All assets located in the Town of Platteville can be considered at risk from straight-line winds and tornadoes. This includes 2,485 people, or 100% of the town's population and all buildings and structures

within the County. Most structures, including the town's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

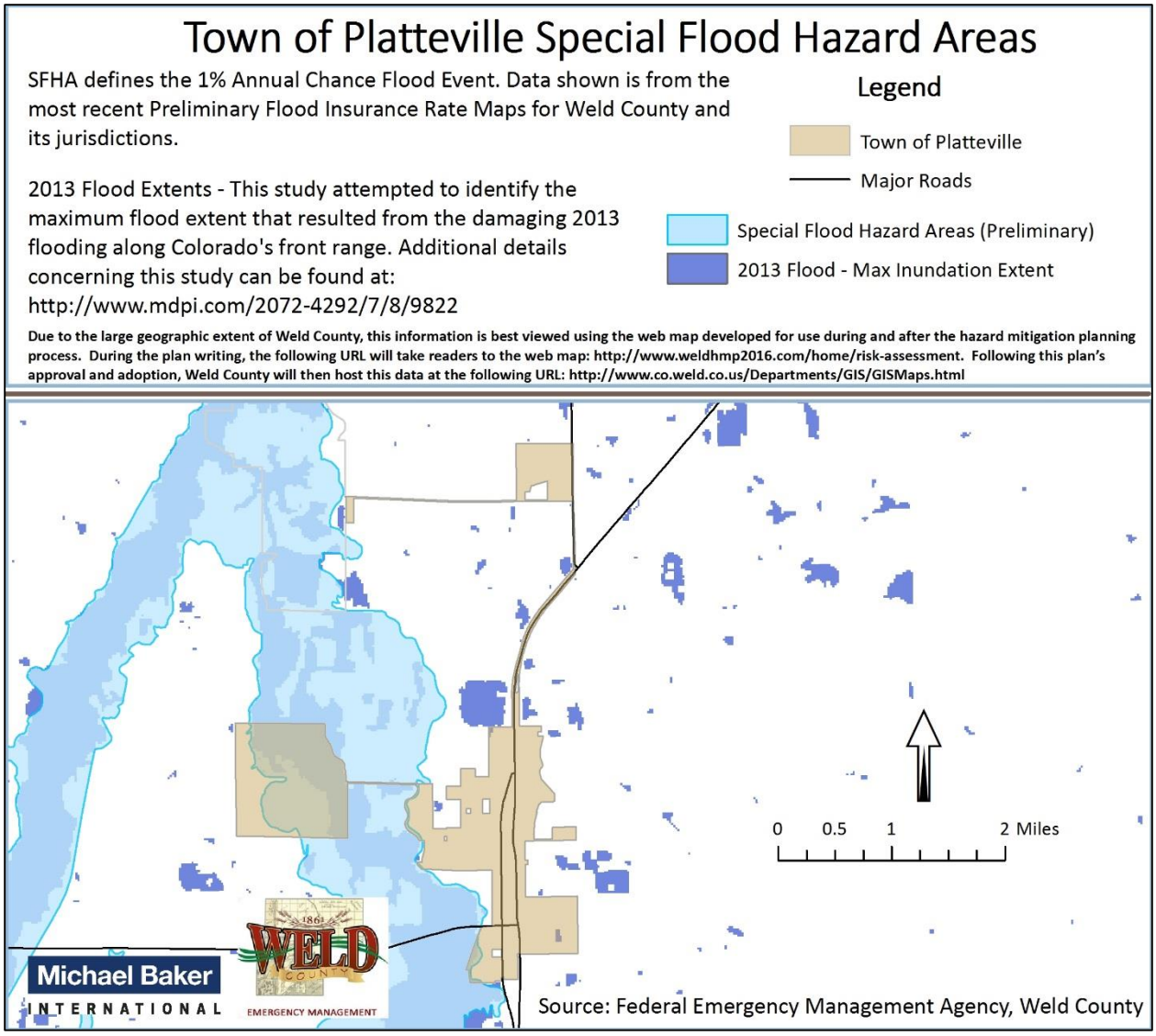
Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $86,514,241. Potential losses could be substantial.

Flood

Although flood was identified as low risk in the Hazard Identification and Risk Assessment, it is being included with the high vulnerability hazards due to the Town of Platteville's close proximity to the South Platte River. According to the best available data there are no reported injuries or deaths in the Town of Platteville caused by flooding. Due to the towns close proximity to the South Platte River, there is a possibility for a flood event to occur at any given time.

There have been two recorded flood events since 1996 in the town of Platteville. The first occurred September 26, 2012 and was categorized as a flash flood. This flood cause $15,000 in property damage and $10,000 in crop damage. The second flood occurred on September 12, 2013 and was categorized as a fast-moving flash flood.



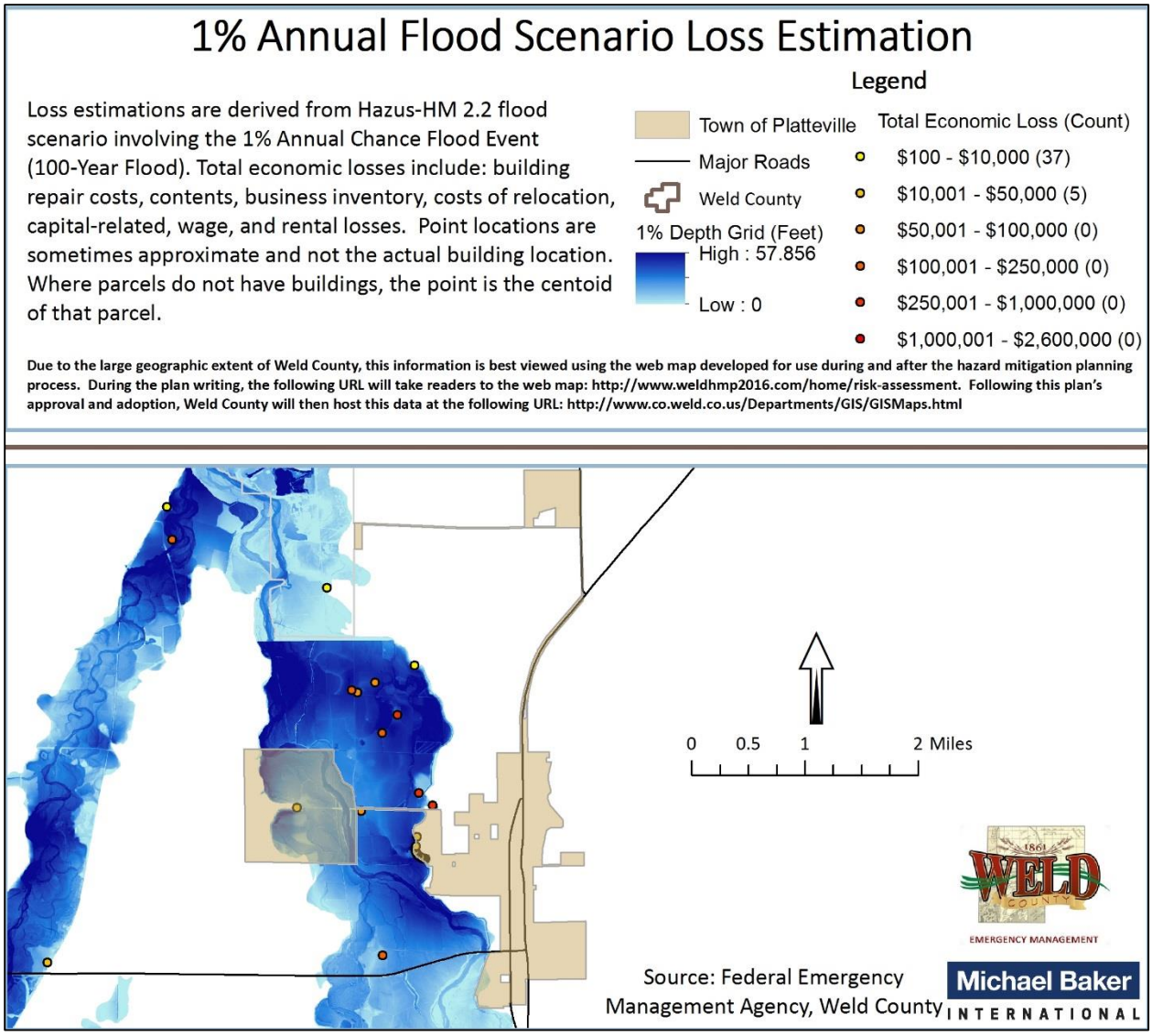
Inventory Exposed

The critical facility and structure exposure analysis estimates that there are no critical facilities and 14 structures in the Town of Platteville that are flood prone (not including the total miles of flood prone infrastructure). The appraised value of these exposed structures is approximately $1,972,746.

Potential Losses

Hazus estimates for the Town of Platteville that for a 100-year flood event, approximately 14 buildings will experience flood damage. The total economic loss estimated for the 100-year flood is approximately $248,084. Currently, there are no critical facilities located within the floodplain in the town of Platteville.

The total building losses for the 100-year flood event are estimated to be approximately $204,738. Building content losses are estimated to be approximately $43,347.



Capabilities Assessment

The capability assessment examines the ability of the Town of Platteville to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the Town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager		X	

Floodplain Administrator		X	
Community Planner		X	
GIS Specialist			X
Grant Writer		X	

In Platteville, The Town Manager serves as the Emergency Manager, Floodplain Administrator & grant writer. The Town contracts for planning services as needed.

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	N
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y*
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

**The emergency operations plan is outdated and is being updated this winter (2015). The Town Engineer will complete a Master Storm Drainage Plan in 2016.*

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and

codes. Town of Platteville has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

The Town of Platteville has had previous experience receiving, administering, and applying for grants for mitigation and planning-related activities or projects. These include:

- Grants: A DOLA Grant in 2010 for Comprehensive Plan Update & 2014 for Master Storm Drainage Plan.

Plan Maintenance and Implementation

The Town of Platteville has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Platteville	*The Plan will be incorporated into the Town's Emergency Management Plan and reviewed annually by the Town Board and respective staff.* *The Plan will be available for public review at Town Hall and on the Town's website. Annual public meetings will be held to discuss priorities, amendments or other actions related to the Plan.*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Platteville did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Platteville based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Platteville	*"Identified high risk hazards will be incorporated into the Town's Capital Improvement Plan. Zoning regulations will be reviewed and updated to address specific hazard mitigation sections."*

Mitigation Action Guides

The following Mitigation Action Guides present status updates on each of the community's mitigation actions included in the 2009 Plan.

Platteville: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Platteville	**GOALS ADDRESSED: 1, 4**
RECOMMENDATION DATE: Ongoing	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE:	Pages 508-509
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to floodprone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION:	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: The Town of Platteville continues to participate in FEMA's NFIP Program. The model ordinance was adopted in 2014 and the town continues to enforce floodplain regulations.	

The following Mitigation Action Guides each of the community's new mitigation actions that were developed for the 2016 Plan.

Town of Platteville: Early warning system for various hazards	
PRIORITY: Medium	**HAZARDS ADDRESSED: Flood, Wind & Tornado, Public Health**
LOCATION: Town	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 10/20/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: Town citizens require a reliable early warning system for various hazards including flooding, severe storms, tornadoes and high winds along with general public health hazmat situations.	

RECOMMENDATION: Continue improving existing emergency warning systems while updating emergency management plans and educating the community on such plans.	
ACTION: Maintain and improve existing systems (install early warning siren system, implement emergency phone notification system) & update Emergency Management Plan	
LEAD AGENCY: Town Administration	**EXPECTED COST:** TBD
SUPPORT AGENCIES: Police & Public Works Departments	**POTENTIAL FUNDING SOURCES:** Capital Improvement Fund, State and Federal Funding Sources
PROGRESS MILESTONES: Will review Emergency Management Plans with community annually.	

Jurisdiction or Organization: Town of Platteville	
PRIORITY: Ongoing Program	**HAZARDS ADDRESSED: Flood, Severe Storm,**
LOCATION: Platteville	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 12.1.2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 12.1.2018	
ISSUE: : Improve and enhance reliable early warning systems for the community to mitigate various hazards including flooding, severe storms, tornados and high winds along with general public health hazmat situations.	
RECOMMENDATION: Continue improving existing emergency warning systems while educating the community on such plans to mitigate potential impacts. Establish another (4th) early warning siren on the north side of the community to enhance warning notifications to the residents & businesses as the community grows and expands. Expand the use of the emergency phone notification system to maximize potential in mitigating hazards. By improving and expanding the early warning systems the Town's vision of growth that was identified in the 2010 Comprehensive Plan Update will be enhanced with fewer concerns of potential hazard impacts.	
ACTION: Maintain and improve current early warning systems.	
LEAD AGENCY: Town Administration	**EXPECTED COST:** 25,000.00
SUPPORT AGENCIES: Public Works, Planning, Police, Fire District.	**POTENTIAL FUNDING SOURCES:** Capital Improvement Fund, General Fund, State and Federal Funding Sources.

PROGRESS MILESTONES: The Town of Platteville has significantly improved it's ability to reduce and mitigate hazardous situations within the community and surrounding area during recent years by implementing early warning notifications systems (2009 & 2014), a major milestone will be installing a 4th siren on the north side of the community.

Jurisdiction or Organization: Town of Platteville	
PRIORITY: Ongoing Program	**HAZARDS ADDRESSED: Flood, Severe Storm,**
LOCATION: Platteville	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 12.1.2015	**OBJECTIVES ADDRESSED: C, E**
TARGET COMPLETION DATE: 12.1.2018	
ISSUE: : The Town of Platteville has significantly improved it's ability to reduce and mitigate hazardous situations within the community and surrounding area during recent years by implementing early warning notifications systems (2009 & 2014),	
RECOMMENDATION: In 2015 the Town applied for and received DOLA funding to assist in completing a Master Storm Drainage Study. The study is expected to be completed in 2016 and will provide valuable information to identify potential storm drainage and flooding issues within the community. The study will be used by the Town's engineer and Public Works Director to mitigate current flooding and storm drainage concerns while developing long-term mitigation plans for future development and growth in areas identified in the 2010 Comprehensive Plan Update.	
ACTION: In 2015 the Town applied for and received DOLA funding to assist in completing a Master Storm Drainage Study. The study is expected to be completed in 2016 and will provide valuable information to identify potential storm drainage and flooding issues within the community. The study will be used by the Town's engineer and Public Works Director to mitigate current flooding and storm drainage concerns while developing long-term mitigation plans for future development and growth in areas identified in the 2010 Comprehensive Plan Update.	
LEAD AGENCY: Town Administration	**EXPECTED COST:** 80,000.00
SUPPORT AGENCIES: State Planning, Engineering, Public Works	**POTENTIAL FUNDING SOURCES:** Capital Improvement Fund, General Fund, State and Federal Funding Sources.
PROGRESS MILESTONES: Completing a Master Storm Drainage Plan and updating existing emergency management plans and systems in 2016 will assist in ongoing hazardous mitigation efforts for the Town of Platteville. Utilizing the hazard analysis developed in the Hazard Mitigation plan will provide supporting documentation to update the Emergency Operation Plan.	

Letter of Intent to Participate

LETTER OF INTENT TO PARTICIPATE

Town of Platteville

September 3, 2015

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Platteville is submitting this letter of intent to confirm that Town of Platteville has agreed to participate in the Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Town of Platteville agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

Town of Platteville understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I Troy Renken, commit the Town of Platteville to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 3rd day of September, 2015 Troy Renken

Platteville Town Manager

EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

Town of Severance

"We understand that growth creates impacts on our community including impacts on our infrastructure, traffic among others. However, we also recognize that growth brings opportunity that can improve our sense of community, quality of life, business opportunities. [...] The elements of our community that we hold dear and want to preserve include the lifestyle associated with living in a small town along Colorado's northern front range which includes the enjoyment of the natural features of the landscape that surrounds us, including the gentle rolling hills, vistas of the snow-capped Rockies, and an abundance of small lakes and water ways that surround us, our quiet hometown character, clean air, open views, proximity and the ease of access to adjacent urban center for culture and entertainment, our safe neighborhoods with low crime, our new high quality schools, our closely tied friendly community where neighbors know each other and build ties with each other, and our financially stable community."

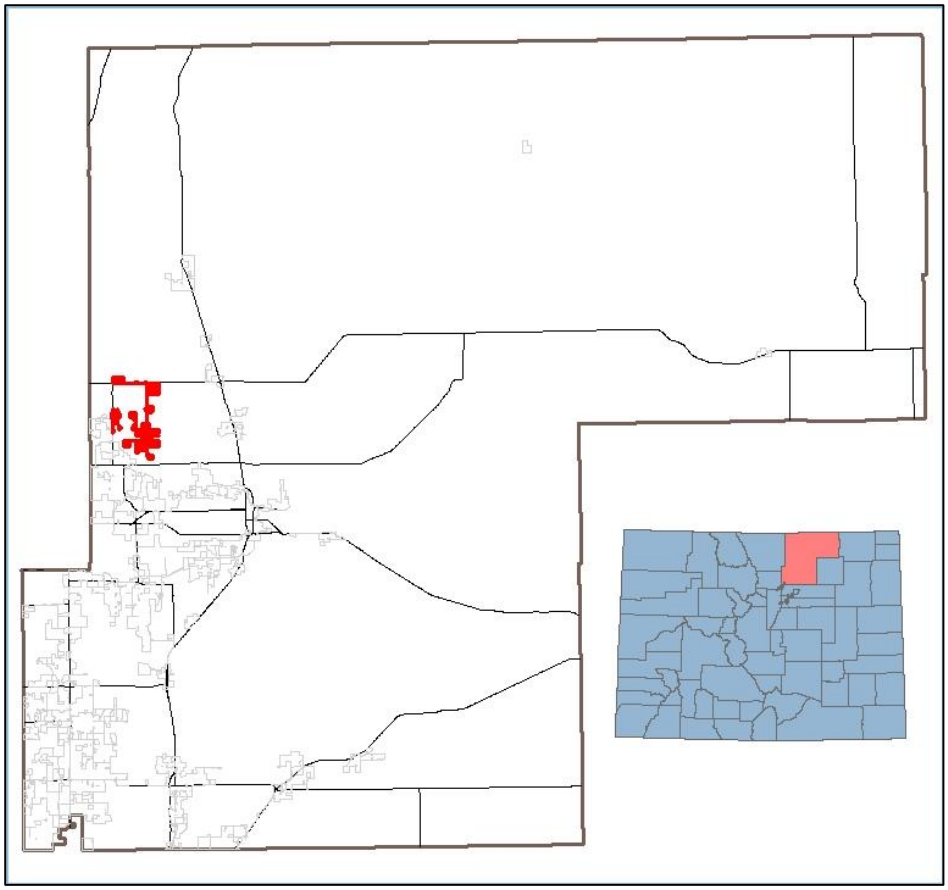
– Severance Hometown Vision, Comprehensive Plan 2011

Community Profile

The Town of Severance is located approximately 10 miles east of Fort Collins, 7 miles north of Windsor and 10 miles northwest of Greeley. Severance has a total area of 2.1 square miles and is located at an elevation of 4,888 feet above sea level. Severance was founded in the late 19th century as an agricultural community, the town remained primarily a small rural farming community based on the raising of cattle, sugar beets, potatoes, and onions. In the 1990s it began to grow aggressively by the construction of new residential subdivisions in the nearby rural areas of Weld County, especially as growth spilled over from nearby Windsor. The construction of new residential communities near the town has left the original agricultural community surrounded by modern construction and contributed to an upsurge in population.

Severance is served by two State Highways and numerous county roads, which offer easy motoring to Interstate 25 and all points beyond. Its internal roadways are well maintained and offer unbridled recreation access to other Northern communities. As development occurs a pedestrian and bicycle pathway will connect with Windsor's trail network.

The Town currently maintains five parks spread throughout many neighborhoods. A trail system is being developed that will hook into regional trail systems in the future. The surrounding area is home to prime waterfowl hunting and the Rocky Mountains are easily accessible.



Town of Severance Statistics		
	Town of Severance	Colorado
Population, 2010	3,165	5,029,196
2000-2010 Population Change, %	81.1%	14.5%
% Population under 5 years, 2010	10%	6.8%
% Population under 19 years, 2010	21.2%	20.3
% Population 65 years and over, 2010	5.3%	10.9%
Language other than English spoken at home, % age 5+, 2009-2013	2.2%	15.9%
Homeownership Rate 2010	91%	65.5%
Persons Per Household 2010	2.9	2.57
Persons below poverty level, %, 2013	3.4%	13.2%
Median Household Income, 2013	$84,293	$58,433

Source: US Census Bureau

Hazard Identification and Risk Assessment

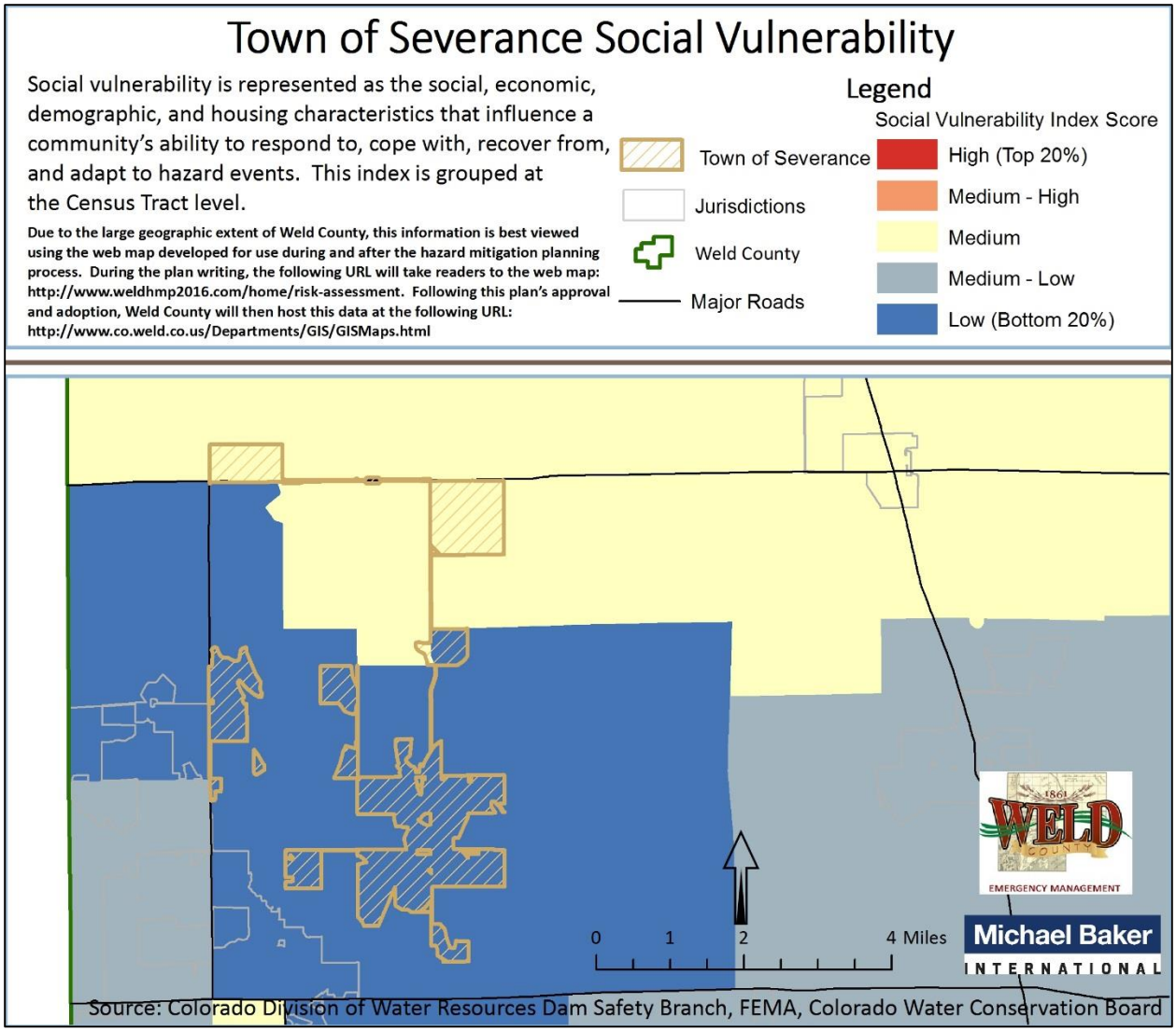
NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Severe Storm	1.20	0.60	0.80	0.40	0.10	3.10

Straight-Line Winds & Tornadoes	1.20	0.60	0.80	0.40	0.10	3.10
Extreme Temperatures	1.20	0.60	0.80	0.10	0.10	2.80
Drought	1.20	0.60	0.80	0.10	0.10	2.80
Prairie Fire	0.90	0.60	0.60	0.10	0.10	2.30
Flood	0.60	0.60	0.40	0.10	0.10	1.80
Public Health Hazards	0.60	0.60	0.40	0.10	0.10	1.80
HAZMAT	0.60	0.30	0.20	0.10	0.10	1.30
Earthquake	0.30	0.30	0.20	0.10	0.10	1.00
Land Subsidence	0.30	0.30	0.20	0.10	0.10	1.00
HIGH RISK (2.5 or higher): Severe Storm; Straight-Line Winds & Tornadoes; Extreme Temperatures; Drought						
MODERATE RISK HAZARD (2.0 - 2.4): Prairie Fire						
Low Risk (1.9 or lower): Flood; Public Health Hazards; HAZMAT; Earthquake; Land Subsidence						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Severance, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Severance.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Severance's social vulnerability map shows social vulnerability within the community.

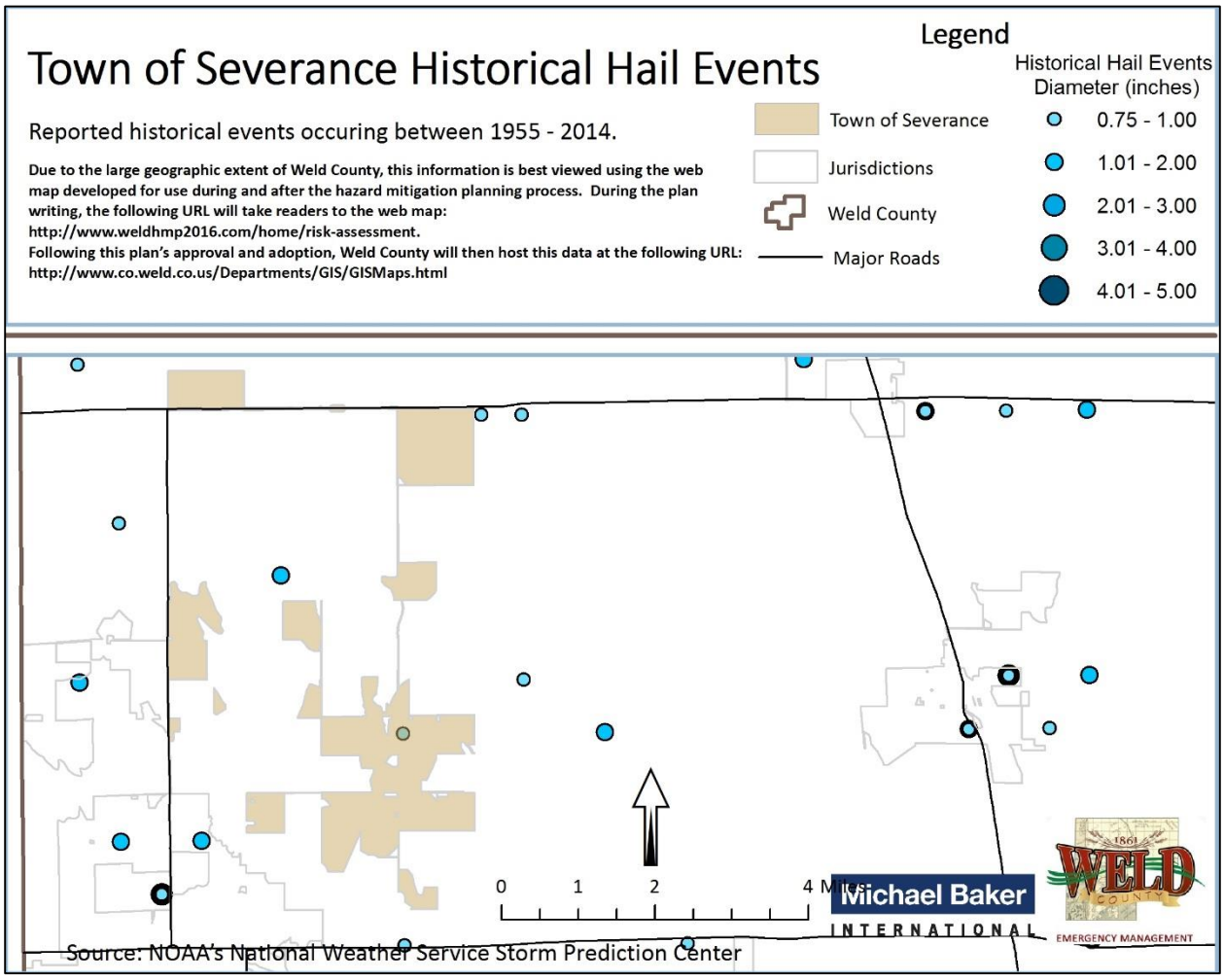


The Town of Severance is characterized by low and medium levels of social vulnerability. The majority of the town is in the bottom 20% of social vulnerability in the county. Currently, the socioeconomic indicators that contribute to elevated vulnerability to disasters are lower in Severance than they are in the majority of Weld County. This does not mean, however, that there aren't any socially vulnerable residents living in the community or that social vulnerability levels will remain the same over time. Close analysis of the individual social vulnerability indicators within the community will give local emergency managers, planners, and stakeholders a clearer picture of which social vulnerability factors threaten the community the most and where social and economic resources should be allocated in order to reduce vulnerability. Over time, the Town of Severance should continue to monitor their progress as demographic, economic, and housing related conditions change over time.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the Town of Severance. There have been four hail events that were reported within the town limits and several hail events that occurred less than one mile from the town limits, none of which reported injuries, deaths, property damage, or crop damage. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According NOAA's Storm Events Database, no injuries, deaths, property damage, or crop damage have been reported within the Town of Severance due to lightning. Although there is no historic data showing hazardous impacts on the town, there is still great potential for Lightning to occur at any given time.

Winter Storm

According to NOAA's Storm Events Database, the Town of Severance has experienced 54 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central and southern Weld County. There were no deaths, injuries or damage to crops reported for any of these storms. The Town of Severance is at high risk of experiencing Winter Storms during the winter months.

Inventory Exposed

All assets located in the Town of Severance can be considered at risk from severe storms. This includes 3,165 people, or 100% of the town's population, and all buildings and infrastructure within the Town. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

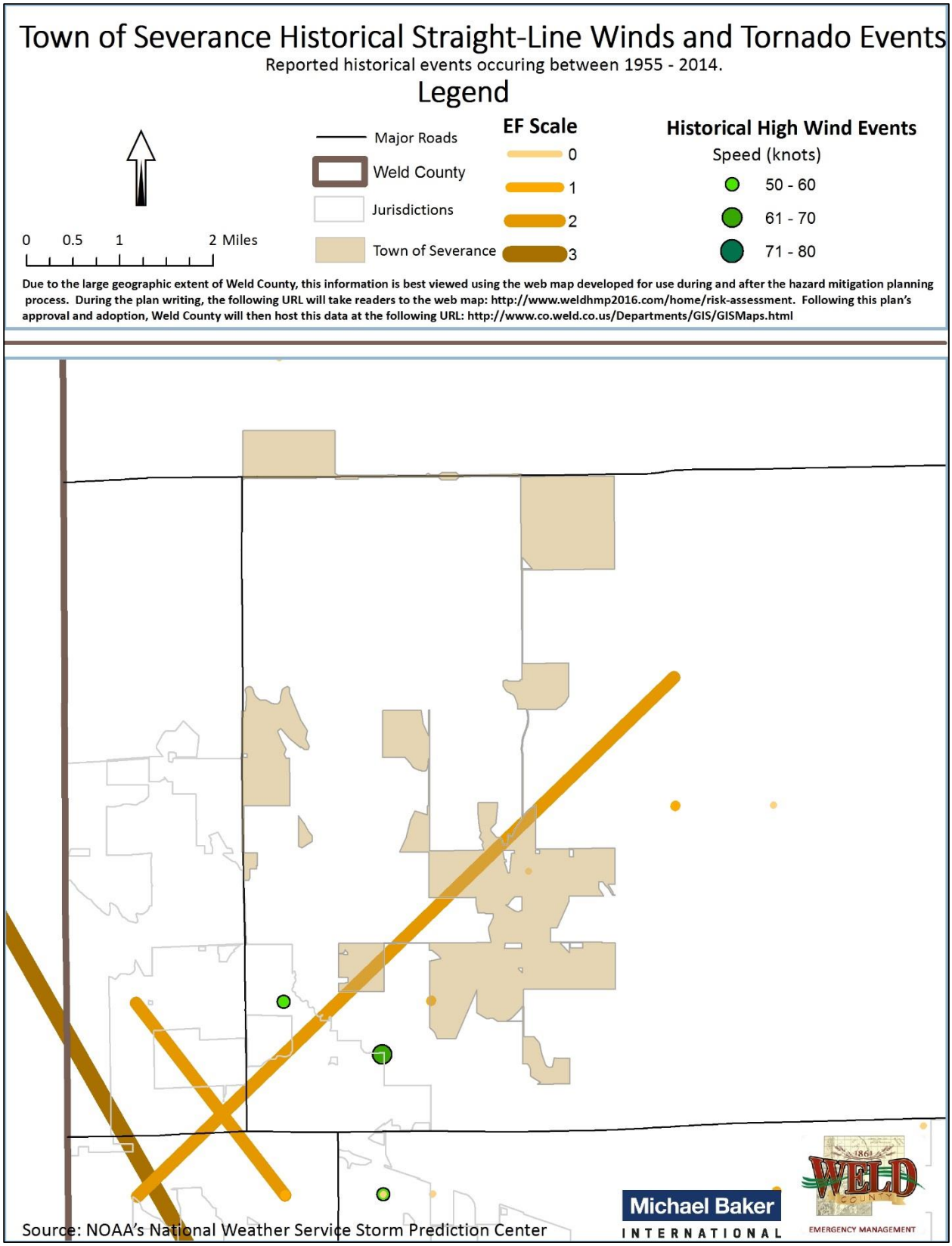
Severe storms affect the entire planning area of the Town of Severance including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of Severance. It is likely that lightning and hail will also be experienced in the area due to such storms.

Straight-Line Winds & Tornadoes

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Severance due to tornadoes. There have been three tornadoes reported within the town limits between 1957 and 2009. A tornado occurred on May 30, 1957 and caused $3,000 worth of property loss. Another tornado occurred on June 16, 1983 that caused $1,000 in property damage. There have been tornadoes reported very close to both the northern, eastern and southern borders of the Town limits. Tornadoes will remain a highly likely occurrence for the Town of Severance.

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Severance due to straight-line winds. However, straight-line winds remain a highly likely occurrence for the Town of Severance.



Inventory Exposed

All assets located in the Town of Severance can be considered at risk from straight-line winds and tornadoes. This includes 3,165 people, or 100% of the town's population, and all buildings and structures within the County. Most structures, including the town's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $266,707,561. Potential losses could be substantial.

Extreme Temperatures

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Severance due to extreme temperatures. There are two reports of extreme cold temperatures in central and southern Weld County on December 16th and 17th, 1996. There is a great potential for extreme temperature events to occur within the region at any given time.

Inventory Exposed

Due to the regional nature of extreme temperatures hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of extreme temperatures. This includes places with high numbers of elderly residents, low income families and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to extreme temperatures. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, a high poverty rate and/or large numbers of rental properties can plan accordingly to provide appropriate services and mitigation assistance during extreme temperature events.

Populations Vulnerable to Extreme Temperatures			
	Age: 65 and Over (%)	**Persons Below Poverty Level (%)**	**Renter-occupied housing units (%)**
Colorado	10.9	12.9	34.5
Town of Severance	5.3	3.4	9.0

The Town of Severance has a lower percentage of elderly residents than does the state of Colorado. This is also true for the percentage of people living below poverty level in the town. A much larger percentage of Severance residents own their homes than the general population of Colorado. Based on these statistics, Severance residents (in general) do not appear to be acutely vulnerable to the impacts of extreme temperatures. That said, future mitigation efforts related to extreme temperature should focus on reaching those residents who are elderly, live in poverty or are homeless, or are renters.

Potential Losses

Because there is no defined geographic boundary for extreme temperature hazards, all of the people and infrastructure within the Town of Severance are exposed to extreme temperatures. Those with elevated risk and potential loss are the homeless, infirm, elderly, and low income families. Given the lack of historical data and limited likelihood of structural losses in the Town of Severance resulting from extreme heat or cold, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the Town of Severance due to extreme temperatures are currently considered unquantifiable.

Drought

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Severance due to drought. There are four reports of drought in southern Weld County. The four drought events all occurred in April of 2002 and March of 2011. There is a great potential for a drought event to occur at any given time.

Inventory Exposed

Drought will have little to no direct impact on critical facilities or structures in the Town of Severance. Should a drought affect the water available for public water systems or individual wells, the availability of clean drinking water could be compromised. This situation would require emergency actions and could possibly overwhelm local capacities and financial resources.

Potential Losses

Although it is unlikely that drought conditions will affect existing buildings, infrastructure, and critical infrastructure, economic livelihoods in the Town of Severance could be negatively impacted due to crop loss, water shortages, and wildfires as a result of drought. Possible losses/impacts to critical facilities include the loss of critical function due to low water supplies.

As Severance continues to grow, it will consider water-saving mitigation activities that will decrease local vulnerability to drought.

Capabilities Assessment

The capability assessment examines the ability of the Town of Severance to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the Town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager	X		
Floodplain Administrator	X		
Community Planner	X		
GIS Specialist			x

Grant Writer			x

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the Town's current capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	N
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	IDK
A Stormwater Plan	IDK
A Continuity of Operations Plan (COOP)	N
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	N
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Severance has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of Severance has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Severance	"*Staff and Town Council will review the 2016 Plan annually."* *"Changes to the mitigation actions and priorities will be posted on the Town's web site."*

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for

integrating hazard mitigation into their local planning mechanisms and policies. The Town of Severance did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Severance based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Severance	*"We will integrate hazard mitigation actions into our capital improvements plan by including possible projects that mitigate risk hazards and elevates these projects up the projects priority list."*

Mitigation Action Guides

The following Mitigation Action Guide presents a status update of Severance's mitigation actions that were included in the 2009 Plan.

Severance: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Severance	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continued compliance with the NFIP	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES:	

The following Mitigation Action Guide profiles the community's new mitigation action that was developed for the 2016 Plan.

Town of Severance: Downtown drainage and street improvements	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding, drainage
LOCATION: Severance	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: January 1, 2016	
ISSUE: Localized flooding and drainage issues in the older part of Town.	
RECOMMENDATION: The benefits are to decrease impacts created by localized flooding and drainage in the old part of Town by installing curb, gutter, sidewalk and storm drainage facilities to alleviate the problem	
ACTION: install curb, gutter, sidewalk, street and drainage improvements by January 2016	
LEAD AGENCY: Town of Severance Officials	**EXPECTED COST: $1,700,000**
SUPPORT AGENCIES: DOLA	**POTENTIAL FUNDING SOURCES: Energy Impact Grant Funds**
PROGRESS MILESTONES: Begin project September 2015	

Letter of Intent to Participate

TOWN OF Severance

August 19, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County's Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Severance is submitting this letter of intent to confirm that Town of Severance has agreed to participate in the Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, Town of Severance agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town of Severance understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, I, Nicholas J. Wharton, commit the Town of Severance to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Nicholas J. Wharton, MPA
Assistant Town Administrator

Executed this 19 day of August, 2014

3 South Timber Ridge Parkway • P.O. Box 339 • Severance, Colorado 80546 • ph 970.686.1218 • fax 970.686.6250

Town of Windsor

The following are the overall goals that the City of Windsor established in their Comprehensive Plan: *2006 Update of the 2002 Comprehensive Plan.* These goals are the foundation of ongoing public and private sector as decisions that "effect the future quality of life of existing and future residents and the natural and build environment in which they live, learn, work, and play." In the context of the Weld County Hazard Mitigation Plan and the City's local hazard mitigation program, the achievement of the following goals will depend largely upon the city's ability to successfully implement its hazard mitigation strategies and reduce risk to people and property from hazards.

- Establish land uses and development patterns that reflect the needs and desires of Town of Windsor's citizens
- Provide guidance to the Town staff and elected and appointed officials as they make land use development decisions
- Facilitate communication between citizens and Town government
- Help coordinate various governmental functions
- Provide a basis for the development of specific, necessary, and appropriate regulations to govern the physical development of the Town

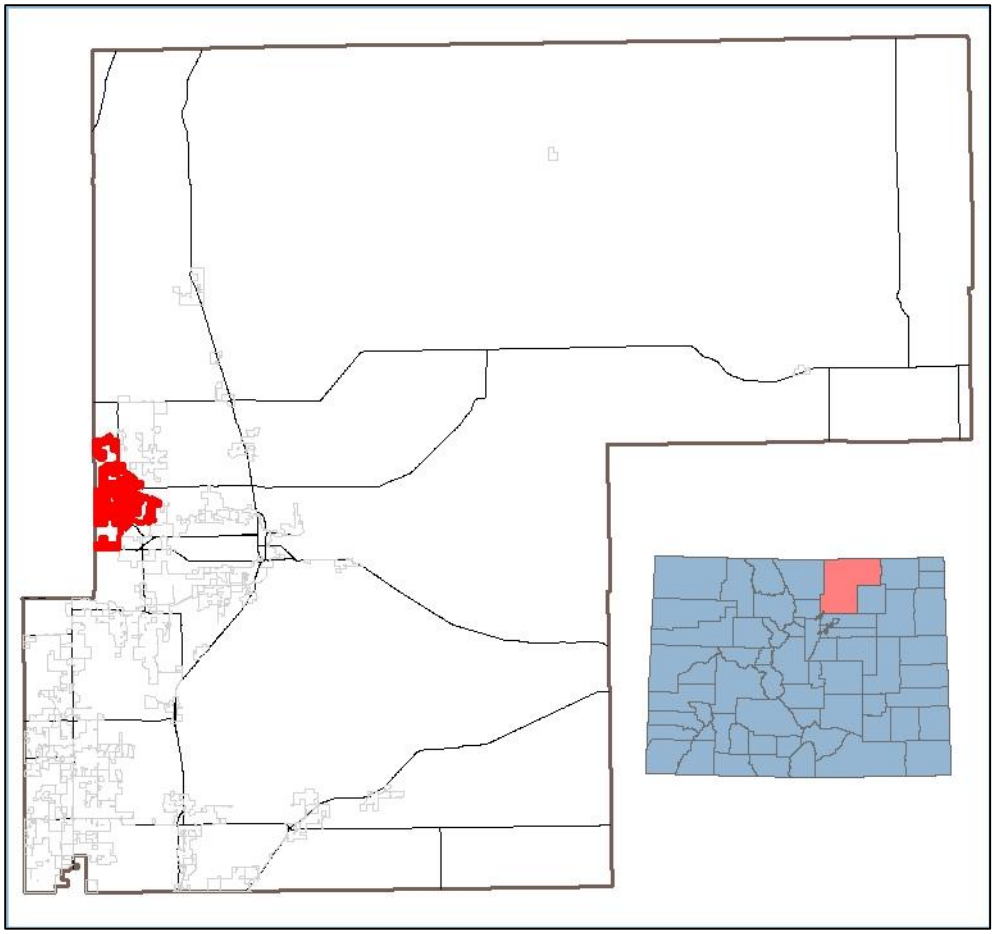
Community Profile

The Town of Windsor was founded in 1882 and incorporated in 1890. Windsor is located 60 miles north of Denver at an elevation of 4,800 feet above sea level. The town is approximately 24.67 square miles and boasts a semi-arid climate. The population of the Town of Windsor has steadily increased over the years. Currently, key community facilities include a Chamber of Commerce; Educational Facilities; Library Services; Parks, Recreational and Cultural Facilities; Fire Protection; Police; and Health and Medical Facilities.

Windsor has one Senior High School, two Middle Schools, five Elementary Schools, and one Charter School. Additionally, there are several higher educational facilities in close proximity to the town. Colorado State University and Arapahoe Community College are located approximately 15 miles to the northwest, the University of Northern Colorado and Aims Community College is approximately 15 miles to the southeast. The Town of Windsor offers a comprehensive park, recreation, cultural and trails program. This includes over 40 miles of trail including the Poudre River Trail and Windsor Lake Trail for hiking and biking; over 300 acres of parks (developed and undeveloped) and over 52 acres of Town managed open space. Conservation easements and two State Wildlife areas add over 400 more acres of public open space.

The Windsor-Severance Fire Rescue (WSFR) provides fire, rescue, and hazmat services to the Towns of Windsor and Severance, as well as the rural areas surrounding them. It is a special tax district made up of paid and volunteer staff. The WSFR has two stations staffed 24/7 in Windsor and a third in Severance.

Currently, the Town of Windsor has one Nursing Home, two Assisted Living Facilities (with a 3rd under construction); one Independent Senior Living (Good Samaritan Society); two Medical Office Buildings/Outpatient Facilities; and one Urgent Care Facility. The community's public services include: Water and Sewer Services; Public Improvements; Drainage information; Electric Services; Natural Gas; and Trash Collection.



Town of Windsor Statistics		
	Town of Windsor	Colorado
Population, 2014	21,106	5,355,866
Population, % change April 1, 2010 to July 1, 2014	13.2%	6.5%
% Population under 5 years, 2010	7.3%	6.8%
% Population under 18 years, 2010	29.4%	24.4%
% Population 65 years and over, 2010	10.0%	10.7%
Language other than English spoken at home, % age 5+, 2009-2013	5.5%	16.8%
Homeownership Rate	80.2%	65.4%
Persons Per Household	2.75	2.53
Persons below poverty level, %, 2009-2013	4.8%	13.2%
Median Household Income, 2009- 2013	$83,602	$58,433

Source: US Census Bureau

Hazard Identification and Risk Assessment

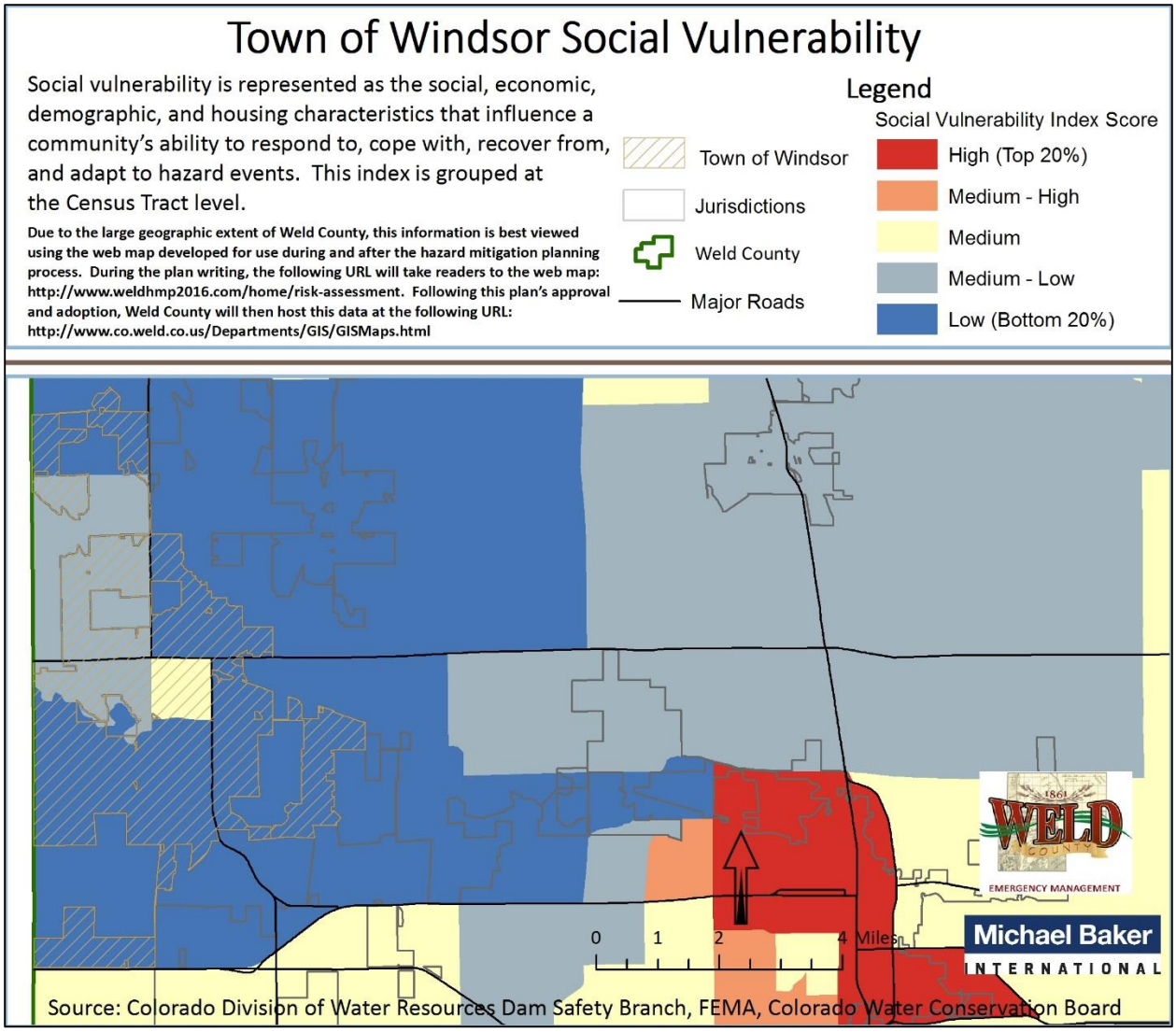
The Town of Windsor is situated in both Larimer and Weld Counties. For the purpose of this plan, spatially analyzed hazard risks have been assessed for the areas of the city that lie specifically within Weld County.

NATURAL HAZARD	PROBABILITY	IMPACT	SPATIAL EXTENT	WARNING TIME	DURATION	RF RATING
Severe Storm	0.90	0.30	0.80	0.30	0.30	2.60
Extreme Temperatures	0.90	0.30	0.80	0.10	0.40	2.50
Straight-Line Winds & Tornadoes	0.90	0.30	0.60	0.40	0.10	2.30
Drought	0.90	0.30	0.80	0.10	0.20	2.30
Prairie Fire	0.90	0.30	0.20	0.40	0.30	2.10
Flood	0.90	0.30	0.20	0.10	0.40	1.90
Public Health Hazards	0.60	0.30	0.40	0.10	0.40	1.80
Land Subsidence	0.60	0.30	0.20	0.40	0.30	1.80
HAZMAT	0.30	0.30	0.20	0.40	0.30	1.50
Earthquake	0.30	0.30	0.20	0.40	0.10	1.30
HIGH RISK (2.5 or higher) : Severe Storm; Extreme Tempuratures						
MODERATE RISK HAZARD (2.0 - 2.4): Straight-Line Winds & Tornadoes; Drought; Prairie Fire						
Low Risk (1.9 or lower): Flood; Public Health Hazards; Land Subsidence; HAZMAT; Earthquake						

Vulnerability Assessment

This section provides a refined vulnerability assessment, specific for the Town of Windsor, for those hazards that were identified as being rated HIGH in the preceding section. This analysis was conducted separately from that of the county-wide vulnerability assessment to specifically focus on the population, structures, infrastructure, and other assets unique to the Town of Windsor.

The results of the social vulnerability assessment are displayed on the map below. On the map, social vulnerability is represented at the census tract level by 5 classes of vulnerability: Low (bottom 20% of the county), Medium-Low, Medium, Medium-High, and High (top 20% of the county). The Town of Windsor's social vulnerability map shows social vulnerability within the community.

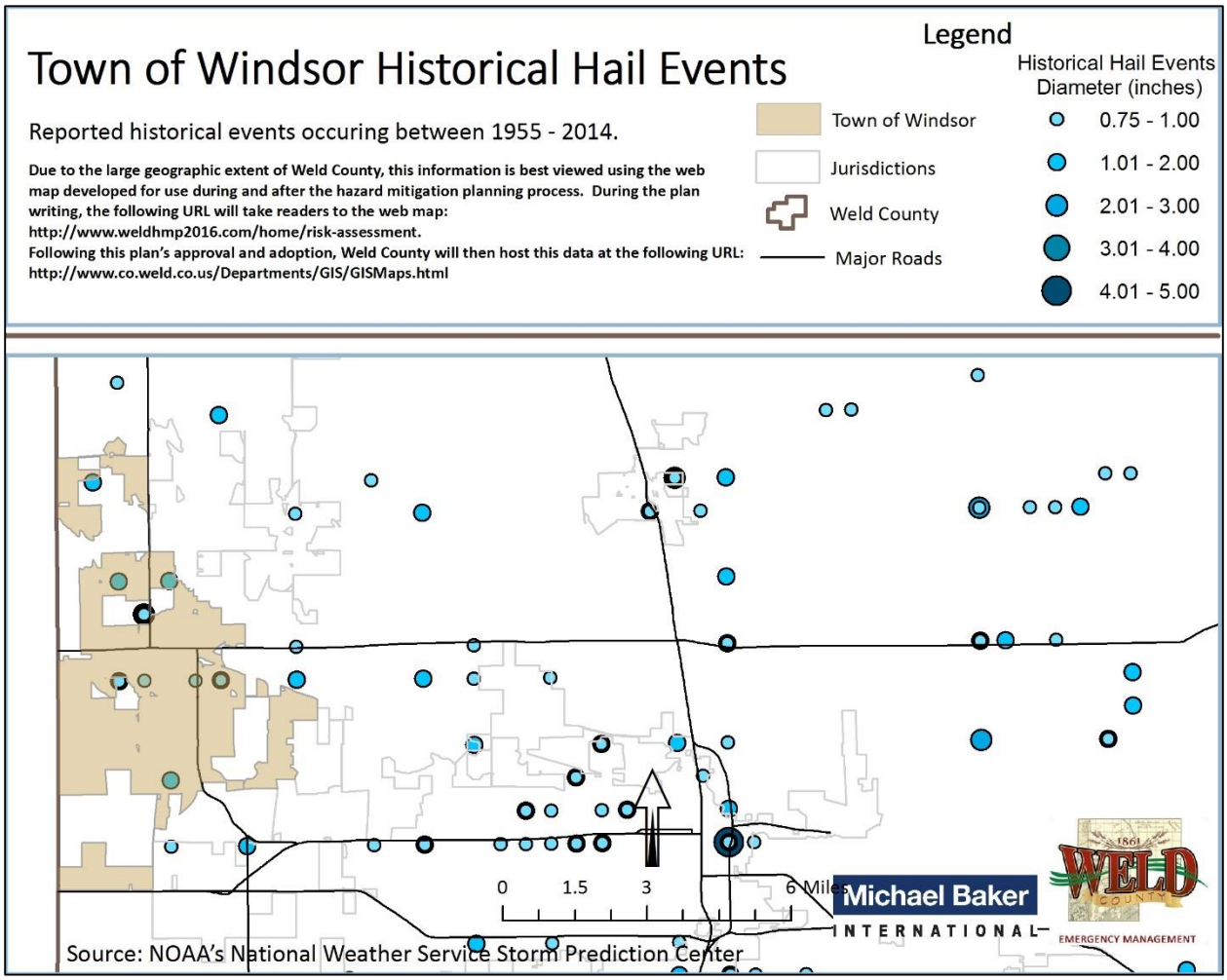


The Town of Windsor is characterized by low and medium-low levels of social vulnerability. The majority of the town is in the bottom 20% of social vulnerability in the county. Currently, the socioeconomic indicators that contribute to elevated vulnerability to disasters are lower in Windsor than they are in the majority of Weld County. This does not mean, however, that there aren't any socially vulnerable residents living in the community or that social vulnerability levels will remain the same over time. Close analysis of the individual social vulnerability indicators within the community will give local emergency managers, planners, and stakeholders a clearer picture of which social vulnerability factors threaten the community the most and where social and economic resources should be allocated in order to reduce vulnerability. Over time, the town should continue to monitor their progress as demographic, economic, and housing related conditions change over time.

Severe Storm (Hail, Lightning, Winter Storm)

Hail

According to the best available data there are no reported injuries, deaths, property damage, or crop damage in the Town of Windsor. There were several hail events that occurred within the town limits as well as several events less than one mile from the town limits, none of which reported injuries, deaths, property damage, or crop damage. Although there is no historic data showing hazardous impacts on the town, there is a great potential for hail events to occur at any given time.



Lightning

According to the National Climatic Data Center Storm Event Database there have been three recorded Lightning strikes within the Town of Windsor. There were no injuries, deaths, or crop damage; however, the town has reported $700,000 in property damage. There is a great potential for Lightning to occur at any given time within the Town of Windsor.

Winter Storm

According to the best available data, the Town of Windsor has experienced 25 Winter Storms since 1996. On December 28, 2006 there was report of a winter storm causing $102,000 in property damage in central

and southern Weld County. There were no deaths, injuries or damage to crops reported for any of these storms. Town of Windsor is at high risk of experiencing Winter Storms during the winter months.

Inventory exposed

All assets located in the Town of Windsor can be considered at risk from severe storms. This includes 21,106 people, or 100% of the town's population and all buildings and infrastructure within the Town. Damages primarily occur as a result of high winds, lightning strikes, hail, snow-loading, and flooding. Most structures, including the town's critical facilities, should be able to provide adequate protection from hail but the structures could suffer broken windows and dented exteriors. Those facilities with back-up generators are better equipped to handle severe weather situation should the power go out.

Potential Losses

Severe storms affect the entire planning area of the Town of Windsor including all above-ground structures and infrastructure. Although losses to structures are typically minimal and covered by insurance, there can be impacts with lost time, maintenance costs, and contents within structures. A timely forecast may not be able to mitigate the property loss, but could reduce the casualties and associated injuries.

It appears possible to forecast these extreme events with some skill, but further research needs to be done to test the existing hypothesis about the interaction between the convective storm and its environment that produces the extensive swath of high winds. Severe storms will remain a highly likely occurrence for the Town of Windsor. It is likely that lightning and hail will also be experienced in the area due to such storms.

Straight-Line Winds & Tornadoes

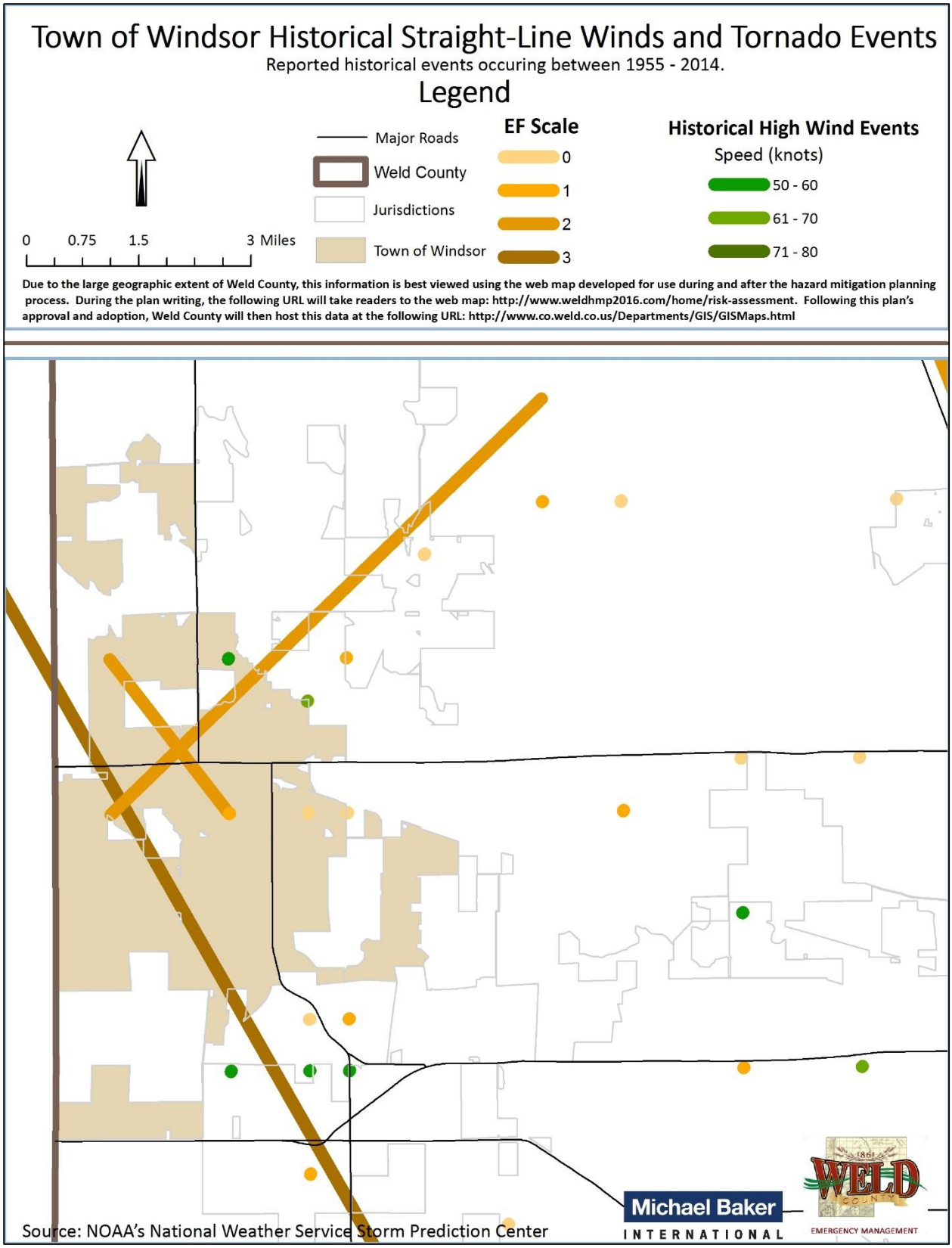
Although straight-line winds and tornadoes were identified as medium risk in the Hazard Identification and Risk Assessment, it is being included with the high vulnerability hazards due to the history of tornado events within the town. According to NOAA's Storm Events Database, 78 injuries, one death, approximately $147,000 of property damage, and no crop damages have been recorded within and near the Town of Windsor due to tornadoes.

There have been six tornadoes in the Town of Windsor between 1957 and 2008. The most severe event occurred on May 22, 2008. This EF3 tornado traveled in a north westerly direction and reached speeds of over 165 miles per hour. This tornado event consisted of a formation of several combined tornadoes forming a wedge that was between a half and three quarters of a mile wide. The tornado caused damage to not only the Town of Windsor but also the towns of Milliken, Platteville, Gilchrest, and the City of Greeley. One person was killed at the Missile Silo Campground near Greeley. The tornado impacted area was designated a national disaster. The Rocky Mountain Insurance Information Association (RMIIA) reported that there was an estimated $193.5 million in insured damages and approximately 24,000 auto and homeowners claims. Additional details concerning this damaging event can be found in the post-event reports posted on the Town's website (https://windsorgov.com/index.aspx?NID=581).

There have been tornadoes reported very close to the northern, eastern and southern borders of the Town limits as well. Tornadoes will remain a highly likely occurrence for the Town of Windsor.

Two residents of Chimney Park walk away with some of their belongings after the tornado blew through Windsor on May 22, 2008. (Photo Credit: Joe Amon, The Denver Post)

According to NOAA's Storm Events Database, no injuries, deaths, or crop damages have been recorded within the Town of Windsor due specifically to straight-line winds. There have been straight-line winds reported causing less than $1,000 in damages to property within the town limits. Additionally, there have been several reports of strong winds very close to the borders of the town limits. Straight-line winds will remain a highly likely occurrence for the Town of Windsor.



Inventory Exposed

All assets located in the Town of Windsor can be considered at risk from straight-line winds and tornadoes. This includes 21,106 people, or 100% of the town's population, and all buildings and structures within the County. Most structures, including the town's critical facilities, should be able to withstand and provide adequate protection from severe wind and tornadoes. Those facilities with back-up generators should be fully equipped to handle severe wind and tornado events should the power go out.

Potential Losses

Generally, straight-line wind events and tornadoes destroy private, commercial, and public property. Additional costs stem from debris removal, maintenance, repair, and response. Indirect costs include loss of industrial and commercial productivity as a result of damage to infrastructure, facilities, or interruption of services. Because no specific, community-wide loss estimation exists for wind and tornado hazards, potential losses are related to structure value. The building value of the structures in this area amounts to roughly $1,247,727,419. Potential losses could be substantial.

Extreme Temperatures

According to the best available data, no injuries, deaths, or crop damages have been recorded within the Town of Windsor due to extreme temperatures. There are two reports of extreme cold temperatures in central and southern Weld County on December 16th and 17th, 1996. There is a great potential for extreme temperature events to occur within the region at any given time.

Inventory Exposed

Due to the regional nature of extreme temperatures hazards, jurisdictions with higher numbers of socially vulnerable residents are expected to experience magnified impacts of extreme temperatures. This includes places with high numbers of elderly residents, low income families and homeless individuals/outdoor laborers.

The table below shows data related to population vulnerability to extreme temperatures. Based on Census information and knowledge of social vulnerability to hazards, jurisdictions with high numbers of elderly residents, a high poverty rate and/or large numbers of rental properties can plan accordingly to provide appropriate services and mitigation assistance during extreme temperature events.

Populations Vulnerable to Extreme Temperatures			
	Age: 65 and Over (%)	**Persons Below Poverty Level (%)**	**Renter-occupied housing units (%)**
Colorado	10.9	12.9	34.5
Town of Windsor	10.0	4.8	19.8

The Town of Windsor has a similar percentage of elderly residents as the state of Colorado. Windsor has a lower percentage of people living below poverty level than the state. A higher percentage of Windsor residents own their homes than the general population of Colorado. Based on these statistics, Windsor residents (in general) appear to be less acutely vulnerable to the impacts of extreme temperatures than the general population of Colorado. That said, future mitigation efforts related to extreme temperature should focus on reaching those residents who are elderly, live in poverty, are homeless, or are renters.

Potential Losses

Because there is no defined geographic boundary for extreme temperature hazards, all of the people and infrastructure within the Town of Windsor are exposed to extreme temperatures. Those with elevated

risk and potential loss are the homeless, infirm, elderly, and low income families. Given the lack of historical data and limited likelihood of structural losses in the Town of Windsor resulting from extreme heat or cold, and that placing a dollar amount on the cost of a human life are beyond the scope of the Plan, annualized economic losses for the Town of Windsor due to extreme temperatures are currently considered unquantifiable.

Capabilities Assessment

The capability assessment examines the ability of the Town of Windsor to implement and manage the comprehensive mitigation strategy laid out in this Plan. The strengths, weaknesses, and resources of the community are identified here as a means for evaluating and maintaining effective and appropriate management of the Town's hazard mitigation program.

Local Personnel

The ability of a community to implement a comprehensive mitigation strategy depends, in part, on available resources, including people and staff. The table below outlines the Town's capabilities as they relate to key personnel.

	Full Time	Part Time	None or Not-Identified
Emergency Manager			X
Floodplain Administrator			X
Community Planner			X
GIS Specialist	X		
Grant Writer			X

In Windsor, the Fire Chief and Police Chief act as the joint emergency managers when needed.

Land Use Planning and Codes

Local land use plans and building codes are tremendous tools for evaluating local policies related to hazard mitigation and risk reduction. Additionally, comprehensive master plans, capital improvement plans, stormwater plans and zoning ordinances all present opportunities for enhanced local capabilities. The table below outlines the Town's capabilities as they relate to land use planning and codes.

	Yes (Y); No (N); I don't know (IDK)
A zoning ordinance	Y
A hazard-specific ordinance	Y
Local building codes	Y
A comprehensive plan / master plan	Y
A Capital Improvements Plan	Y
A Stormwater Plan	Y
A Continuity of Operations Plan (COOP)	Y
An Emergency Operations Plan (EOP)	Y
A Long-Term Recovery Plan	Y
Participates in the NFIP	Y

Building codes are one tool that communities use to enhance public safety. For example, they can increase structural integrity, mitigate structure fires, and provide benefits in relation to natural hazard avoidance. In Colorado, land use regulations and building codes are typically implemented at the local level. Even without a statewide mandate, most counties and many municipalities have enacted regulations and codes. The Town of Windsor has adopted a local building code requirement, demonstrating their understanding of the benefits codes provide, including reduced exposure to hazards.

Plan Maintenance and Implementation

The Town of Windsor has developed a Plan Maintenance and Implementation Strategy outlining their method and schedule for keeping the plan current. The Implementation Strategy below also includes a discussion of how the town will continue public participation in the plan maintenance process.

Jurisdiction	Plan Maintenance and Implementation Strategy
Town of Windsor	*The Weld County Hazard Mitigation Plan will be reviewed annually by staff and Town Board.* *The public will have an opportunity to comment during the annual public meeting.*

The Town of Windsor has had experience receiving, administering, and applying for grants for mitigation and planning-related activities or projects. These previous grants include:

- FEMA Pre Disaster Mitigation Grants, HUD Grants, DOLA, HMGP Grants
- Additionally, the Town receives technical assistance from the agencies responsible for each grant

Integrating Hazard Mitigation into Local Planning

Through discussions at planning meetings and the use of an online survey, individual outreach, and phone calls, each participating jurisdiction brainstormed with the planning team to identify processes for integrating hazard mitigation into their local planning mechanisms and policies. The Town of Windsor did not integrate the 2009 HMP into other local planning mechanisms. The table below lists the specific integration strategies identified by the Town of Windsor based on the mitigation actions listed in this plan.

Jurisdiction	Strategy
Town of Windsor	*"The Capital Improvement Plan is looked at annually and discussed to ensure measures are taken to mitigate potential hazards. The Weld County HMP will be used moving forward."*

Mitigation Action Guides

The following Mitigation Action Guide presents a status update of Windsor's mitigation action that was included in the 2009 Plan.

Windsor: Continued compliance with the NFIP	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Windsor	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 2009	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: As participants in the NFIP the Community will continue to promote wise use of floodplains through ordinance administration and periodic update, promotion of flood insurance and staff training, including encouragement of Certified Floodplain Manager status.	
RECOMMENDATION: The benefits are to flood prone building owners who choose to insure against flood losses, and to taxpayers who no longer would be faced with subsidizing those potential losses.	
ACTION: Continued compliance with the NFIP	
LEAD AGENCY: Floodplain Management officials	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: Windsor does not participate in the CRS program, however we are a member of NFIP. Windsor adopted the model ordinance in Jan of 2014 as required by the State of Colorado. The Town enforces the floodplain regulations in accordance with FEMA's requirements.	

The following Mitigation Action Guides profile each of the community's new mitigation actions that were developed for the 2016 Plan.

Windsor: John Law Ditch - Flood Mitigation Project	
PRIORITY: High	**HAZARDS ADDRESSED:** Flooding
LOCATION: Windsor	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 10/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 2016	
ISSUE: FEMA mitigation match for the installation of concrete box culverts under the Greeley No. 2 Canal, Weld County Road 21 and State Highway 392 to reduce flood damage within the John Law Floodplain.	
RECOMMENDATION: Complete project within given timeline to receive grant funding	
ACTION: Complete John Law Ditch- Flood Mitigation Project	
LEAD AGENCY: Town of Windsor	**EXPECTED COST:** $2,977,504.59
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** FEMA and CDBG-DR

PROGRESS MILESTONES: Received FEMA grant and CDBG-DR funding. Project is scheduled to be complete in 2016.

Windsor: Acquire Emergency Power System	
PRIORITY: Medium	**HAZARDS ADDRESSED:** All Hazards
LOCATION: Windsor	**GOALS ADDRESSED: 1, 2**
RECOMMENDATION DATE: 10/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: 2016	
ISSUE: In Colorado, there a numerous events that could knock out power to Town offices. In case of emergency, there are several Town employees who need to stay connected to serve our residents.	
RECOMMENDATION: The Town plans on purchasing a backup generator	
ACTION: Acquire Emergency Power System	
LEAD AGENCY: Town of Windsor	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:**
PROGRESS MILESTONES: Funds for project are included in the 2016 budget.	

Windsor: Conduct LETA 911 Outreach to Residents	
PRIORITY: Medium	**HAZARDS ADDRESSED:** All hazards
LOCATION: Windsor	**GOALS ADDRESSED: 1, 2, 3**
RECOMMENDATION DATE: 10/2015	**OBJECTIVES ADDRESSED: A, D, E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: Residents need to be informed in case emergency situations arise.	
RECOMMENDATION: The Town continuously partners with LETA 911 to provide emergency communications to our residents. We will provide LETA 911 each year and encourage residents to sign-up for this great service.	
ACTION: Conduct LETA 911 Outreach to Residents	
LEAD AGENCY: Larimer County	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES: Town of Windsor and other jurisdictions	**POTENTIAL FUNDING SOURCES:** Already funded
PROGRESS MILESTONES: Town of Windsor staff was recently trained to use LETA 911.	

Windsor: Flood Mitigation on CR 13	
PRIORITY: Medium	**HAZARDS ADDRESSED:** Flooding
LOCATION: Windsor	**GOALS ADDRESSED: 1**
RECOMMENDATION DATE: 10/2015	**OBJECTIVES ADDRESSED: E**
TARGET COMPLETION DATE: Ongoing	
ISSUE: CR 13 is vulnerable to flooding each year	
RECOMMENDATION: The Town invests $50,000 annually to prevent flooding by removing excess gravel	
ACTION: Develop a flood mitigation strategy for CR 13	
LEAD AGENCY: Town	**EXPECTED COST:** Can be accomplished within existing budgets
SUPPORT AGENCIES:	**POTENTIAL FUNDING SOURCES:** Already funded
PROGRESS MILESTONES:	

Letter of Intent to Participate

TOWN OF WINDSOR
COLORADO

LETTER OF INTENT TO PARTICIPATE

August 18, 2014

Weld County Office of Emergency Management
Director Roy Rudisill
1150 O Street
Greeley, CO 80632

Re: "Statement of Intent to Participate" as a participating jurisdiction in Weld County Multi-Jurisdictional Hazard Mitigation Plan (HMP)

Dear Director Rudisill,

In accordance with the Federal Emergency Management Agency's (FEMA) Local Hazard Mitigation Plan (HMP) requirements, under 44 CFR §201.6, which specifically identify criteria that allow for multi-jurisdictional mitigation plans, the Town of Windsor, Police Department is submitting this letter of intent to confirm that the Town of Windsor, Police Department has agreed to participate in the Weld County's Multi-Jurisdictional Hazard Mitigation Planning effort.

Further, as a condition to participating in the mitigation planning, the Town of Windsor, Police Department agrees to meet the requirements for mitigation plans identified in 44 CFR §201.6 and to provide such cooperation as is necessary and in a timely manner to the Weld County Office of Emergency Management, to complete the plan in conformance with FEMA requirements.

The Town of Windsor, Police Department understands that it must engage in the following planning process, as more fully described in FEMA's *Local Mitigation Planning Handbook* dated March 2013 including, but not limited to:

- Identification of hazards unique to the jurisdiction and not addressed in the master planning document;
- The conduct of a vulnerability analysis and an identification of risks, where they differ from the general planning area;
- The formulation of mitigation goals responsive to public input and development of mitigation actions complementary to those goals. A range of actions must be identified specific for each jurisdiction;
- Demonstration that there has been proactively offered an opportunity for participation in the planning process by all community stakeholders (examples of participation include relevant involvement in any planning process, attending meetings, contributing research, data, or other information, commenting on drafts of the plan, etc.);
- Documentation of an effective process to maintain and implement the plan;
- Formal adoption of the Multi-Jurisdictional Hazard Mitigation Plan by the jurisdiction's governing body (each jurisdiction must officially adopt the plan).

Therefore, with a full understanding of the obligations incurred by an agreement between the Lead Jurisdiction and the Participating Jurisdiction, John E. Michaels, commits the Town of Windsor, Police Department to the Weld County Multi-Jurisdictional Hazard Mitigation Planning effort.

Executed this 18th day of August, 2014

J. E. Michaels
John E. Michaels, Chief of Police

Windsor Police Department
200 N. 11th Street • Windsor, CO 80550 • phone: 970- 674-6400 • fax: 970- 686-7478
www.windsorgov.com

1861 WELD COUNTY
EMERGENCY MANAGEMENT

Michael Baker INTERNATIONAL

Appendix C – Local Jurisdiction Mitigation Outreach

Weld County Hazard Mitigation Plan Update

As a participating member of the Weld County Hazard Mitigation Planning Committee (HMPC), you serve as a vital link between the county and its businesses and residents. Individual jurisdictional and organizational representatives can help ensure a successful planning process by helping to inform your communities about this process and the ultimate goal of a more resilient Weld County. Please leverage any opportunities that you may have to inform the public about this important project (www.WeldHMP2016.com).

When opportunities do arise to outreach to groups of citizens, it is important to document these public interactions so that they can be mentioned in the plan document. During the course of the planning process, please help to document these interactions with the public using the brief form below.

Jurisdiction/Organization:	Town of Milliken
Meeting / Event :	Town Board Meeting
Date:	11/25/2014
Location:	Community Chambers – 1201 Broad Street
Brief Description of outreach performed:	The Town of Milliken Adopted the Town's Stormwater Master Plan. The Plan noted $20,000,000 in needed Storm Drainage Projects for the Town.

Weld County Hazard Mitigation Plan Update

As a participating member of the Weld County Hazard Mitigation Planning Committee (HMPC), you serve as a vital link between the county and its businesses and residents. Individual jurisdictional and organizational representatives can help ensure a successful planning process by helping to inform your communities about this process and the ultimate goal of a more resilient Weld County. Please leverage any opportunities that you may have to inform the public about this important project (www.WeldHMP2016.com).

When opportunities do arise to outreach to groups of citizens, it is important to document these public interactions so that they can be mentioned in the plan document. During the course of the planning process, please help to document these interactions with the public using the brief form below.

Jurisdiction/Organization:	Town of Milliken
Meeting / Event :	Approval of Ordinance 704, Creating the Town of Milliken Storm Water Management and Facility Utility Enterprise
Date:	12/10/2014
Location:	Community Chambers – 1201 Broad Street
Brief Description of outreach performed:	The Town set up a Storm Water Utility Fee that can be utilized for future Stormwater Projects. The Town is currently in the process have having a study completed to establish a fair and equitable stormwater fee for businesses and residents. The study will be completed by the end of 2015. At the beginning of 2016 the stormwater utility fee will be permanently put in place.

CITY OF FORT LUPTON
CITY COUNCIL

CITY OF Fort Lupton EST 1836
COME PAINT YOUR FUTURE WITH US

Tommy Holton, Mayor

Shannon Rhoda, Ward 1
Chris Ceretto, Ward 2
Chris Cross, Ward 3

David Crespin, Ward 1
Zoe A. Stieber, Ward 2
Bob McWilliams, Ward 3

AM 2016-161

APPROVING A SITE PLAN AND SPECIAL USE PERMIT FOR DAVE'S EARTHWORKS, INC. LOCATED WEST AND ADJACENT TO COUNTY ROAD 27 AND APPROXIMATELY ONE-HALF MILE NORTH OF COUNTY ROAD 8 ON LOTS 2 AND 3 OF THE YARBROUGH ACRES MINOR SUBDIVISION, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO

I. **Agenda Date:** *Council Meeting – November 7, 2016*

II. **Attachments:**

a. *Proposed Resolution*
b. *PC Resolution P2016-007, Minutes & Staff Report*
c. *Land Use Application & Project Description*
d. *Site Plan Map and Other Submitted Maps*
e. *Drainage Report*
f. *Referral Responses*
g. *Legal Notifications*

III. **Issue/Request:**

The Applicant, Dave's Earthworks Inc., has submitted a request for a site plan for approval of a storage yard, maintenance shop and commercial office and special use permit for three above-ground fuel tanks.

IV. **Fiscal Note:** Please see Item XII.

Finance Department Use Only

Finance Director

V. **Submitted by:**

Planner

VI. **Approved for Presentation:**

City Administrator

VII. **Attorney Reviewed** Approved Pending Approval

VIII. **Certification of Council Approval:**

City Clerk Date

IX. Detail of Issue/Request:

The applicant, Dave's Earthworks, Inc., has submitted a final site plan application for a property that includes two parcels, which are located west and adjacent to County Road 27 and approximately one-half mile north of County Road 8 on Lots 2 and 3 of the Yarbrough Acres Minor Subdivision. The property is located within the I-1 Light Industrial zone district and the proposed use complies with this zoning classification.

The Applicant has submitted a request for a site plan for approval of a storage yard, maintenance shop and commercial office and special use permit for three above-ground fuel tanks. The applicant will also perform occasional crushing of recycled concrete and/or asphalt at the site. The applicant will construct the majority of improvements on the southern parcel, which will include construction of the combined shop and office building and the storage yard. Improvements to the northern parcel include landscaping, leach field and drainage improvements. Future phasing plans for a small building to serve a landscaping materials business, with the time for this development unknown.

Planning Commission held a public hearing on November 1, 2016, and recommended approval of the proposed final site plan. The Planning Commission Resolution P2016-007 and minutes from the hearing are included in the packet.

X. Legal / Political Considerations:

All public notification requirements have been met, including publication of the Planning Commission and City Council public hearings in the Fort Lupton Press, sign posting on the property of the public hearings, notice of the hearings by mail to owners of the property within one hundred (100) feet of the subject property.

XI. Alternatives/Options:

The City Council has the following three options:

a) Approve the final site plan and special use permit application;
b) Approve the final site plan and special use permit application with conditions;
c) Disapprove the final site plan and special use permit application; or
d) Refer the application back to Planning Commission for further study.

XII. Financial Considerations:

The applicant has paid all applicable land use application fees and are covering ongoing review expenses.

XIII. Staff Recommendation:

Staff recommends conditional approval of Resolution 2016Rxxx for Dave's Earthworks, Inc. application for a final site plan and special use permit.

RESOLUTION NO. 2016RXXX

A RESOLUTION OF THE CITY COUNCIL OF FORT LUPTON RECOMMENDING TO CITY COUNCIL APPROVAL OF DAVE'S EARTHWORKS, INC.'S SITE PLAN FOR A STORAGE YARD, MAINTENANCE SHOP AND COMMERCIAL OFFICE AND SPECIAL USE PERMIT FOR ABOVE-GROUND FUEL TANKS LOCATED AT LOTS 2 AND 3 OF THE YARBROUGH ACRES MINOR SUBDIVISION, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission held a public hearing on November 1, 2016, for the purpose of reviewing the site plan for a storage yard, maintenance shop and commercial office and special use permit for above-ground fuel tanks; and

WHEREAS, after review of the application and supporting documentation, find the site plan generally conforms with City codes and requirements and policies therein; and

WHEREAS, the City Council held a public hearing to consider and review the request for a Site Plan on November 8, 2016; and

WHEREAS, all legal requirements for the public hearing have been met including publication of the legal notice in the Fort Lupton Press, mailing of public hearing notices to adjacent property owners within one hundred (100) feet of the property, and the posting of a sign on the site advertising the public hearing a minimum of fifteen (15) days in advance of the hearing; and

NOW THEREFORE BE IT RESOLVED, City Council of Fort Lupton has considered the application and has taken into consideration staff comments, the applicant's presentation, all referral comments and any citizen testimony in response to this application. Based on the facts presented on this date, the Planning Commission hereby recommends approval of the Dave's Earthworks, Inc.'s site plan for a storage yard, maintenance shop and commercial office and special use permit for three above-ground fuel tanks located west and adjacent to County Road 27 and approximately on-half mile north of County Road 8 on Lots 2 and 3 of the Yarbrough Acres Minor Subdivision, City of Fort Lupton, County of Weld, State of Colorado, with the following conditions:

I. Prior to recording the Site Plan:

A. The title of the site plan map shall include the Project No. SPR2016-001 and SUP2016-002.

B. Details shall be removed from the Site Plan and placed on a separate detail sheet.

C. A dedicated emergency access road 20 feet in width shall be delineated on the Site Plan.

D. The following notes shall be placed on the site plan map:

1. The property shall be maintained to the curb, or roadway if no curb exists.

2. Dead and dying landscaping material shall be replaced at the earliest reasonable date as determined by the City.

3. In the event traffic numbers and usage significantly exceed those represented by the Property Owner and relied upon by the City for compilation of the traffic study applicable to this project, future improvements to the truck routes may be required by the City for reasons related to site activity or truck circulation patterns and numbers, roadway classification changes and newly permitted facilities affecting the truck haul route traffic usage. Property Owner shall pay a proportionate cost share of future improvements not described herein based on the Property Owner's percentage of truck total trips using the current data on the haul route in comparison to the numbers and usage represented by Applicant in compilation of the traffic study. The City may retain a third party traffic study consultant to evaluate traffic data usage by Property Owner and provide said study to Property Owner prior to the imposition of any costs stated herein.

4. Lighting on site shall be maintained so that light is directed on the site and shall not spill onto adjacent properties.

5. The septic systems serving the property shall maintain compliance with all regulations and/or requirements of the Weld County Health Department.

6. A three foot clear space shall be maintained around the circumference of fire hydrants. *2012 IFC 507.5.5.*

7. Lots 2 and 3 may not be sold separately without Planning Department approval.

8. The existing oil and gas well shall be delineated on the plat.

9. The three (3) proposed fuel tank sizes shall be limited to two (2) tanks that are no more than 6,000 gallons each and one (1) tank to be no more than 4,000 gallons, and all three (3) fuel tanks must be approved by the Fire District and labeled on the site plan.

10. The applicant shall delineate an optional chain link fence along the perimeter of the property.

11. A decorative gate for the entrance shall be proposed and approved by the Fire District and City Staff.

II. Prior to release of building permits:

A. Written evidence of a final grading permit from the State must be provided.

B. Written evidence shall be provided to show that the comments from the City Engineer have been adequately addressed.

C. Written evidence shall be provided to show that the comments from the Planning Technician have been adequately addressed.

D. Written evidence shall be provided to show that Paragraph 7 of the Fort Lupton Fire Protection District's response and map comments have been adequately addressed.

E. Two sets of Mylars of the site plan maps shall be submitted for recording with the Weld County Clerk & Recorder.

III. Prior to release of building permits for the above-ground fuel tanks:

A. Applicant must provide a copy of the permit(s) from the State of Colorado permitting the above-ground fuel tanks.

B. Applicant must provide written evidence that the Fort Lupton Fire Protection District's comments related to the above-ground fuel tanks have been adequately addressed.

IV. Prior to the release of a certificate of occupancy:

A. Written evidence shall be provided to show that the comments from United Power have been adequately addressed.

B. Written evidence shall be provided to show that the comments from the Fort Lupton Fire Protection District have been adequately addressed.

C. Written evidence of a final septic permit shall be provided.

APPROVED AND PASSED BY A MAJORITY VOTE OF THOSE ELECTED TO THE CITY COUNCIL THIS 8th DAY OF NOVEMBER 2016.

City of Fort Lupton

_____

Tommy Holton, Mayor

Attest:

Nanette S. Fornof, MMC
City Clerk

Approved as to form:

Andy Ausmus, City Attorney

MINUTES

RECORD OF PROCEEDINGS
FORT LUPTON PLANNING COMMISSION
November 1, 2016

The Planning Commission of the City of Fort Lupton met in session at the City Complex, 130 South McKinley Avenue, the regular meeting place of the Planning Commission, on Tuesday, November 1, 2016. Chairperson Mike Simone called the meeting to order at 6:04 p.m.

ROLL CALL

Planning Technician Mari Peña called the roll. Those present were Chairperson Mike Simone, Commission members Bruce Davis, Bush White, Dan Parrish, Lucas Marone and Paul Weber. Also present were Planning Director Todd Hodges, Planner Alyssa Knutson, and Planning Technician Mari Peña.

APPROVAL OF AGENDA

It was moved by Bruce Davis and seconded by Dan Parrish to approve the Agenda as submitted.

Motion carried unanimously by voice vote.

CONSENT AGENDA

It was moved by Bush White and seconded by Bruce Davis to approve the Consent Agenda as submitted. The following item was part of the Consent Agenda:

Approval of the Minutes of the September 20, 2016 meeting.

Motion carried unanimously by a voice vote.

DISCUSSION ITEMS

P2016-007 Dave's Earthworks, Inc.'s Site Plan and Special Use Permit

The Planning Chair disclosed that he knows Kelly Deitman personally and Ms. Deitman notified him that she would be attending the meeting; however, he noted that no conversation occurred over the project.

The Planning Chair asked for a brief description of the project.

The City Planner, Alyssa Knutson, stated the site plan was for a landscape business, Dave's Earthworks Inc., located west and adjacent to County Road 27 and approximately one-half mile north of County Road 8 on Lots 2 and 3 of the Yarbrough Acres Minor Subdivision. The property contains two (2) parcels currently zoned I-1 Light Industrial and contains approximately ten (10) acres. The southern parcel will have the majority of the planned improvements for Phase 1 of the project and is directly north of Maxum Enterprises (d/b/a Pilot Thomas). The northern parcel for this project is a planned Phase II and will include

drainage and septic improvements and landscaping. The special use permit for this project includes three (3) above ground fuel tanks. Ms. Knutson indicated all notification requirements have been met and stated Kerr McGee Oil and Gas has submitted a letter, dated November 1, 2016, informing the City of an oil and gas lease on the property. Kerr McGee Oil and Gas is requesting the applicant identify the existing well location with a 200' setback on the site plan.

The Planning Director, Todd Hodges stated that due to the letter from Kerr McGee Oil and Gas, a condition of approval be added that the owner shall delineate the well and setback prior to recording the site plan map.

The Owner, Dave Hunt, and his Representative, Kelly Deitman, are present for the hearing and have prepared a presentation.

Kelly Deitman, an architect for Halcyon Design LLC, presented the proposed project. The address to the site will be 3355 County Road 27 and includes two (2) parcels. The property to the north is residential along with two (2) properties to the east and across the street are also residential. Street pictures of the north and south views were provided indicating the ditch along the east property line and west of County Road 27. A chain link fence similar to the surrounding properties on the south and west will be placed on the north and east. Due to the ditch, the current temporary access is from Maxum Enterprises LLC. There is an agreement to use the access until access over the ditch is approved by the ditch company. The existing storage building will remain and the owner is currently storing a minimum amount of vehicles on site. The landscape materials will be stored on the northern parcel. The site plan includes one entry point for the two (2) parcels. The septic and leach field will be constructed and a large detention pond will service both lots. Ms. Deitman also indicated the location of three (3) fuel tanks on the site plan. She noted that comments received from the Fort Lupton Fire Protection District indicated a need for a 20 foot wide access drive to loop around the main building. She noted she will be having further discussions with the Fire District regarding the access drive. Also presented, were the front elevations of the main office, utility plans, and type of lighting fixtures. The landscaping plan consists of landscaping surrounding the property.

Dave Hunt, the owner of Dave's Earthworks, Inc., gave a brief overview of his business. He indicated his operation is typically small, with 33 employees but no more than 50. On the north parcel he plans for concrete and asphalt recycling, but added that it is not a big operation. He is coordinating with the ditch company to provide access from County Road 27 to his property. The ditch company will need to shut off the water in order for him to construct the access.

The Planning Chair opened the public hearing at 6:24 p.m. however there was no public. The public hearing was closed at 6:24 p.m.

The Planning Chair asked Ms. Deitman about the chain link fencing on the property.

The Planning Director indicated that the fence needs to be addressed because all outside storage must be screened. The fence must be delineated on the site plan and requires a building permit.

The Planning Chair asked if sidewalk is being proposed. Mr. Hunt indicated that a public sidewalk is not being proposed.

Member Lucas Marone asked for clarification on the number of tanks and their volume. Mr. Hunt indicated that two (2), 6,000 gallon tanks and one (1) 4,000 gallon tank is being proposed. Mr. Hodges stated that there are State requirements for the fuel tanks and the Fire District must also approve the tanks. A new condition has been placed on the Resolution to address the maximum volume permitted for each tank.

Member Dan Parrish asked if a septic system is provided to the existing building. Ms. Deitman answered that the current storage building is not connected to a septic system. He noted concern over the flat land on this property and water saturating the leach field. Ms. Deitman indicated that the building would be constructed at a high point on the property for water to drain away from the building. Mr. Hunt added that the sub detention areas will also have adequate drainage as well as the septic and leach field. Mr. Parrish noted that stipulations were made for a 100 year flood and he thought the Colorado mandated planning for a 500 year flood. The Planning Director stated that the standard that was used was directed from Public Works and should be sufficient. Mr. Parrish also inquired about the "future flows and the loop to hit the capacity" and what that referred to. Ms. Deitman indicated that the Fire District was referring to the sprinkler system for the main building.

Member Bush White inquired over the chain link fence and asked if any other type of fence was proposed. Mr. Hunt indicated that he is open to suggestions on the fence. Discussion occurred over security and type of fences.

Mr. White asked if the landscape will have an irrigation system to keep the landscape from dying. The City Planner, Alyssa Knutson, indicated that a condition of approval (Item No. 2 on the Resolution) states, "Dead and dying landscaping material shall be replaced at the earliest reasonable date as determined by the City." This should cover any concerns over the dying landscape.

Member Bruce Davis asked if there a requirement for a fence along the northern property line. Mr. Hodges added that the fence could be labeled as an option to the owner.

Mr. Davis also inquired over the 20 foot access required by the Fire District. Mr. Hodges explained that the access drive is providing access to fire trucks around the main building. This will keep any vehicles from blocking the fire trucks in case of emergency.

Member Paul Weber asked about setbacks for the leach field. Mr. Hunt answered that there are setbacks from the ditch. Mr. Hodges added that a septic permit must be obtained from the Weld County Health Department. Ms. Deitman indicated that the septic tank is at least 50 feet away from the ditch. Mr. Hodges indicated that prior to Certificate of Occupancy, the owner must provide evidence of a final permit.

The Planning Chair asked if there was a requirement to connect to the City sewer line. Mr. Hodges indicated that there is a requirement to connect to the City's water line; however, he does not believe there is a requirement for sewer connection. Mr. Hodges will review the Annexation Agreement for sewer connection requirements.

The Planning Chair asked if the applicant would agree to install a "decorative" gate at the entrance of the property for staff approval. The applicant agreed and it was determined that this requirement would be added as a condition of approval on the Resolution.

Dan Parrish made a motion to approve Resolution P2016-007 and Bush White seconded the motion.

Mr. Hodges proposed that the following conditions be added to the Resolution:

Item I (d) (8). The existing wells oil and gas well shall be delineated on the plat.

Item I (d) (9). The three (3) proposed fuel tank sized shall be limited to two (2) tanks that are no more than 6,000 gallons each and one (1) tank to be no more than 4,000 gallons, and all three (3) fuel tanks must be approved by the Fire District and labeled on the site plan.

Item I (d) (10). The applicant shall delineate an optional chain link fence along the perimeter of the property.

Item I (d) (11). A decorative gate for the entrance shall be proposed and approved by the Fire District and City Staff.

The Planning Chair asked Dan Parrish if he approved the additional conditions. Dan Parrish approved the changes to the Resolution and Bush White seconded the motion. There being no further discussion, motion passed on voice vote.

Upcoming land use applications and updates

The Planning Chair asked that a planning refresher workshop with DOLA be coordinated for the new members on the Planning Commission.

The City Planner, Alyssa Knutson, indicated that the next meetings will be on Tuesday, November 8, 2016 for a minor subdivision, and Tuesday, November 29, 2016 for a change of zone.

Ms. Knutson presented the members with the adopted changes to the Commercial and Industrial Zone Districts. She briefly updated members on the status of the Comprehensive Plan update and encouraged members to provide feedback on the new webpage at picturefortlupton.com. She also confirmed that the members received the link to current development projects on the City webpage so they can review project documents prior to packets being distributed.

ADJOURNMENT

It was moved by Bruce Davis and seconded by Bush White to adjourn the November 1, 2016 Planning Commission meeting at 7:06 p.m.

Motion carried on voice vote.

_____
Mari Peña, Planning Technician

Approved by Planning Commission

_____
Mike Simone, Chairperson

STAFF REPORT

DAVE'S EARTHWORKS, INC. SITE PLAN & SPECIAL USE PERMIT
STAFF REPORT
SPR2016-001 & SUP2016-002

PROJECT DESCRIPTION

Project Nos.: SPR2016-001 & SUP2016-002

Project Name: Dave's Earthworks, Inc. Site Plan & Special Use Permit

Owner's Name: Dave's Earthworks, Inc. ("Applicant")

Location of Request:

West and adjacent to County Road 27 and approximately one-half mile north of County Road 8 on Lots 2 and 3 of the Yarbrough Acres Minor Subdivision, City of Fort Lupton, County of Weld, State of Colorado ("Property")

The Property is located directly north of an industrial business (Maxum Enterprises LLC) and south of a residential lot. Additional residential properties and an industrial park (Greenfield Industrial Park LLC) are located across from the property.

Nature of Request:

The Applicant has submitted a request for a site plan for approval of a storage yard, maintenance shop and commercial office and special use permit for three above-ground fuel tanks. The applicant will construct the majority of improvements on the southern parcel, which will include construction of the combined shop and office building and the storage yard. Improvements to the northern parcel include landscaping, leach field and drainage improvements. Future phasing plans for a small building to serve a landscaping materials business, with the time for this development unknown.

Site Size: Parcel No. 1 (southern parcel) is 5.005 acres, more or less. Parcel No. 2 (northern parcel) is 5.007 acres, more or less.

Zone District: I-1 Light Industrial.

Proposed Use: Heavy Commercial/Light Industrial.

Existing Use: Agricultural.

Hearing Dates: Planning Commission – November 1, 2016 at 6:00 PM; and
City Council – November 7, 2016 at 7:00 PM.

Hearing Location: Fort Lupton City Hall – Council Chambers, 130 S. McKinley Ave., Fort Lupton, Colorado.

Staff Recommendation: Approval with conditions, as shown on the proposed resolution.

SUMMARY OF PREVIOUS APPLICATIONS

In 2013, this property was annexed and initially zoned to I-1 Light Industrial by the City of Fort Lupton. This property also includes Lots 2 and 3 of the Yarbrough Acres Minor Subdivision, also approved by the Fort Lupton Planning Commission and City Council in 2013.

APPLICATION PROCESS

The Applicant is requesting approval of:

1) A site plan for a storage yard, maintenance shop and commercial office.
2) A special use permit for three above-ground fuel tanks, which include:
    - two 2,000 gallon diesel fuel tanks; and
    - one 1,000 gallon gas tank.

A site plan is processed under Section 16-173 of the Fort Lupton Municipal Code ("Code") and special use permits are processed under Section 16-7 of the Code.

After required public notice of the site plan and special use permit, the Planning Commission shall consider the application, referral comments and any public testimony at a public hearing and make a recommendation to City Council to approve, approve with conditions or deny the site plan and special use permit. The Planning Commission's comments shall be based on the evidence presented, conformance with the Comprehensive Plan and compliance with the City's standards, regulations and policies.

The City Council shall then conduct a public hearing and evaluate the site plan and special use permit, referral agency comments, Planning Commission recommendation and any public testimony, and shall approve, conditionally approve, continue for additional information or for further study or deny the application based on the evidence presented and compliance with the City's standards, regulations and policies and other guidelines.

NOTIFICATION REQUIREMENTS

The Zoning Regulations require published notice of the hearings at least fifteen (15) days prior to the hearings. The Planning Commission and City Council hearings were published in the Fort Lupton Press on October 12, 2016.

Notice of the public hearings were posted on the Property on October 13, 2016, pursuant to the Zoning Regulations, which require the Applicant post the Property with notice of the hearings at least fifteen (15) days prior to the hearings.

Notice was mailed to neighbors within one-hundred (100) feet of the Property and oil and gas lessees on October 5, 2016.

CONFORMANCE WITH CITY STANDARDS, REGULATIONS AND POLICIES

The Property is located within the I-1 Light Industrial Zone District. The objective of the I-1 Light Industrial District is to provide for the location and development of manufacturing and industrial uses which generate limited amounts of noise, fumes, dust, vibrations and traffic, or which are designed in such a fashion that such factors are contained and all storage screened from adjacent residential uses.

The I-1 Light Industrial Zone District permits storage (provided outdoor storage is screened from adjacent residential uses), auto and truck services and repairs, and personal offices as a use by right. However, an approved site plan for utilization of an I-1 zone lot is required prior to release of building permits. The Applicant's use complies with the intent of the I-1 Light Industrial Zone District and will have limited amounts of noise, fumes, dust, vibrations and traffic. Additionally, the Applicant has submitted a landscape plan that will screen its use from surrounding residential properties.

A special use permit for above-ground storage tanks is required in the I-1 Light Industrial District.

The Applicant has submitted the required documents pursuant to the Code.

CONFORMANCE WITH THE COMPREHENSIVE PLAN

The Fort Lupton Comprehensive Plan designates this area as the Employment Area Tier 1 land use type. This land use type is intended to serve as a job center and uses envisioned include business parks, large scale commercial and complementary uses to meet the needs of employees. These uses should be adequately buffered from less intense uses and comply with design standards. Employment Area Tier 1 areas should have access to one or more major arterials and highways.

The proposed development provides additional jobs to the community and is a less intense use than others described in the Comprehensive Plan for this land use type, including less traffic generation. The location is located along County Road 27, which is a major arterial in the City and has close access to U.S. Highway 85 off of County Road 8.

The Property is within Growth Tier Two (secondary growth boundary), as defined in the Comprehensive Plan. Growth Tiers are based on the proximity of infrastructure. Since the adoption of the Comprehensive Plan, infrastructure has been extended to County Road 8, allowing the City to efficiently provide services to this location.

REFERRALS

Referrals were provided to the list below. Any comments received are enclosed with the Planning Commission packet.

City Engineer	City Attorney	Police Chief
Public Works Director	Building Inspector	Zoning Compliance
Wastewater Plant Supervisor	GIS Specialist	Fort Lupton Fire Protection District
CDOT	United Power	Comcast
CenturyLink	Xcel Energy	Postmaster
Weld County Department of Planning	Weld County Department of Public Health & Environment	Weld County School District RE-8
Northern Colorado Water Conservation District		

For more information on this development, please refer to the Planning Commission packet provided. Additional documents are available for review at the Fort Lupton City Hall.

PLANNING COMMISSION
RESOLUTION NO. P2016-007

RESOLUTION NO. P2016-007

A RESOLUTION OF THE PLANNING COMMISSION OF FORT LUPTON RECOMMENDING TO CITY COUNCIL APPROVAL OF DAVE'S EARTHWORKS, INC.'S SITE PLAN FOR A STORAGE YARD, MAINTENANCE SHOP AND COMMERCIAL OFFICE AND SPECIAL USE PERMIT FOR ABOVE-GROUND FUEL TANKS LOCATED AT LOTS 2 AND 3 OF THE YARBROUGH ACRES MINOR SUBDIVISION, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO.

WHEREAS, the Planning Commission held a public hearing on November 1, 2016, for the purpose of reviewing the site plan for a storage yard, maintenance shop and commercial office and special use permit for above-ground fuel tanks; and

WHEREAS, after review of the application and supporting documentation, find the site plan generally conforms with City codes and requirements and policies therein; and

WHEREAS, all legal requirements for the public hearing have been met including publication of the legal notice in the Fort Lupton Press, mailing of public hearing notices to adjacent property owners within 100 feet and posting of the hearing on the site; and

NOW THEREFORE BE IT RESOLVED, the Planning Commission has considered the application and has taken into consideration staff comments, the applicant's presentation, all referral comments and any citizen testimony in response to this application. Based on the facts presented on this date, the Planning Commission hereby recommends approval of the Dave's Earthworks, Inc.'s site plan for a storage yard, maintenance shop and commercial office and special use permit for three above-ground fuel tanks located west and adjacent to County Road 27 and approximately on-half mile north of County Road 8 on Lots 2 and 3 of the Yarbrough Acres Minor Subdivision, City of Fort Lupton, County of Weld, State of Colorado, with the following conditions:

I. Prior to recording the Site Plan:

A. The title of the site plan map shall include the Project No. SPR2016-001 and SUP2016-002.

B. Details shall be removed from the Site Plan and placed on a separate detail sheet.

C. A dedicated emergency access road 20 feet in width shall be delineated on the Site Plan.

D. The following notes shall be placed on the site plan map:

1. The property shall be maintained to the curb, or roadway if no curb exists.

2. Dead and dying landscaping material shall be replaced at the earliest reasonable date as determined by the City.

3. In the event traffic numbers and usage significantly exceed those represented by the Property Owner and relied upon by the City for compilation of the traffic study applicable to this project, future improvements to the truck routes may be required by the City for reasons related to site activity or truck circulation patterns and numbers, roadway classification changes and newly permitted facilities affecting the truck haul route traffic usage. Property Owner shall pay a proportionate cost share of future improvements not described herein based on the Property Owner's percentage of truck total trips using the current data on the haul route in comparison to the numbers and usage represented by Applicant in compilation of the traffic study. The City may retain a third party traffic study consultant to evaluate traffic data usage by Property Owner and provide said study to Property Owner prior to the imposition of any costs stated herein.

4. Lighting on site shall be maintained so that light is directed on the site and shall not spill onto adjacent properties.

5. The septic systems serving the property shall maintain compliance with all regulations and/or requirements of the Weld County Health Department.

6. A three foot clear space shall be maintained around the circumference of fire hydrants. *2012 IFC 507.5.5.*

7. Lots 2 and 3 may not be sold separately without Planning Department approval.

8. The existing oil and gas well shall be delineated on the plat.

9. The three (3) proposed fuel tank sizes shall be limited to two (2) tanks that are no more than 6,000 gallons each and one (1) tank to be no more than 4,000 gallons, and all three (3) fuel tanks must be approved by the Fire District and labeled on the site plan.

10. The applicant shall delineate an optional chain link fence along the perimeter of the property.

11. A decorative gate for the entrance shall be proposed and approved by the Fire District and City Staff.

II. Prior to release of building permits:

A. Written evidence of a final grading permit from the State must be provided.

B. Written evidence shall be provided to show that the comments from the City Engineer have been adequately addressed.

C. Written evidence shall be provided to show that the comments from the Planning Technician have been adequately addressed.

D. Written evidence shall be provided to show that Paragraph 7 of the Fort Lupton Fire Protection District's response and map comments have been adequately addressed.

E. Two sets of Mylars of the site plan maps shall be submitted for recording with the Weld County Clerk & Recorder.

III. Prior to release of building permits for the above-ground fuel tanks:

A. Applicant must provide a copy of the permit(s) from the State of Colorado permitting the above-ground fuel tanks.

B. Applicant must provide written evidence that the Fort Lupton Fire Protection District's comments related to the above-ground fuel tanks have been adequately addressed.

IV. Prior to the release of a certificate of occupancy:

A. Written evidence shall be provided to show that the comments from United Power have been adequately addressed.

B. Written evidence shall be provided to show that the comments from the Fort Lupton Fire Protection District have been adequately addressed.

C. Written evidence of a final septic permit shall be provided.

DONE THIS 1st DAY OF NOVEMBER, 2016, BY THE PLANNING COMMISSION FOR THE CITY OF FORT LUPTON, COLORADO.

Chairman

ATTEST:

Planning Director

LAND USE APPLICATION &
PROJECT DESCRIPTION

Form PLAN002

CITY OF Fort Lupton EST 1836

COME PAINT YOUR FUTURE WITH US

Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621
Phone: 303.857.6694
Fax: 303.857.0351
www.fortlupton.org

Project No. SPR2016-001

Land Use Application Form

A. CONTACT INFORMATION

1) Property Owner Name: Dwayne D Hunt

Company: Dave's Earthworks

Phone: 303-944-0746 Email: Dhunt@deiteam.com

Address: 3355 County road 27 Fort lupton, CO

Preferred method of contact? Email: ☐ Phone: ☒ Mail: ☐

2) Representative Name: Kelly C. Deitman

Company: Halcyon design, LLC

Phone: 303-906-2617 Email: kelly@halcyonarch.com

Address: Firestone, CO

Preferred method of contact? Email: ☐ Phone: ☒ Mail: ☐

3) Billing Contact *(where invoices should be directed to)*: Dave Hunt

Billing Company: Dave's Earthworks Inc

Phone: 303-558-0930 Email: office@deiteam.com

Address: 1137 E. Bridge St. Brighton, CO

B. SITE DESCRIPTION

Site Address: 3355 county Road 27

Parcel Number: 147118401002 & 147118401003

Existing Zone Classification: light industrial Proposed Zone Classification: light industrial

Water Type: Public Name: Dave's Earthworks Inc. Shop + office

Sewage Type: Septic District Name or Location Hauled to: CCW + CCS + NCW

C. APPLICATION TYPE (CHECK ALL THAT APPLY)

☐ Sketch Plat	☐ Administrative Site Plan	☐ PUD Plan (Preliminary & Final)
☐ Preliminary Plat	☐ Special Use Permit	☐ Variance
☐ Final Plat	☐ Oil & Gas Permit	☐ Administrative Variance
☐ Minor Subdivision	☐ Annexation & Initial Zone	☐ Appeal
☐ Amended Plat	☐ Change of Zone	☐ Other:
☒ Site Plan	☐ Comp Plan Amendment	

Project No. SPR2016-001

D. PROJECT DESCRIPTION

Project Name: Dave's Earthworks Inc. Shop + Office

Please provide a short description of the proposed project in the space provided below:

refer to the narrative

E. REQUIRED DOCUMENTS

For an application to be considered complete, and for planning staff to begin review and schedule any applicable public hearings, this Land Use Application Form must be fully completed and all required attachments included. Planning staff will review the application for completeness and will provide notice to the representative and/or owner whether the application has been deemed complete.

F. CERTIFICATIONS

Representative Certification

By signing this application, I attest that I am acting with the knowledge and consent of all owners of the property that is the subject of this application, and that I have been designated to act as the representative for the project described in this land use application. I further certify that all information submitted with this application is true and accurate to the best of my knowledge.

Representative: _____ Date: _____

Owner Certification

I hereby certify that I am the legal owner of record of the property that is the subject of this application. I hereby authorize the representative listed on this application, if any, to communicate directly with City officials and to submit documentation and information regarding this application on my behalf.

Owner: _____ Date: 9-21-16

For Office Use Only

Received Date: 9/16/16

If the application is not complete, state reasons why it is incomplete:

- Need land use app. signed.

Deemed Complete Date: _____

Fees Submitted: $2,650 Escrow Submitted: $2500

Halcyon Design LLC
Architecture • Graphics

August 31, 2016

Project: #1607 DEI Shop/Office
3355 County Road 27, Fort Lupton, CO
Site Plan Review Narrative

To Whom It May Concern:

Included with this submittal are Drawings and Documents as itemized in the City of Fort Lupton Site Plan Process Form WKBK001. The Site Plan Review will include two parcels as noted below. Parcels are intended to remain separate. Descriptions of proposed development items is as follows:

3355 County Road 27 Parcel No. 147118401002

Item 6.m
This project consists of a proposed storage yard, maintenance shop and commercial office for Dave's Earthworks, Inc., currently based out of Brighton, CO. The Owner anticipates having ten (10) employees occupy the office (East) side of the building on a full-time basis during regular business hours (Monday-Friday, 8am-5pm). In addition, there may be up to (20) construction and maintenance staff that will make trips to the office, storage yard and maintenance shop on a brief (1-2 hours), but regular basis of two (2) visits per week. Construction and maintenance staff will routinely work at off-site project locations. It is anticipated that few, if any, office or maintenance staff will be on-site beyond the Monday thru Friday work week. Maintenance activities will be contained with the shop (West) side of the building and will consist of light vehicle repair and construction equipment servicing. The storage yard at the West half of the site away from the street will be where construction equipment and company-owned vehicles are parked, some on trailers. Office employees will park immediately adjacent to the East side of the building in an asphalt paved parking area. An existing structure along the South property line will be maintained for storage, with no modifications planned for the structure. A trash enclosure and monument sign will be as indicated on the Construction Documents.

Item 6.o
Construction of the shop and office (one building) will occur in a single/first phase to include all grading and drainage improvements, street access, paved parking areas, landscaping, exterior lighting, and other site development indicated on the attached Construction Documents.

North Parcel No. 147118401003

Item 6.m
This parcel will be used for a future landscaping materials business. The small building and scale indicated on the Site Plan will be constructed in a future phase, date unknown

Item 6.o
Work proposed for this project phase consists of a leach field to serve both parcels, landscaping, and storm drain. The site will be graded as shown for drainage to a shared detention pond at the Southwest corner of the parcel to the South.

Kelly C. Deitman, AIA, LEED AP, NCARB
Halcyon Design LLC
PO Box 30
Frederick, CO 80530
303.906.2617 (cell)
Kelly@halcyonarch.com

From: Kelly Deitman
To: Alyssa Knutson
Subject: FW: shop fuel tank
Date: Wednesday, September 28, 2016 8:17:00 AM

Here is the fuel tank info. requested (below). Let me know if you have any other questions.

Kelly Deitman, AIA, LEED AP, NCARB
Halcyon Design LLC
PO Box 30
Frederick, CO 80530
8393 W I-25 Frontage Rd, Unit #1
Frederick, CO 80516
303.906.2617
Kelly@halcyonarch.com
www.halcyonarch.com

From: Dave Hunt [mailto:dhunt@deiteam.com]
Sent: Monday, September 26, 2016 4:54 PM
To: Kelly Deitman <kelly@halcyonarch.com>
Subject: Re: shop fuel tank

Kelly
As of right now I have 2- 2,000 gallon tanks for diesel and 1- 1,000 gallon tank for gas. I would like to upgrade these to 2- 6,000 gallon tanks for diesel and 1- 2,000 gallon tank for gas. The diesel fuel is for on road and off road just in case. hope this helps!

On Mon, Sep 26, 2016 at 4:45 PM, Kelly Deitman <kelly@halcyonarch.com> wrote:

> Alyssa is asking for additional info. on the proposed fuel tank for your shop/office site. Specifically, tank size and type of fuel. Thanks,
>
> Kelly Deitman, AIA, LEED AP, NCARB
> Halcyon Design LLC
> PO Box 30
> Frederick, CO 80530
> 8393 W I-25 Frontage Rd, Unit #1
> Frederick, CO 80516
> 303.906.2617
> Kelly@halcyonarch.com
> www.halcyonarch.com

--
Dave Hunt
President/Owner
dhunt@deiteam.com

Dave's Earthworks Inc.
1137 E Bridge Street
Brighton, CO. 80601

303-944-0746 – Cell
303-558-0930 – Office

MAPS

Shop & Office

Site Plan Review

Architect:

Kelly Deitman
Halcyon Design LLC
PO Box 30
Frederick, CO 80516

Civil Engineer:

Eric Wernsman
Wernsman Engineering
1011 42nd Street
Evans, CO 80620

22/123

Project Information

2012 International Building Code
2012 Mechanical Code
2012 Plumbing Code
2012 Fuel Gas Code
2006 Energy Conservation Code
2011 National Electrical Code
2012 International Fire Code

Jurisdiction: City of Fort Lupton
Parcel No. 147118401002 & 147118401003
Lot Area: 5 Acres each parcel, 10 acres total

Zoning: I-1 Light Industrial
Setbacks: 10' Rear, 0' Side, 25' Front
Offstreet Parking:
1 space per employee, maximum per shift
Min. of one off-street loading space, 12' x 50'
Parking Spaces 9' x 19' with 25' wide (2-way) aisle
Oversized Spaces 10' x 20', min. 40% of spaces
Accessible Parking Space 13' x 20'
Bicycle parking min. 2% of vehicle parking spaces

Building Height: 28' +/-
Building Area: 10,780 s.f.

Water District: Central Colorado Water (CCW)
Central Colorado Water Subdistrict (CCS)
Northern Colorado Water (NCW)
Fire District: Fort Lupton Fire

Land Use Areas

North Parcel
(future phase TBD)

Land Use	Area	% of Lot
Building Footprint	3200 s.f.	1%
Asphalt Paving	11,826 s.f.	6%
Concrete Walk	N/A	N/A
Total Impervious	15,026 s.f.	7%
Lot Size	217,800 s.f.	100%
Pervious Area	202,774 s.f.	93%

South Parcel

Land Use	Area	% of Lot
Building Footprint	10,907 s.f.	5%
Asphalt Paving	11,192 s.f.	5%
Concrete Walk	3,725 s.f.	2%
Total Impervious	25,824 s.f.	12%
Lot Size	217,800 s.f.	100%
Pervious Area	191,976 s.f.	88%

Sheet Index

PROPERTY DESCRIPTION

A parcel of land in the City of Fort Lupton, Colorado, located in the NE4 of SE4 of Section 18, T1, R66 of the 6th P.M. and more particularly described as follows: Lot 2 of the Yarbrough Acres Minor Subdivision.

OWNER'S APPROVAL

Know All Men By These Presents, that _____, being the sole owner of the land described herein, and _____ are all of the mortgagees and holders of liens upon the property, and each and all hereby consent to this plat and join the conveyance and dedication of all streets, roads, alleys, easements, public ways and places shown hereon.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this ___ day of _____, 2016.

_____

STATE OF COLORADO,)
) ss
COUNTY OF WELD)

The foregoing instrument was acknowledged before me by _____ on this ___ day of _____, 2016. Witness my hand and seal.

My commission expires _____.

_____
Notary Public

CITY ENGINEER'S APPROVAL

Approved this ___ day of _____, 2016.

_____
City Engineer

CITY WATER AND SEWER DEPARTMENT APPROVAL

Approved this ___ day of _____, 2016.

_____
Director of Public Works

CITY ADMINISTATOR'S APPROVAL

Approved this ___ day of _____, 2016.

_____
City Administrator

PLANNING COMMISSION RECOMMENDATION

Recommended this ___ day of _____, 2016, by Resolution No. _____.

_____
Chairperson, Fort Lupton
Planning Commission

MAYOR'S CERTIFICATE

This is to certify that a plat of the above-described property was approved by _____ No. ___ _____ of the City of Fort Lupton passed and adopted on the ___ day of _____, A.D., 2016 and that the Mayor of the City of Fort Lupton, as authorized by said _____ on behalf of the City of Fort Lupton, hereby acknowledges and adopts the said plat upon which this certificate is endorsed for all purposes indicated thereon.

_____
Mayor

Attest:

_____
City Clerk

(Seal)

Dave's Earthworks Inc. Shop & Office
Site Plan Review
3355 County Rd 27
Fort Lupton, Colorado 80621

Halcyon Design LLC
PO Box 30
Frederick, CO 80530
303.906.2617

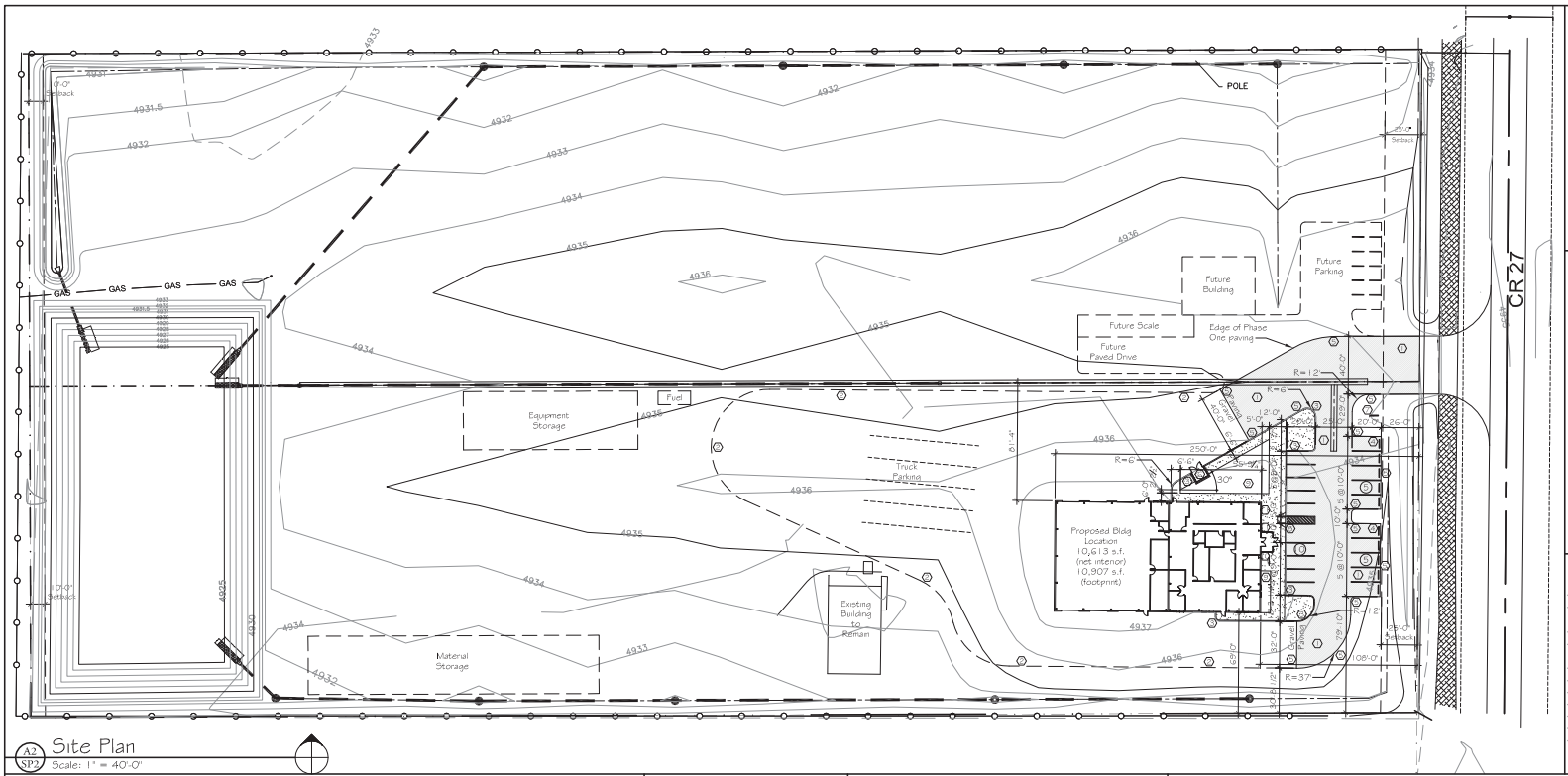
DATE
8.31.16

REVISIONS

SHEET TITLE
Cover Sheet & Project Info.

SHEET NUMBER
SP1

Project No. 1607



A2 / SP2 Site Plan
Scale: 1" = 40'-0"

Site Legend

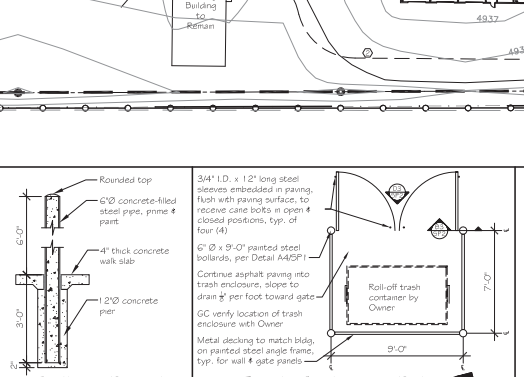
- Property Line
- Setback Line
- Existing Contours
- New Contours
- Existing Water Line
- New Water Service
- Existing Sanitary Sewer Line
- New Sanitary Sewer Service
- New Telephone Service
- New Electrical Service
- Transformer (existing)
- Existing Gas Line
- New Gas Service

General Notes

1. This project consists of work on two separate parcels to include Parcel #1471184O1003 and Parcel #1471184O1002 also known as 3355 County Rd 37. Parcels will remain separate - no minor subdivision process is intended for this phase of the project.
2. See Civil Drawings for grading, drainage, and horizontal control.
3. See Landscaping Drawings for planting and irrigation information.
4. Building dimensions are to the outside face of foundation.
5. Proposed structure is approximately 28' +/- high from finished floor height to highest roof fascia.
6. The proposed office and shop building will have ten full-time employees.
7. Concrete curb radius shall be 3'-0" to outside face of curb, unless noted otherwise on plan.

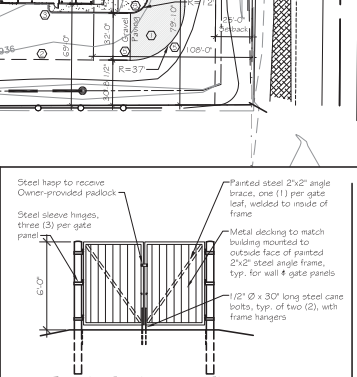
Plan Key Notes

1. Asphalt paving per Geotechnical Report.
2. Approximate edge of gravel paving, verify with Owner.
3. 6" Concrete curb per Civil.
4. 6' Wide concrete wheel stops in locations shown.
5. Edge of asphalt paving.
6. Trash enclosure per Details, this Sheet.
7. Monument sign per Details, this Sheet.
8. Accessible curb ramp per Detail E3/SP2.
9. Planter bed per Landscape Plans.
10. Bicycle Rack.
11. Accessible parking signage per Detail C4/SP2.

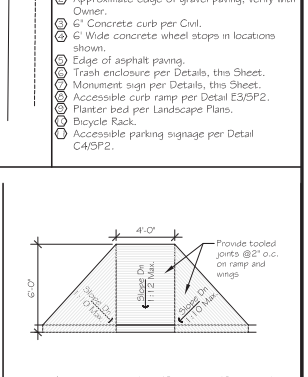


B3 / SP2 Bollard Detail
Scale: 1 1/2" = 1'-0"

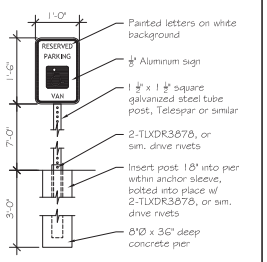
C3 / SP2 Trash Enclosure Dtl
Scale: 1/4" = 1'-0"



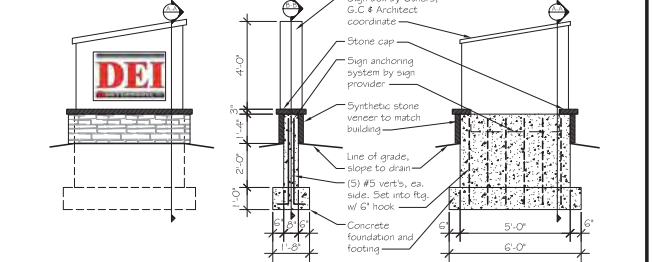
D3 / SP2 Trash Enclosure Elevation
Scale: 1/4" = 1'-0"



E3 / SP2 Accessible Ramp Detail
Scale: 1/4" = 1'-0"



C4 / SP2 Accessible Parking Sign
Scale: 3/4" = 1'-0"



D4 / SP2 Monument Sign Details
Scale: 3/8" = 1'-0"

23/123

Dave's Earthworks Inc. Shop & Office
Site Plan Review
3355 County Rd 27
Fort Lupton, Colorado 80621

Halcyon Design LLC
PO Box 30
Frederick, CO 80530
303.906.2617

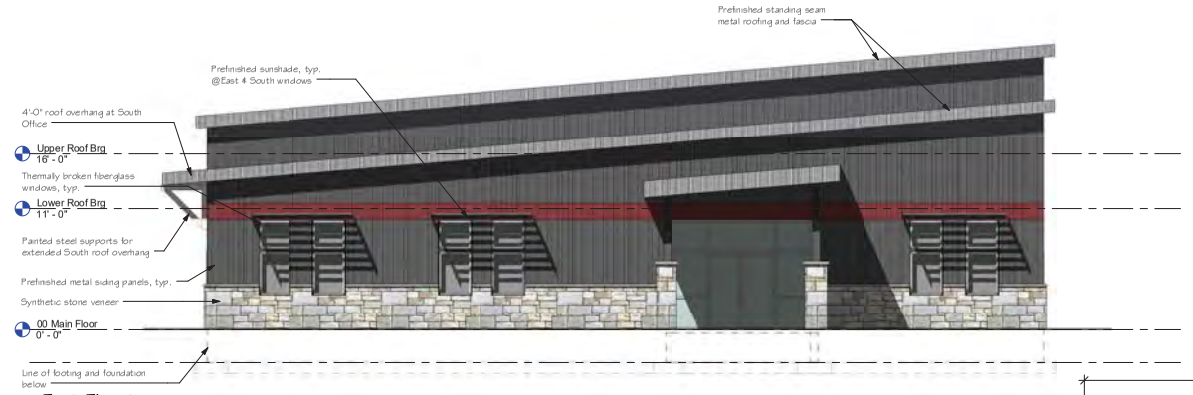
DATE
8.31.16

REVISIONS

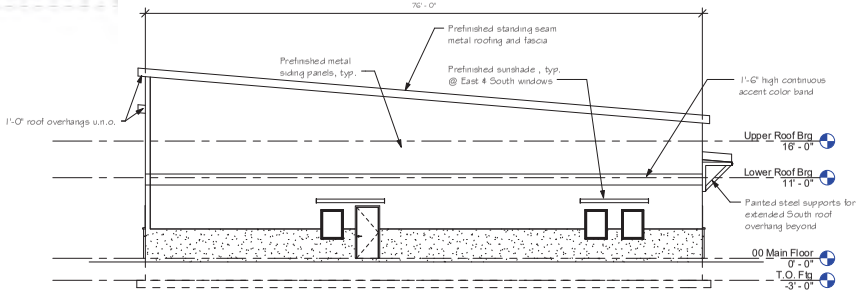
SHEET TITLE
Site Plan Map

SHEET NUMBER
SP2

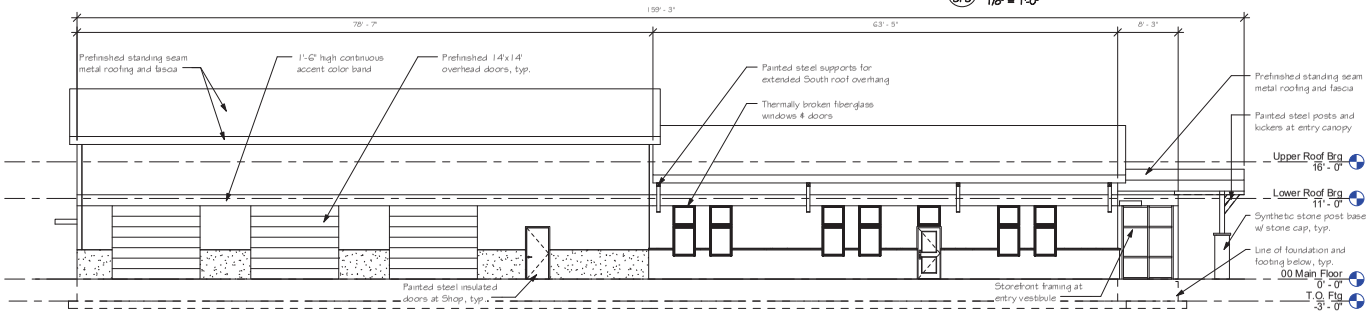
Project No. 1607



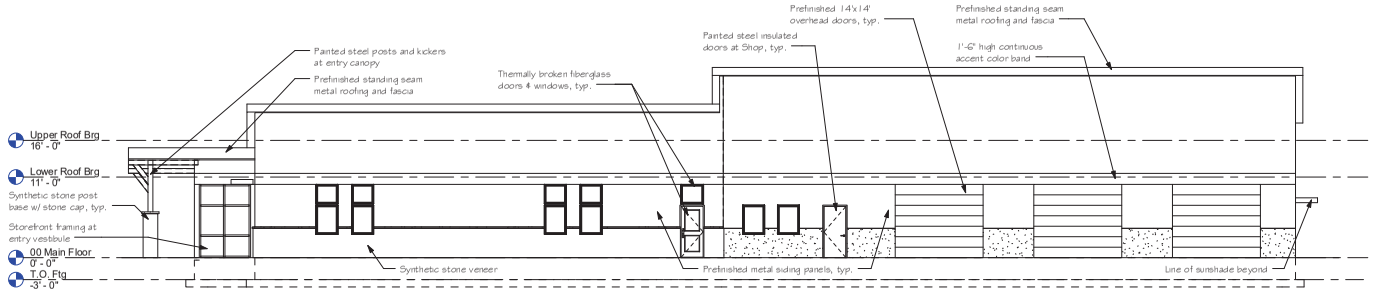
A1 / SP3 **East Elevation**
3/16" = 1'-0"



C2 / SP3 **West Elevation**
1/8" = 1'-0"



A3 / SP3 **South Elevation**
1/8" = 1'-0"



A4 / SP3 **North Elevation**
1/8" = 1'-0"

Dave's Earthworks Inc. Shop & Office

Weld County Parcel No. 147118401002 & 147118401003
Fort Lupton, Colorado 80621

Halcyon Design LLC
PO Box 30
Frederick, CO 80530
303.906.2617

DATE
8.31.16

REVISIONS

SHEET TITLE
Building Elevations

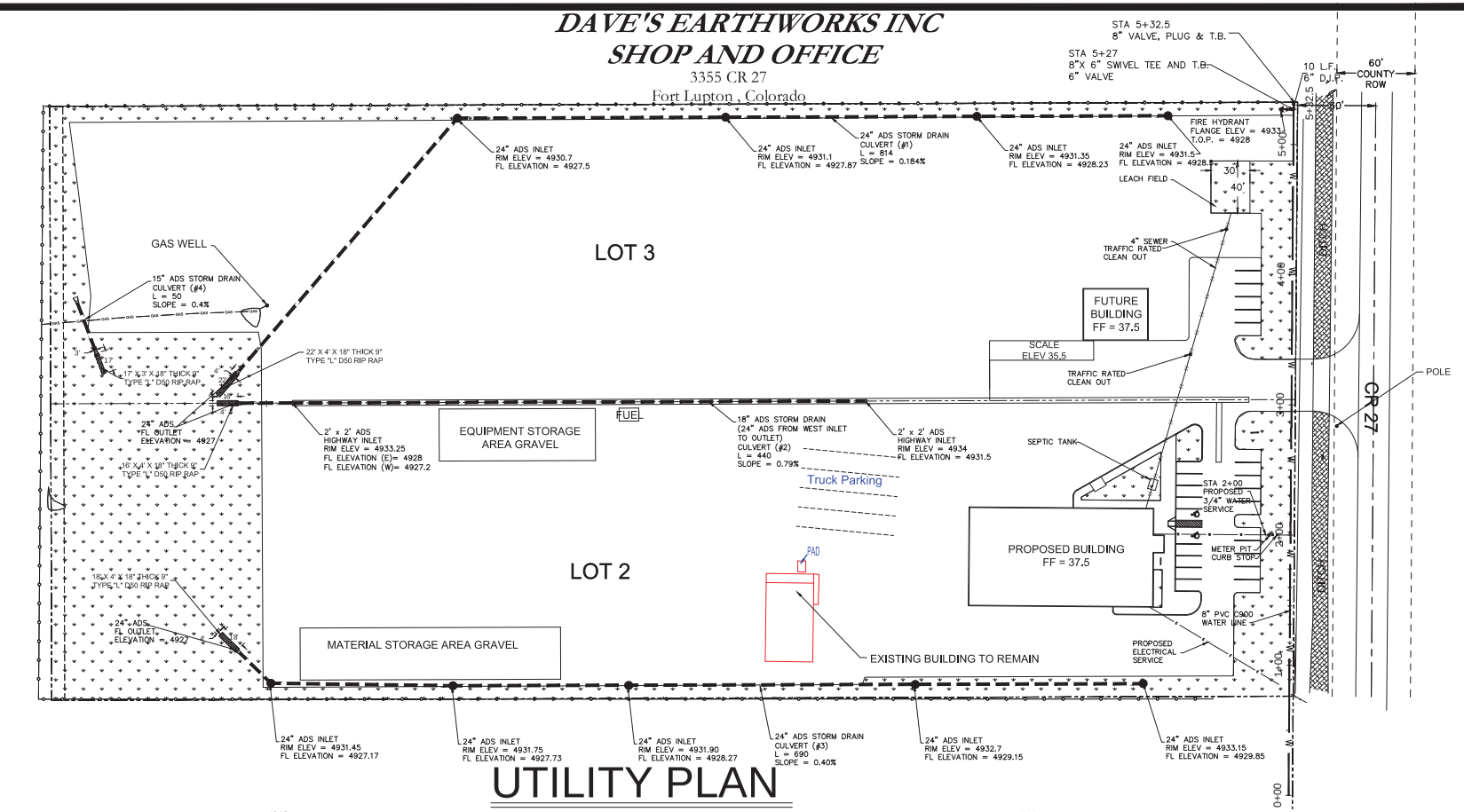
SHEET NUMBER
SP3

Project No. 1607

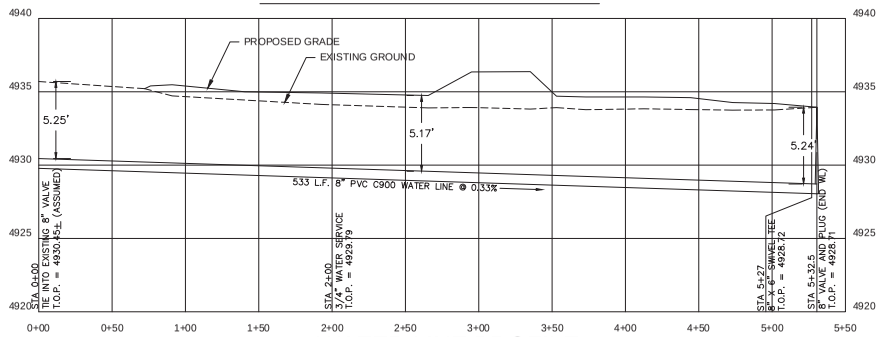
DAVE'S EARTHWORKS INC
SHOP AND OFFICE

3355 CR 27

Fort Lupton , Colorado



UTILITY PLAN



WATER LINE PROFILE

1" = 40' HORIZONTALLY
1" = 4' VERTICALLY

DRAWN FOR
DAVE HUNT
P.O. Box 322
Brighton, CO 80601

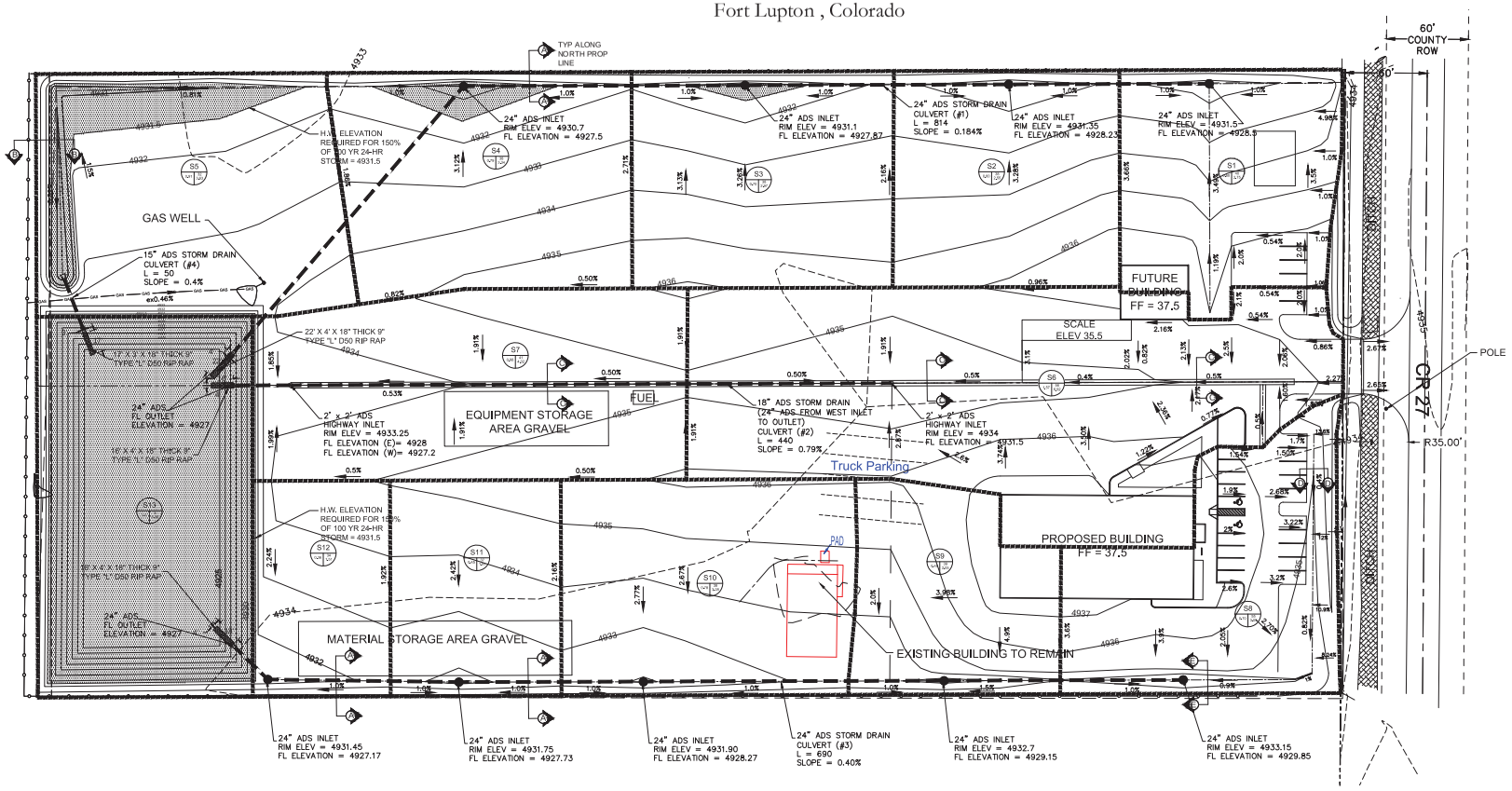
DAVES
EARTHWORKS INC
3355 CR 27
FORT LUPTON COLORADO

WERNSMAN ENGINEERING
STEVE WERNSMAN
1011 42nd STREET
EVANS, CO 80620
(970) 353-4463

DRAWN
CHECKED
DATE 8/31/2016
SCALE 1" = 40'
PROJECT #
SHEET C2
OF OF SHEETS

DAVE'S EARTHWORKS INC
SHOP AND OFFICE

3355 CR 27
Fort Lupton , Colorado



DRAINAGE LEGEND

SUB-BASIN BOUNDARY

0.5% DIRECTION OF FLOW

A = Basin Designation
B = Area in Acres
C = % Imperviousness
D = Q(100) cfs

BASIN	AREA (AC)	C(100)	%IMP	Q(100)CFS
ENTIRE SITE	10.01	0.58	38	37.65
S1	0.60	0.58	40	2.75
S2	0.60	0.58	38	2.55
S3	0.70	0.58	38	2.97
S4	0.79	0.58	38	3.34
S5	0.91	0.57	32	3.63
S6	1.57	0.62	56	6.92
S7	0.98	0.58	41	4.02
S8	0.70	0.62	55	3.09
S9	0.49	0.58	39	2.05
S10	0.78	0.58	38	3.28
S11	0.45	0.58	37	1.91
S12	0.36	0.57	34	1.51
S13	1.01	0.51	3	5.36

NOTE ALL VALUES SHOWN ARE FOR 100-YR EVENT

PROPOSED BASINS

SCALE 1" = 40'

N

0 40 80

DRAWN FOR
DAVE HUNT
P.O. Box 322
Brighton, CO 80601

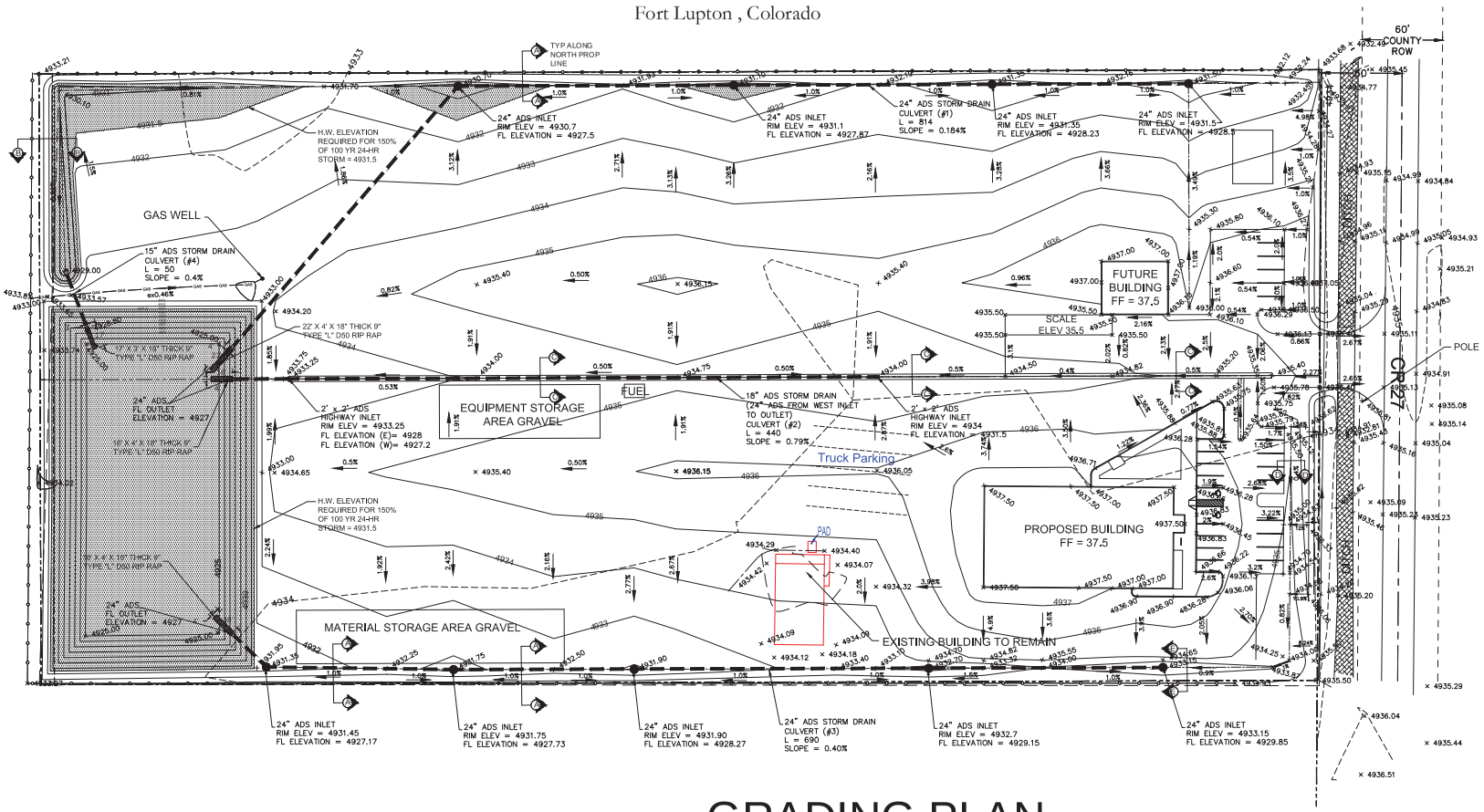
DAVES
EARTHWORKS INC
3355 CR 27
FORT LUPTON COLORADO

WERNSMAN ENGINEERING
STEVE WERNSMAN
1011 42nd STREET
EVANS, CO 80620
(970) 353-4463

DRAWN
CHECKED
DATE 8/31/2016
SCALE 1" = 40'
PROJECT #
SHEET C3
OF OF SHEETS

DAVE'S EARTHWORKS INC
SHOP AND OFFICE

3355 CR 27
Fort Lupton , Colorado



GRADING PLAN

LEGEND:
- PROPERTY LINE
- EDGE OF BUILDING
- EDGE OF EASEMENT
- SWALE CENTERLINE
- EXISTING GRADE CONTOUR
- FINISHED GRADE CONTOUR
- CULVERT

0 40 80

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DAVES
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3355 CR 27
FORT LUPTON COLORADO

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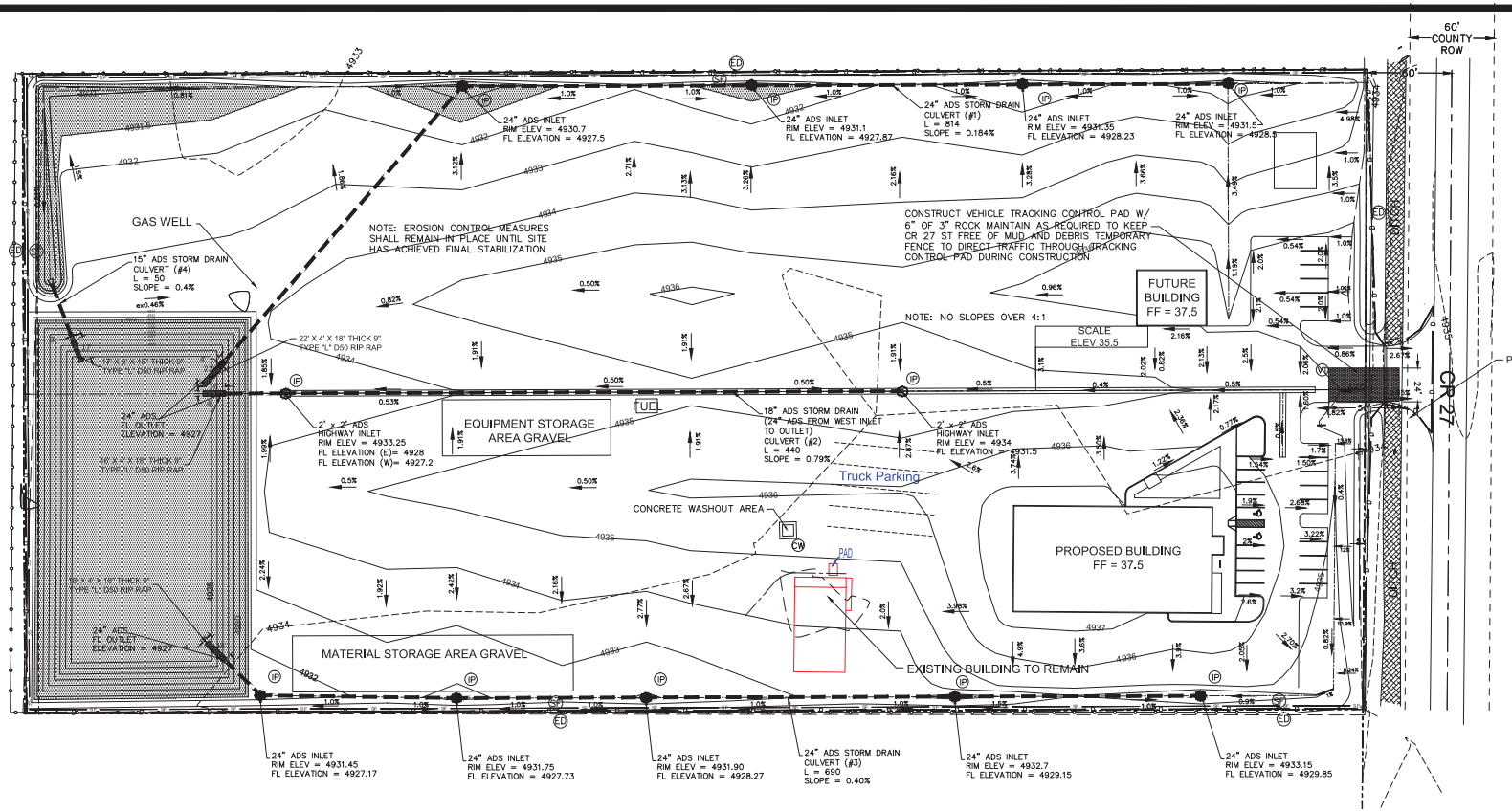

EROSION CONTROL PLAN

KEY	TITLE	SYMBOL/ LINEWORK
SF	SILT FENCE	— SF — SF — SF — SF
ED	EXTENT OF DISTRUBANCE	
VT	VEHICLE TRACKING PAD	
CW	CONCRETE WASHOUT AREA	
IP	INLET PROTECTION	

0 40 80

SITE MAINTENANCE NOTES:

1. REGULAR INSPECTION OF ALL DRAINAGE PATHS SHOULD BE SCHEDULED TO ENSURE PROPER FUNCTIONING OF THE DRAINAGE SYSTEM.
2. AFTER EACH RAIN EVENT SITE SHALL BE CHECKED TO ENSURE EROSION HAS NOT OCCURED AND/ OR CORRECT ANY ISSUES IF REQUIRED.
3. SNOW SHOULD BE PILED IN SUCH A MANNER AS TO NOT CAUSE PLUGGING OR MALFUNCTION OF DRAINAGE SYSTEM.
4. RE-SEED AS NECESSARY TO MAINTAIN GROUNDCOVER TO ELIMINATE SOIL EROSION
5. FORT LUPTON SHALL NOT BE RESPONSIBLE FOR MAINTENANCE OF ON-SITE DETENTION AREAS

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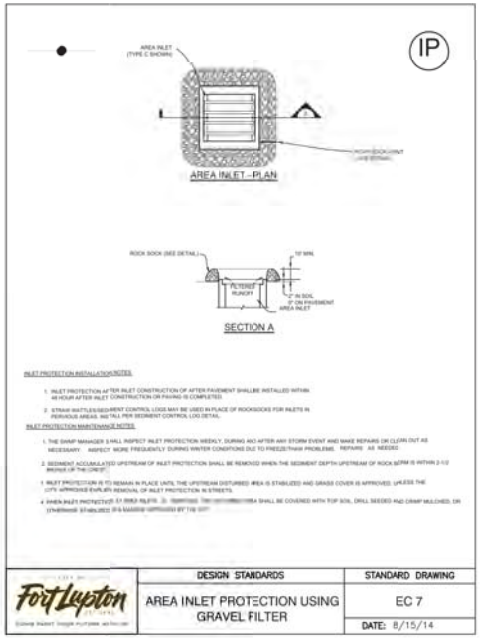

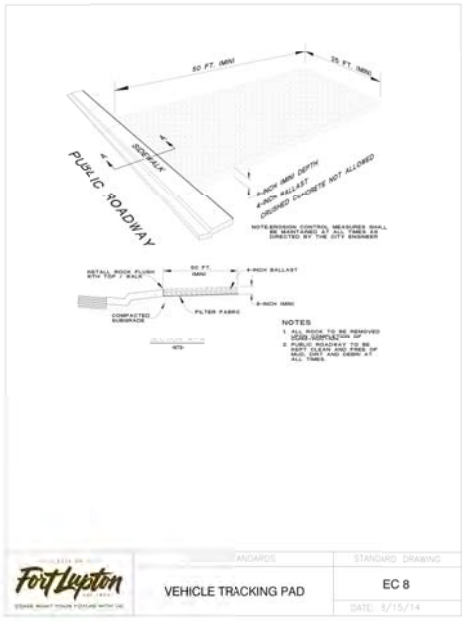

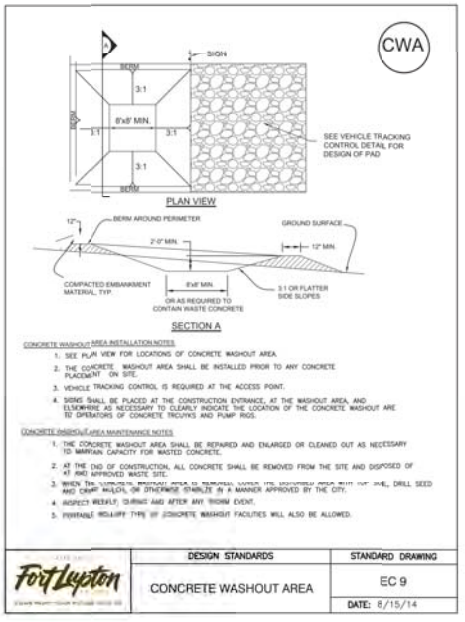

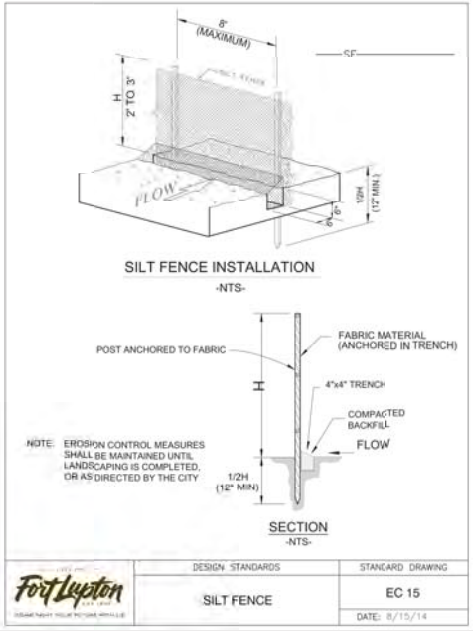

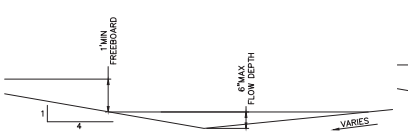

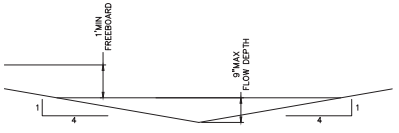

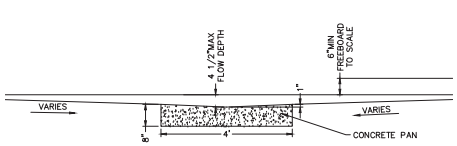

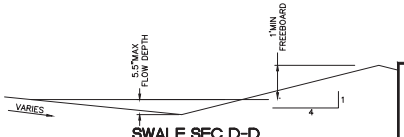

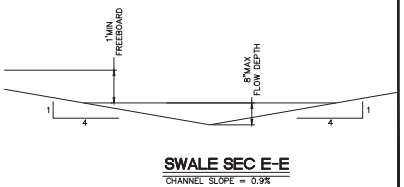

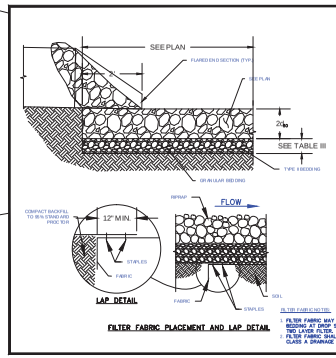

TABLE I
CLASSIFICATION AND GRADATION OF ORDINARY RIPRAP

RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSIONS (INCHES)	d_{50} (INCHES)*
TYPE VL	70–100	12	
	50–70	9	6**
	35–50	6	
	2–10	2	
TYPE L	70–100	15	
	50–70	12	
	35–50	9	9**
	2–10	3	
TYPE M	70–100	21	
	50–70	18	
	35–50	12	12
	2–10	4	
TYPE H	70–100	30	
	50–70	24	
	35–50	18	18
	2–10	6	
TYPE VH	70–100	42	
	50–70	33	
	35–50	24	24
	2–10	8	

* d_{50} = MEAN PARTICAL SIZE (INTERMEDIATE DIMENSION) BY WEIGHT. ** FOR VL AND L RIPRAP WITH 30% (BY VOLUME) TOPSOIL AND BURY IT WITH 6-INCHES OF TOP SOIL, ALL VIBRATION COMPACTED, AND REVEGETATED.

GENERAL NOTES:
1. FOR CHANNEL APPLICATIONS REFER TO THE MAJOR DRAINAGE CHAPTER OF THE URBAN STORM DRAINAGE CRITERIA MANUAL, VOLUME 3, FOR RIPRAP SIZING.
2. FOR CDA VERTISTORM SEWER OUTLET APPLICATIONS REFER TO THE HYDRAULIC STRUCTURES CHAPTER OF THE URBAN STORM DRAINAGE CRITERIA MANUAL VOLUME 2, FOR RIPRAP SIZE, RIPRAP DEPTH, BASIN LENGTH, AND BASIN WIDTH.

FILTER FABRIC NOTES:
1. FILTER FABRIC MAY BE USED IN COMBINATION WITH TYPE II BEDDING ON DRAINAGE STRUCTURES AS AN ALTERNATIVE TO A TWO LAYER FILTER.
2. FILTER FABRIC SHALL CONFORM TO CDOT SPECIFICATIONS FOR CLASS A DRAINAGE GEOTEXTILES – SECTION 712.

TABLE II
GRADATION FOR GRANULAR BEDDING

U.S. STANDARD SIEVE SIZE	PERCENT WEIGHT BY PASSING SQUARE-MESH SIEVES	
	TYPE I CDOT SECT. 703.01	TYPE II CDOT SECT. 703.08 CLASS A
3 INCHES	-----	90–100
1 1/2 INCHES	-----	-----
3/4 INCHES	-----	20–90
3/8 INCHES	100	-----
#4	95–100	0–20
#16	45–80	-----
#50	10–30	-----
#100	2–10	-----
#200	0–3	0–3

TABLE III
THICKNESS REQUIREMENTS FOR GRANULAR BEDDING

U.S. STANDARD SIEVE SIZE	PERCENT WEIGHT BY PASSING SQUARE-MESH SIEVES		
	FINE-GRAINED SOILS*	COURSE-GRAINED SOILS*	
	TYPE I	TYPE II	TYPE II
$VL(d_{50}$= 6IN.), $L(d_{50}$= 9 IN.)	4	4	6
$M(d_{50}$= 12 IN.)	4	4	6
$H(d_{50}$= 18 IN.)	4	6	8
$VH(d_{50}$= 24 IN.)	4	6	8

* ANY SUBSTITUTE ONE 12-INCH LAYER OF TYPE II BEDDING. THE SUBSTITUTE OF ONE LAYER OF TYPE I BEDDING SHALL NOT BE PERMITTED AT DROP STRUCTURES. THE USE OF A COMBINATION OF FILTER FABRIC AND TYPE II BEDDING AT DROP STRUCTURES IS ACCEPTABLE.
** FIFTY PERCENT OR MORE BY WEIGHT RETAINED ON THE #40 SIEVE.

RIPRAP INSTALLATION
STORMWATER CONSTRUCTION DRAWINGS

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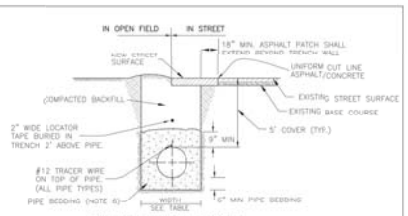


TYPICAL TRENCH SECTION

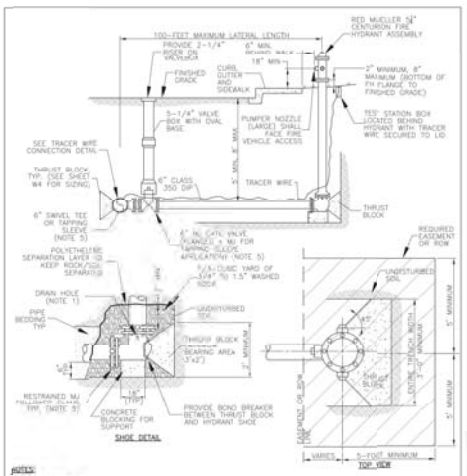
TRENCH WIDTH

PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	1'-4"	2'-4"
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
12"	2'-0"	3'-0"
16"	2'-4"	3'-4"
20"	2'-8"	3'-8"
24"	4'-0"	5'-0"

NOTES:

1. TRENCHES 5 FT DEEP OR GREATER REQUIRE A "PROTECTIVE SYSTEM" AS DEFINED BY OSHA. TRENCHES 20 FT DEEP OR GREATER REQUIRE THAT THE PROTECTIVE SYSTEM BE DESIGN BY A REGISTERED PROFESSIONAL ENGINEER.
2. OSHA'S STANDARDS REQUIRE THAT TRENCHES BE INSPECTED DAILY AND AS CONDITIONS CHANGE BY A "COMPETENT PERSON" (AS DEFINED BY OSHA) PRIOR TO WORKER ENTRY TO ENSURE ELIMINATION OF EXCAVATION HAZARDS. FOR ADDITIONAL INFORMATION REGARDING OSHA REQUIREMENTS CALL 1-800-321-OSHA.
3. MINIMUM COVER OVER PIPE TO BE BELOW OFFICIAL STREET GRADE.
4. FOR PIPE BEDDING REQUIREMENTS REFER TO CHAPTER 9 OF THE STANDARDS AND SPECIFICATIONS.
5. PIPE BEDDING SHALL BE PLACED AGAINST UNDISTURBED SOIL IN THE TRENCH BOTTOM, HOWEVER, WHERE ADVERSE SOIL IS ENCOUNTERED IN THE OPINION OF THE ENGINEER, SOIL SHALL BE REMOVED AND TRENCH STABILIZATION MATERIAL SHALL BE PLACED IN ACCORDANCE WITH THE RECOMMENDATIONS OF A GEOTECHNICAL ENGINEER.

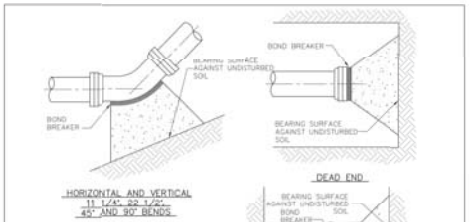
DESIGN STANDARDS	STANDARD DRAWING
TYPICAL TRENCH SECTION PIPE PROTECTION	W1
	DATE: 8/15/14



NOTES:

1. ALL FITTINGS, DI PIPE, AND HYDRANT BARREL SHALL BE POLYETHYLENE WRAPPED PER AWWA C-105. PROVIDE REINFORCING AT HYDRANT DRAIN HOLES.
2. PRIOR TO PLACING INTO SERVICE THE FOLLOWING SHALL BE PERFORMED: NOZZLE THREADS SHALL BE GREASED, OIL REMOVED FROM SHOE SHALL BE FILLED, AND HYDRANTS SHALL BE FINISH PAINTED FIRE ENGINE RED (#7407).
3. THE ENTIRE PIPING ASSEMBLY (HYDRANT SHOE TO CONNECTION AT MAIN) SHALL BE FULLY RESTRAINED.

DESIGN STANDARDS	STANDARD DRAWING
FIRE HYDRANT INSTALLATION DETAIL	W2
	DATE: 8/15/14



TYPICAL PIPE/THRUST BLOCK CROSS SECTION
MINIMUM BEARING SURFACE AREA

SIZE OF PIPE	BENDS				TEE OR DEAD END
	11 1/4°	22 1/2°	45°	90°	
4"	1.0	2.0	3.0	6.0	4.0
6"	2.0	3.0	5.0	11.0	8.0
8"	3.0	6.0	11.0	19.0	14.0
12"	6.0	13.0	22.0	40.0	29.0
16"	15.0	25.0	38.0	70.0	50.0
20"	15.0	30.0	59.0	108.0	86.0
24"	22.0	43.0	84.0	154.0	110.0

NOTES:

1. BEARING SURFACES SHOWN IN CHART ARE MINIMUM.
2. BEARING SURFACES ARE BASED ON 150 PSI INTERNAL PIPE \ PRESS PLUS WATER HAMMER.
   4", 6", 8" AND 12" WATER HAMMER = 110 PSI
   16", 20" AND 24" WATER HAMMER = 70 PSI
3. BEARING SURFACE CALCULATIONS ARE BASED ON 1500 PSF SOIL BEARING CAPACITY.
4. ALL DUCTILE IRON AND CAST IRON PIPE AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE AND SECURELY TAPED PRIOR TO PLACING THRUST BLOCKS.
5. NO CONCRETE THRUST BLOCK SHALL BE PLACED AGAINST THRUST BLOCKS FOR A MINIMUM OF 24 HOURS AFTER PLACEMENT. CONCRETE MUST CURE a MIN. OF 24 HOURS PRIOR TO TESTING LINES.

DESIGN STANDARDS	STANDARD DRAWING
CONCRETE THRUST BLOCKS - BEARING SURFACES AND INSTALLATION	W3
	DATE: 8/15/14

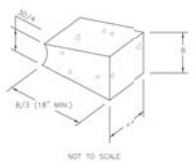
MINIMUM DIMENSIONS FOR THRUST BLOCKS

FITTING SIZE	TEES & PLUGS		90° BEND		45° BENDS & WYES	
	A	B	A	B	A	B
4"	1'-7"	1'-2"	1'-9"	1'-6"	1'-8"	0'-10"
6"	2'-0"	1'-11"	2'-5"	2'-2"	1'-10"	1'-7"
8"	2'-8"	2'-6"	3'-2"	3'-0"	2'-5"	2'-1"
10"	3'-4"	3'-1"	4'-0"	3'-10"	3'-0"	2'-9"
12"	4'-0"	3'-10"	4'-8"	4'-6"	3'-8"	3'-3"
14"	5'-5"	5'-10"	6'-6"	6'-11"	4'-9"	3'-5"
20"	5'-0"	5'-0"	6'-0"	6'-0"	5'-0"	4'-0"
24"	6'-0"	6'-0"	7'-0"	7'-0"	5'-0"	5'-0"
30"	7'-6"	7'-6"	8'-0"	8'-0"	6'-3"	6'-3"

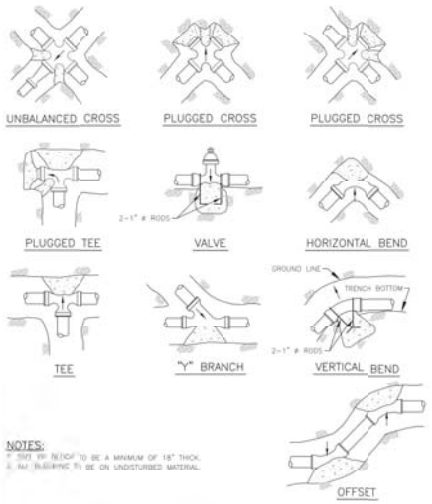
FITTING SIZE	REDUCERS & 22 1/2° BENDS		11 1/4° BENDS	
	A	B	A	B
4"	1'-3"	0'-6"	0'-6"	0'-6"
6"	1'-9"	0'-10"	1'-0"	0'-6"
8"	1'-9"	1'-6"	1'-0"	1'-0"
10"	2'-2"	1'-11"	1'-6"	1'-0"
12"	2'-7"	2'-3"	2'-0"	1'-0"
14"	3'-5"	2'-5"	2'-0"	1'-6"
20"	3'-6"	3'-0"	3'-0"	2'-0"
24"	4'-6"	3'-0"	3'-0"	3'-0"
30"	4'-9"	4'-6"	3'-3"	3'-3"

GENERAL NOTES:

1. BEARING SURFACE AREAS SHOWN IN CHART ARE MINIMUM
2. BASED ON 150 P.S.I. INTERNAL PIPE PRESSURE.
3. SOIL BEARING CAPACITY = 2000 LB./SQ. FT.
4. ALL FITTINGS TO BE WRAPPED WITH POLYETHYLENE (MINIMUM 8 MIL)



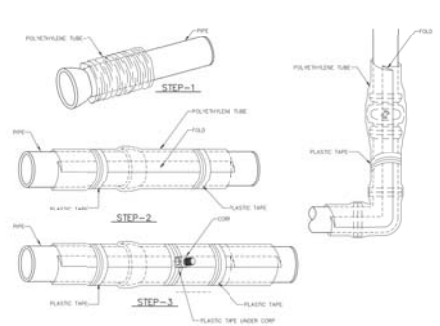
DESIGN STANDARDS	STANDARD DRAWING
TYPICAL TRENCH BLOCK DIMENSIONS	W4
	DATE: 8/15/14



NOTES:

1. SIZE BY RETOF TO BE A MINIMUM OF 18" THICK.
2. TAT BLEARING TO BE ON UNDISTURBED MATERIAL.

DESIGN STANDARDS	STANDARD DRAWING
CONCRETE THRUST BLOCK FOR UNBALANCED SURFACES	W5
	DATE: 8/15/14



FIELD INSTALLATION-POLYETHYLENE WRAP

STEP-1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.

STEP-3 OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE SHALL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED ON TOP OF THE PIPE AND TAPED IN PLACE.

NOTE: POLYETHYLENE SHALL BE MINIMUM 8-MIL THICKNESS

DESIGN STANDARDS	STANDARD DRAWING
POLYETHYLENE WRAP	W6
	DATE: 8/15/14

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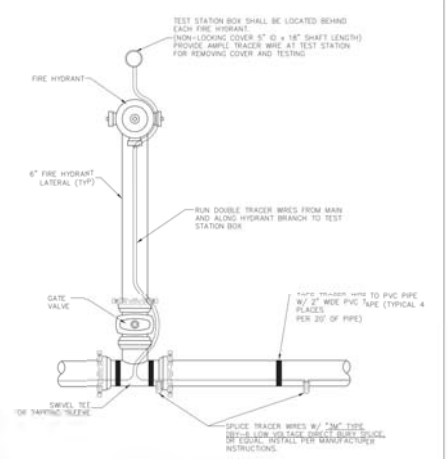
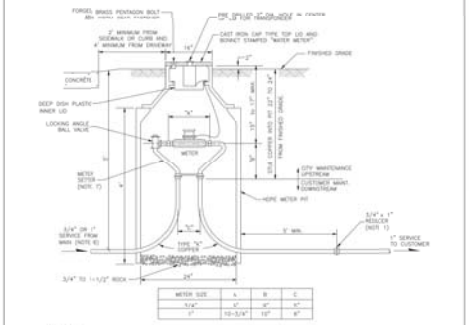


Fort Lupton	DESIGN STANDARDS	STANDARD DRAWING
	TRACER WIRE	W7
		DATE: 8/15/14



METER SIZE	A	B	C
3/4"	5"	4"	5"
1"	10-3/4"	10"	6"

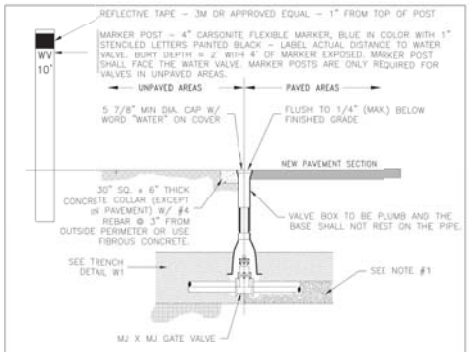
Fort Lupton	DESIGN STANDARDS	STANDARD DRAWING
	3/4" & 1" DOMESTIC METER SETS	W8
		DATE: 8/15/14

GENERAL NOTES

1. NOT FOR INSTALLATION IN ROADWAYS, DRIVEWAYS, PARKING AREAS, SIDEWALKS, OR CONCRETE. EDGE OF METER PIT LID SHALL NOT BE CLOSER THAN 4" FROM EDGE OF DRIVEWAY.
2. IF SURFACE IS NOT TO OFFICIAL GRADE WHEN THE METER IS INSTALLED, THE OWNER MUST RAISE OR LOWER THE PIT, METER SETTER AND ALL OTHER APPURTENANCES TO THE FINAL APPROVED GRADE.
3. METER SHALL BE SET WITHIN PUBLIC R.O.W OR PUBLIC EASEMENT.
4. NO CONCRETE FLOOR TO BE LAID IN METER PIT.
5. METER PIT SHALL BE CONSTRUCTED OF MODIFIED HI-DENSITY POLYETHELENE.
6. ADJUSTMENT RINGS SHALL BE 2", 3", 4" OR 6" N HEIGHT AND SHALL BE INSERTED ABOVE THE POLYETHYLENE METER PIT.
7. FOR WATER SERVICE LINES 1" AND LARGER: IF THE METER PIT IS NOT INSTALLED WITHIN THE PUBLIC R.O.W. THEN A CURB STOP AND BOX SHALL BE INSTALLED WITHIN THE PUBLIC R.O.W.

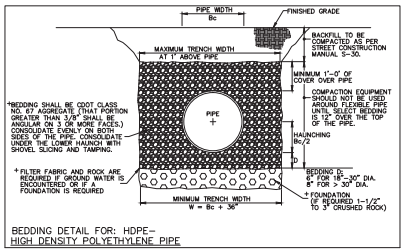
(PAGE 2 OF 2)

Fort Lupton	DESIGN STANDARDS	STANDARD DRAWING
	3/4" & 1" METER NOTES	W9
		DATE: 8/15/14



NOTES:
1. CARE SHALL BE TAKEN WHEN INSTALLING VALVES TO ASSURE PROPER SUPPORT OF THE VALVE. THE CITY ENGINEER MAY REQUIRE 3/4" CRUSHED ROCK TO BE INSTALLED UNDER THE VALVE TO PROVIDE PROPER SUPPORT.
2. VALVES SHALL NOT BE PLACED IN CONCRETE SIDEWALKS, CROSS PANS, GUTTERS, OR OTHER DRAINAGE WAYS.
3. OPERATING NUTS OR EXTENSIONS SHALL NOT BE SET CLOSER THAN TWO (2) FEET FROM FINAL GRADE. IF THE OPERATING NUT IS DEEPER THAN FIVE (5) FEET FROM FINAL GRADE, PROVIDE A 1 1/4" EXTENSION SHAFT W/ CENTERING RING. OPERATOR EXTENSIONS SHALL BE CONNECTED TO THE VALVE OPERATOR NUT USING A PIN. THE EXTENSION SHAFT SHALL INCLUDE A 1/4" THICK TRASH RING LOCATED 6" BELOW THE NON-RISING PORTION OF THE VALVE BOX. THE DIAMETER OF THE TRASH RING SHALL BE 1/8" LESS THAN THE INSIDE DIAMETER OF THE VALVE BOX.
4. GATE VALVE SHALL BE POLYETHYLENE WRAPPED (8 MIL).
5. CONCRETE COLLARS & MARKER POSTS ARE REQUIRED WHEN VALVE IS LOCATED IN AN UNPAVED AREA.
6. VALVE BOXES ARE TO BE BROUGHT UP TO GRADE AT THE TIME OF PAVEMENT PLACEMENT OR OVERLAY. VALVE BOX ADJUSTING RINGS ARE NOT ALLOWED.

Fort Lupton	DESIGN STANDARDS	STANDARD DRAWING
	VALVE BOX	W1
		DATE: 8/15/14



BEDDING DETAIL FOR: HDPE–
HIGH DENSITY POLYETHYLENE PIPE

DRAWN FOR
DAVE HUNT
P.O. Box 322
Brighton, CO 80601

DAVES
EARTHWORKS INC
3255 CR 27
FORT LUPTON COLORADO

WERNSMAN ENGINEERING
STEVE WERNSMAN
1011 42nd STREET
EVANS, CO 80620
(970) 353-4463

DRAWN
CHECKED
DATE 8/31/2016
SCALE N.T.S.
PROJECT #
SHEET C8
OF OF SHEETS

PLANT LEGEND

- DECIDUOUS CANOPY TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- DECIDUOUS AND/OR EVERGREEN SHRUBS
- 3/4" ROCK MULCH
- WARM SEASON MIXED GRASS PRAIRIE NATIVE SEED
- STEEL EDGER
- BOULDERS

NORTH

0 20 40 80
SCALE: 1" = 40'

ENGINEER

Eric Wernsman
Wernsman Engineering
Cell 970-539-2656

LANDSCAPE ARCHITECT

ROB MOLLOY
980 NORWAY MAPLE DRIVE
LOVELAND, CO
970-988-5301

DAVE'S EARTHWORKS INC.
PRELIMINARY PLAN
FORT LUPTON, COLORADO

LANDSCAPE PLAN

DATE: 08/08/2016
JOB NO.
DRAWN: RM
CHECKED
REVISED: 04/27/2016
05/31/2016

L1

PLANT NOTES

1. ALL PLANT MATERIAL SHALL MEET SPECIFICATIONS OF THE AMERICAN ASSOCIATION OF NURSERYMEN (AAN) FOR NUMBER ONE GRADE. ALL [illegible] AND BURLAPPED OR EQUIVALENT.
2. NO PLANT MATERIAL WITH MATURE GROWTH GREATER THAN THREE FEET (3') IN HEIGHT SHALL BE PLANTED WITHIN WATER AND SEWER EASEMENTS.
3. NO SHRUBS SHALL BE PLANTED WITHIN FIVE FEET (5) RADIUS OR TREES WITHIN TEN FEET (10) OF WATER METERS, FIRE HYDRANTS, OR MAINTAIN SEWER MANHOLES.
4. DEVELOPER SHALL ENSURE THAT THE LANDSCAPE PLAN IS COORDINATED WITH THE PLANS DONE BY OTHER CONSULTANTS SO THAT THE PROPOSED GRADING, STORM DRAINAGE, OR OTHER CONSTRUCTION DOES NOT CONFLICT NOR PRECLUDE INSTALLATION AND MAINTENANCE OF LANDSCAPE ELEMENTS ON THIS PLAN.
5. ALL LANDSCAPE AREAS WITHIN THE SITE SHALL BE IRRIGATED WITH AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. AN IRRIGATION PLAN WILL BE REQUIRED PRIOR TO ISSUANCE OF A BUILDING PERMIT.
6. ALL TURF AREAS TO BE IRRIGATED WITH AN AUTOMATIC POP-UP IRRIGATION SYSTEM. ALL SHRUB BEDS AND TREES ARE TO BE IRRIGATED WITH AN AUTOMATIC IRRIGATION (TRICKLE) IRRIGATION SYSTEM OR ACCEPTABLE ALTERNATIVE. THE IRRIGATION SYSTEM IS TO BE ADJUSTED TO MEET THE WATER REQUIREMENTS OF THE INDIVIDUAL PLANT MATERIAL.
7. ALL SHRUB BEDS TO BE MULCHED 3" DEEP WITH 3/4" RIVER ROCK PLACED ON WEED BARRIER FABRIC.
8. EDGING BETWEEN GRASS AND SHRUB BEDS SHALL BE 2" X 4" STEEL SET LEVEL WITH TOP OF GRADE.
9. **SHORT GRASS PRAIRIE NATIVE SEED MIXTURE. THIS MIXTURE IS TO BE USED BETWEEN OCTOBER 15th AND March 30th ONLY AT A RATE OF 30.19 PLS LBS/ACRE**

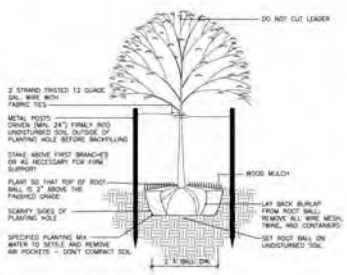
NOTES

1. TOPSOIL TO THE MAXIMUM EXTENT FEASIBLE TOPSOIL THAT IS REMOVED DURING CONSTRUCTION ACTIVITY SHALL BE CONSERVED FOR LATER USE.
2. SOIL AMENDMENTS: PRIOR TO INSTALLATION OF PLANT MATERIALS, AREAS THAT HAVE BEEN COMPACTED OR DISTURBED BY CONSTRUCTION ACTIVITY SHALL BE THOROUGHLY LOOSENED. ORGANIC AMENDMENTS SUCH AS COMPOST, PEAT, OR AGED MANURE SHALL BE THOROUGHLY INCORPORATED.

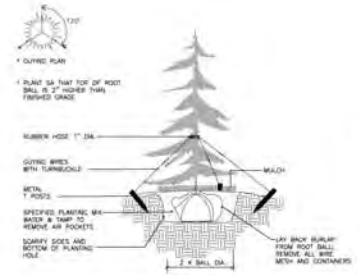
PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE	NOTES	QTY
DECIDUOUS TREES					
CO	*Celtis occidentalis*	Western Hackberry	2" cal.	B&B	4
QM	*Quercus Macrocarpa*	Bur Oak	2" cal.	B&B	4
AFA	*Acer x freemanii 'Autumn Blaze'*	Autumn Blaze Maple	2" cal.	B&B	1
CB	*Celtis laevigata*	Western Celtis	2" cal.	B&B	1
GT	*Gleditsia triacanthos inermis 'Imperial'*	Imperial Locust	2" cal.	B&B	7
KD	*Gymnocladus dioicus*	Kentucky Coffeetree	2" cal.	B&B	7
GTS	*Gleditsia triacanthos inermis 'Shademaster'*	Shademaster Locust	2" cal.	B&B	5
ORNAMENTAL TREES					
TCO	*Crataegus crus-galli inermis*	Thornless Cockspur Hawthorne	1.5" cal.	B&B	4
PCD	*Pyrus calleryana 'Chanticleer'*	Chanticleer Pear	1.5" cal.	B&B	2
EVERGREEN TREES					
PN	*Pinus nigra*	Austrian Pine	6' ht.	B&B	15
PPG	*Picea pungens glauca*	Colorado Blue Spruce	6 gal.	B&B	9
JV	*Juniperus virginiana 'Grumpa'*	Grumpa Juniper	5 gal.	5' o.c.	34
EVERGREEN SHRUBS					
JSBW	*Juniperus sabina 'Broadmoor'*	Broadmoor Juniper	5 gal.	5' o.c.	11
JCH	*Juniperus chinensis 'Hetzii'*	Hetzii Juniper	5 gal.	5' o.c.	36
DECIDUOUS SHRUBS					
RT	*Rhus trilobata*	Three-leaf Sumac	5 gal.	5' o.c.	5
RAT	*Ribes aureum petiolare*	Russian Sage	5 gal.	4' o.c.	7
PS	*Prunus besseyi*	Western Sandcherry	5 gal.	5' o.c.	10
RWF	*Rosa x blanda'arld White*	White Meadow Rose	5 gal.	4' o.c.	1
SPH	*Spiraea japonica nana*	Dwarf Anthony Waterer	5 gal.	3' o.c.	1
RTC	*Chrysothamnus nauseosus*	Rabbitbrush	5 gal.	3' o.c.	1
SV	*Syringa vulgaris*	Albert Victor Lilac	5 gal.	7' o.c.	30
CD	*Cotoneaster dielsianus*	Spreading Cotoneaster	5 gal.	6' o.c.	4
FxM	*Forsythia x 'Meadowlark'*	Meadowlark Forsythia	5 gal.	7' o.c.	4
HERBACEOUS AND ORNAMENTAL GRASSES					
KA	*Calamagrostis x acutiflora 'Karl Foerster'*	Karl Foerster Grass	1 gal.	24" o.c.	32
MS	*Miscanthus sinensis 'Morning Light'*	Morning Light Maiden Grass	2 gal.	4' o.c.	11
PAH	*Pennisetum alopecuroides 'Hameln'*	Dwarf Fountain Grass	1 gal.	18" o.c.	22
HPB	*Hemerocallis 'Happy Returns'*	Dwarf Yellow Daylily	2 gal.	18" o.c.	35
RFG	*Rudbeckia fulgida 'Goldsturm'*	Black-eyed Susan	1 gal.	18" o.c.	75
FOG	*Festuca ovina glauca*	Blue Fescue	1 gal.	18" o.c.	39

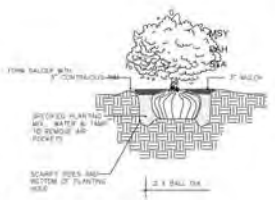
NOTE: SHORT GRASS PRAIRIE NATIVE SEED MIXTURE. THIS MIXTURE IS TO BE USED BETWEEN OCTOBER 15th AND March 30th ONLY AT A RATE OF 30.19 PLS LBS/ACRE



A TREE PLANTING - IRRIGATED AREAS
NOT TO SCALE



B CONIFER TREE PLANTING - GUY WIRES
NOT TO SCALE



C SHRUB PLANTING
NOT TO SCALE

GENERAL CONSTRUCTION NOTES:

1. THE ELECTRICAL CONTRACTOR SHALL VERIFY THAT ALL ELECTRICAL ITEMS TO REMAIN OR BE RELOCATED AND REUSED ARE IN WORKING ORDER PRIOR TO ANY DEMOLITION WORK. IF THE EXISTING MATERIAL IS FOUND TO BE INOPERABLE, CONTRACTOR SHALL INFORM THE OWNER. ONCE ANY DEMOLITION WORK HAS BEGUN, ANY INOPERABLE OR DAMAGED MATERIAL SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
2. VERIFICATION OF EXISTING CONDITIONS. "INASMUCH AS THE REMODELING AND/OR REHABILITATION OF THE EXISTING BUILDING REQUIRES THAT CERTAIN ASSUMPTIONS BE MADE REGARDING EXISTING CONDITIONS, AND BECAUSE SOME OF THESE ASSUMPTIONS MAY NOT BE VERIFIABLE WITHOUT DESTROYING OTHERWISE ADEQUATE OR SERVICEABLE PORTIONS OF THE BUILDING, THE GENERAL CONTRACTOR AGREES THAT, EXCEPT FOR NEGLIGENCE ON THAT PART OF THE DESIGN PROFESSIONAL THE CONTRACTOR WILL HOLD HARMLESS, INDEMNIFY AND DEFEND THE DESIGN PROFESSIONAL FROM AND AGAINST ANY AND ALL CLAIMS ARISING OUT OF THE PROFESSIONAL SERVICES PROVIDED."
3. ANY ELECTRICAL ITEMS SHOWN OR NOT SHOWN ON THE PLANS, OR WHERE CIRCUITS IN EXISTING WALLS ARE REMOVED BY DEMOLITION, SHALL UPON COMPLETION OF REMODEL WORK BE LEFT IN WORKING CONDITION.
4. ALL PHASES OF THE ELECTRICAL WORK SHALL BE COORDINATED WITH THE ARCHITECT. WORK SHALL BE DONE IN A FASHION TO CAUSE AS LITTLE INCONVENIENCE AS POSSIBLE TO THE OWNER.
5. ELECTRICAL DEVICES NOTED TO BE REMOVED SHALL BE REMOVED BACK TO A POINT WHERE EXISTING CONDUIT CAN BE ABANDONED IN CONCEALED SPACES. REMOVE ALL WIRING FROM ABANDONED CONDUIT. ALL BOXES TO BE REMOVED SHALL BE TAKEN OUT OF WALLS AND HAVE HOLES REFINISHED TO MATCH
6. WALL FINISH.
7. ELECTRICAL CONTRACTOR SHALL NOT DEFACE ANY AREAS OF THE BUILDING WHERE REMODELING IS NOT BEING DONE.
8. RACEWAYS: ALL CONDUIT SHALL BE CONCEALED WHEREVER POSSIBLE. CONDUIT SHALL NOT BE EXPOSED IN FINISHED AREAS (EXCLUDES MECHANICAL ROOMS, STORAGE CLOSETS, AND SIMILAR AREAS). EXPOSED RACEWAYS SHALL BE SURFACE RACEWAYS PER SPECIFICATIONS.
9. ROUTING OF EXISTING CONCEALED CONDUIT NOT KNOWN. LOCATION DETERMINED BY ELECTRICAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL RECIRCUIT AS NOTED UTILIZING ANY EXISTING CONDUIT. HE SHALL REMOVE EXISTING WIRE AND REPULL NEW. ALL NEW CONDUIT ADDED SHALL BE CONCEALED WHEREVER POSSIBLE.
10. SURFACE RACEWAY: WHEREVER CONCEALED CONDUIT IN FINISHED AREAS IS NOT POSSIBLE, ELECTRICAL CONTRACTOR SHALL INSTALL SURFACE MOUNTED RACEWAYS EQUAL TO WIREMOLD. RUN SURFACE RACEWAYS IN CORNER OF WALL AND CEILING. ALL RACEWAYS THAT ARE EXPOSED SHALL BE APPROVED BY ARCHITECT PRIOR TO ROUGH-IN.
11. TERMINATING AND SPLICING: MAKE ALL JOINTS AND SPLICES IN BRANCH CIRCUIT WIRING WITH APPROVED SOLDERLESS TOOL APPLIED OR TWIST-ON CONNECTORS, IN THE VARIOUS BOXES, GUTTERS, AND SIMILAR LOCATIONS, BUT NOT IN RACEWAYS. LEAVE SUFFICIENT SLACK TO PERMIT TWO (2) OR MORE SPLICES OR JOINTS TO BE REMADE IN CASE OF FAULT.
12. NM (ROMEX CABLE) WILL NOT BE ALLOWED ON THIS PROJECT.
13. ELECTRICAL CONTRACTOR SHALL RECEIVE, FROM SYSTEM SUPPLIERS, ALL WIRING DIAGRAMS FOR ALL EQUIPMENT, PRIOR TO ANY ROUGH-IN, TO ASSURE PROPER ELECTRICAL CHARACTERISTICS ARE PROVIDED. ELECTRICAL CONTRACTOR SHALL PROVIDE ARCHITECT WRITTEN NOTIFICATION PRIOR TO ROUGH-IN, THAT ALL WIRING DIAGRAMS HAVE BEEN RECEIVED AND REVIEWED FOR CORRECTNESS. ANY INCORRECT WIRING OR DEVICES INSTALLED BY ELECTRICAL CONTRACTOR WITHOUT WIRING DIAGRAMS SHALL BE CORRECTED AT ELECTRICAL CONTRACTOR'S EXPENSE.
14. ELECTRICAL CONTRACTOR SHALL RECEIVE, FROM MECHANICAL CONTRACTOR, ALL WIRING DIAGRAMS AND SHOP DRAWINGS FOR ALL MECHANICAL EQUIPMENT, PRIOR TO ANY ROUGH-IN, TO ASSURE PROPER ELECTRICAL CHARACTERISTICS, VOLTAGE, PHASE, HORSEPOWER, AMPERE, KILOWATTS AND ETC. ARE PROVIDED. ELECTRICAL CONTRACTOR SHALL PROVIDE ARCHITECT WRITTEN NOTIFICATION PRIOR TO ANY ROUGH-IN, THAT ALL WIRING DIAGRAMS AND SHOP DRAWINGS HAVE BEEN RECEIVED AND REVIEWED FOR CORRECTNESS. ANY INCORRECT WIRING OR DEVICES INSTALLED BY ELECTRICAL CONTRACTOR WITHOUT WIRING DIAGRAMS SHALL BE CORRECTED AT ELECTRICAL CONTRACTOR'S EXPENSE.
15. ALL EXISTING AND NEW SMOKE DETECTORS IN OR NEAR AREAS BEING REMODELED SHALL BE BAGGED OR REMOVED. IF REMOVED, STORE IN A SEALED BAG UNTIL ALL REMODELING WORK IS COMPLETE. IF SMOKE DETECTORS ARE NOT BAGGED OR REMOVED THEY SHALL BE REPLACED WITH NEW DETECTORS AT CONTRACTOR'S EXPENSE WHEN THE PROJECT IS COMPLETED.
16. EXACT ELECTRICAL DEMOLITION REQUIREMENTS NOT SHOWN ON THE DRAWINGS. ELECTRICAL CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING TO DETERMINE EXACT DEMOLITION WORK TO BE DONE AND SHALL INCLUDE ALL DEMOLITION COSTS IN THEIR BID.
17. ELECTRICAL CONTRACTOR SHALL VERIFY ELECTRICAL DEVICE LOCATIONS IN ALL CASE WORK WITH ARCHITECTURAL CASE WORK DETAILS PRIOR TO ANY ROUGH-IN.
18. ELECTRICAL CONTRACTOR SHALL VERIFY FINAL LOCATIONS OF ALL SINKS WITH PLUMBING CONTRACTOR PRIOR TO ROUGH-IN. ANY ELECTRICAL DEVICES LOCATED ABOVE COUNTER AND BEHIND FINAL SINK LOCATIONS SHALL BE SHIFTED A MINIMUM OF 6" TO EITHER SIDE OF SINK. ANY ELECTRICAL DEVICES LEFT BEHIND SINK AT TIME OF FINAL ELECTRICAL OBSERVATION SHALL BE RELOCATED AT ELECTRICAL CONTRACTOR'S EXPENSE.
19. ALL NEW ELECTRICAL ITEMS SHOWN ON EXISTING WALLS AND CEILINGS SHALL BE FLUSH MOUNTED UNLESS NOTED OTHERWISE. CUT AND PATCH EXISTING WALLS AND CEILINGS TO CONCEAL ALL MOUNTING BOXES AND CONDUITS.
20. FIRE ALARM SHALL BE APPROVED BY LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO ROUGH-IN. ANY MODIFICATIONS OR ADDITIONS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION SHALL BE INCLUDED IN ELECTRICAL CONTRACTOR'S BASE CONSTRUCTION COST.
21. RELOCATIONS: OWNER RESERVES THE RIGHT TO RELOCATE ANY ELECTRICAL DEVICE, UP TO A DISTANCE OF 12'-0", BEFORE INSTALLATION WITHOUT EXTRA CHARGE FROM ELECTRICAL CONTRACTOR.
22. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY. EXACT LOCATION OF ALL SYSTEMS AND EQUIPMENT SHALL BE FIELD VERIFIED AND COORDINATED WITH OTHER TRADES PRIOR TO ANY INSTALLATION. WHERE EXACT LOCATIONS ARE NECESSARY, THEY ARE DIMENSIONED ON THESE DRAWINGS. WHERE THERE IS A QUESTION OF ADEQUATE CLEARANCE OR COORDINATION BETWEEN TRADES, THIS CONTRACTOR SHALL PREPARE SHOP DRAWINGS FOR ENGINEER'S REVIEW. ON ALL SPECIAL SYSTEMS REQUIRING DRAWINGS BY LICENSED INSTALLATION CONTRACTORS, SUCH AS FIRE PROTECTION, SUCH DRAWINGS SHALL BE SUBMITTED WITHIN 30 DAYS AFTER AWARD OF CONTRACT.
23. CALL UTILITY COMPANIES (POWER, GAS, WATER, SEWER, TELEPHONE, CABLE TV, ETC.) IN ADVANCE BEFORE TRENCHING FOR THE MARKING OF THEIR UNDERGROUND UTILITIES. ALSO CONTRACTOR SHALL LOCATE ALL ON-SITE UTILITIES SUCH AS SECONDARY SERVICE FEEDERS, UNDERGROUND ELECTRICAL BRANCH CIRCUITS, SPRINKLER LINES, ETC. PRIOR TO TRENCHING. ANY CUT OR DAMAGED UNDERGROUND UTILITIES SHALL BE REPAIRED OR REPLACED AT CONTRACTOR'S EXPENSE.
24. EMT CONDUIT FITTINGS: DRY LOCATIONS ALL EMT COUPLERS AND CONNECTORS SHALL BE STEEL SET SCREW TYPE. DIE CAST FITTINGS SHALL NOT BE USED ON THIS PROJECT. DAMP/WET LOCATIONS, USE STEEL COMPRESSION GLAND TYPE COUPLER AND CONNECTORS.
25. ACCESS PANELS REQUIRED BY THE ELECTRICAL CONTRACTOR SHALL BE PROVIDED BY THE ELECTRICAL BID CONTRACTOR, THEN TURNED OVER TO THE APPROPRIATE TRADE FOR INSTALLATION. SEE ARCHITECTURAL SPECIFICATION SECTION DIVISION 8.
26. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE GENERAL CONTRACTOR TO OBTAIN ACTUAL ROOM NAMES AND NUMBERS, DESIGNATED BY THE OWNER/ARCHITECT AT THE COMPLETION OF THE PROJECT. ACTUAL ROOM NAMES AND NUMBERS SHALL BE USED ON ALL PANEL SCHEDULES, COMPUTER PROGRAMMING, GRAPHIC PLAQUES, SOUND SYSTEMS, TELEPHONE SYSTEM, INTERCOMS, FIRE ALARMS, SECURITY SYSTEMS, CATV SYSTEMS AND SIMILAR.

CONTRACTOR SHALL NOT FASTEN, ATTACH OR HANG ANY MATERIAL FROM THE ROOF DECK. ALL CONDUITS, JUNCTION BOXES, FIXTURES, DEVICES AND EQUIPMENT SHALL BE HUNG FROM THE STRUCTURAL STEEL FRAME AND SHALL BE PLACED WITH A MINIMUM OF 1" CLEARANCE BELOW THE ROOF DECK. WIRING AND CONDUITS SHALL NOT BE PLACED WITHIN THE RIBS OF THE ROOF DECK. CONTRACTOR SHALL NOT LOOSEN, REMOVE OR CUT ANY ROOFING SYSTEM FASTENERS PROTRUDING THROUGH THE ROOF DECK.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	MAIN DISTRIBUTION BOARD
	PANELBOARD
M CT	ELECTRIC SERVICE METER CURRENT TRANSFORMER
	CONCEALED CIRCUIT
	UNDERGROUND/FLOOR CIRCUIT
	EXPOSED CIRCUIT
WM	WIREMOLD (SURFACE RACEWAY)
PM	PLUGMOLD (SURFACE RACEWAY)
P 1,3,5	HOMERUN TO PANELBOARD (ONE ARROW / CIRCUIT, PANEL AND CIRCUIT #'S SHOWN)
	CONDUIT TURNS UP
	CONDUIT TURNS DOWN
J	JUNCTION BOX
M	MOTOR (REFER TO MOTOR SCHEDULE)
	SAFETY DISCONNECT SWITCH (REFER TO MOTOR SCHEDULE)
	RECEPTACLE – DUPLEX
	RECEPTACLE – DUPLEX WITH ISOLATED GROUND
	RECEPTACLE – DUPLEX WITH GFCI PROTECTION
	RECEPTACLE – DUPLEX SPLIT WIRE
	RECEPTACLE – QUADRAPLEX (DOUBLE DUPLEX)
	RECEPTACLE – SPECIAL PURPOSE – SINGLE PHASE
	RECEPTACLE – SPECIAL PURPOSE – THREE PHASE
	RECEPTACLE – SINGLE OUTLET –
	RECEPTACLE – RANGE
	RECEPTACLE – DUPLEX – FLOOR MOUNTED
	RECEPTACLE – QUADRAPLEX – FLOOR MOUNTED
	RECEPTACLE – SINGLE – CEILING MOUNTED
	RECEPTACLE – DUPLEX – CEILING MOUNTED
	RECEPTACLE – QUADRAPLEX – CEILING MOUNTED
$	COMBINATION SWITCH/RECEPTACLE
XX	MISCELLANEOUS ELECTRICAL DEVICE DM – MOTORIZED DAMPER HH – HANDHOLE MH – MANHOLE PP – PUSHPLATE RC – RELAY CABINET TC – TIME CLOCK
XXX	MISCELLANEOUS ELECTRICAL DEVICE EPO – EMERGENCY POWER OFF POD – POWER OPERATED DOOR VFD – VARIABLE FREQUENCY DRIVE
XXXX	MULTI-SERVICE BOXES AND RACEWAYS CHARACTERS DESCRIBE MOUNTING LOCATION, ACCESS, SERVICE DEVICE/COVER FITTING AS INDICATED BELOW. REFER TO MULTI-SERVICE BOX SCHEDULE FOR SPECIFIC REQUIREMENTS, CONDUIT, AND DEVICE CONFIGURATIONS. X–– LOCATION –X– ACCESS F–FLOORBOX C–CONCEALED P–POKE–THRU E–EXPOSED R–RAISED FLOOR S–STAGE T–TABLE U–UNDERFLOOR DUCT W–WALL ––X– SERVICE COVER / DEVICE FITTING B–BLANK F–FLUSH R–REGRESSED S–SEMI FLUSH T–TOMBSTONE W–WHIP ––––X SEQUENTIAL NUMBER 1,2,3,ETC – REFER TO MULTI-SERVICE BOX SCHEDULE

SYMBOL	DESCRIPTION
	SURFACE MOUNT 1x4 LUMINAIRE
	SURFACE MOUNT 2x4 LUMINAIRE
	SURFACE MOUNT 2x4 LUMINAIRE – UN–SWITCHED (NIGHT–LIGHT)
	SURFACE MOUNT ROUND LUMINAIRE
	SURFACE MOUNT STRIP LUMINAIRE
	WALL MOUNT STRIP LUMINAIRE
	RECESSED 2x4 LUMINAIRE
	RECESSED 2x4 LUMINAIRE – UN–SWITCHED (NIGHT–LIGHT)
	RECESSED 2x4 LUMINAIRE WITH EMERGENCY BATTERY BACK–UP
	RECESSED 2x2 LUMINAIRE
	RECESSED 2x2 LUMINAIRE WITH EMERGENCY BATTERY BACK–UP
	RECESSED ROUND LUMINAIRE
	RECESSED ROUND LUMINAIRE WITH EMERGENCY BATTERY BACK–UP
	PENDANT LUMINAIRE
	WALL MOUNTED LUMINAIRE
	POLE MOUNTED LUMINAIRE
	WALL MOUNTED EMERGENCY BATTERY BACK–UP
	CEILING MOUNTED EMERGENCY BATTERY BACK–UP
	EXIT SIGN WITH DIRECTIONAL ARROWS HATCH INDICATES ILLUMINATED FACES, ARROWS INDICATE DIRECTIONS
$ $F	SWITCH (TOGGLE UNLESS NOTED): x – SWITCH GROUP "x" to – THERMAL OVERLOAD 2 – 2 POLE p – PILOT LIGHT 3 – 3–WAY k – KEYED 4 – 4–WAY t – TIMER D – DIMMER F – FUSTAT OS – OCCUPANCY SENSOR VS – VACANCY SENSOR FC – CEILING FAN CONTROL V – VARIABLE SPEED
	ROMAN NUMERAL (I,II,III, etc) INDICATES QUANTITY OF GANGED DEVICES UNDER COMMON FACEPLATE
OS	OCCUPANCY SENSOR – CEILING
VS	VACANCY SENSOR – CEILING
DS	DAYLIGHT SENSOR – CEILING
OS	OCCUPANCY SENSOR – WALL MOUNTED

SYMBOL	DESCRIPTION
	DATA OUTLET
	TELEPHONE OUTLET
	COMBINATION DATA / TELEPHONE OUTLET
	TELEVISION OUTLET
XX	MISCELLANEOUS SYSTEMS DEVICE DB – DOORBELL CH – CHIME CK – CARD READER / KEYPAD CR – CARD READER DA – DURESS ALARM DC – DOOR CONTACT DE – DELAYED EGRESS EL – ELECTRIC LOCK ES – ELECTRIC STRIKE IC – INTERCOM CALL STATION KP – KEYPAD MD – MOTION DETECTOR ML – MAGNETIC LOCK RX – REQUEST TO EXIT
S	WALL MOUNTED FIRE ALARM STROBE
S	WALL MOUNTED FIRE ALARM SPEAKER STROBE
S	WALL MOUNTED FIRE ALARM HORN STROBE
	WALL MOUNTED FIRE ALARM SPEAKER
	WALL MOUNTED FIRE ALARM HORN
S	DASHED OUTLINE – CEILING MOUNTED DEVICE
XX	MISCELLANEOUS FIRE ALARM DEVICE F– MANUAL PULL STATION FJ – FIREFIGHTER PHONE JACK H – HEAT DETECTOR S – SMOKE DETECTOR D – DUCT SMOKE DETECTOR DT – SMOKE DETECTOR TEST STATION SH – SMOKE VENTING HATCH RELEASE DH – DOOR HOLD OPEN RELEASE FR – FAN SHUT DOWN RELAY PS – PRESSURE SWITCH FS – FLOW SWITCH TS – TAMPER SWITCH RR – CONTROL / MONITORING RELAY
XXX	MISCELLANEOUS FIRE ALARM DEVICE ARA – AREA OF RESCUE ASSISTANCE NAC – NOTIFICATION EXTENDER PANEL FAP – REMOTE ANNUNCIATOR PANEL FCB – FIRE PHONE CABINET FCP – FIRE ALARM CONTROL PANEL FAC – TERMINAL CABINET

FIXTURE TYPE SYMBOL / SWITCH LETTER / MULTI–GANG NUMERAL → FIXTURE TYPE (SEE SCHEDULE); CIRCUIT NUMBER

NOTE: NOT ALL SYMBOLS OR ABBREVIATIONS ON THIS LEGEND ARE NECESSARILY USED ON THIS PROJECT.

GENERAL ELECTRICAL ABBREVIATIONS

AC – ABOVE COUNTER
AFF – ABOVE FINISHED FLOOR
AFG – ABOVE FINISHED GRADE
BFC – BELOW FINISHED CEILING
BAS – BUILDING AUTOMATION SYSTEM
BLDG – BUILDING
BMS – BUILDING MANAGEMENT SYSTEM
BOF – BOTTOM OF FIXTURE
COF – COFFEE MAKER
CKT – CIRCUIT
CLG – CEILING
CO – CONDUIT ONLY
CWA – COORDINATE WITH ARCHITECT
CWM – COORDINATE WITH EQ SUPPLIER
DW – DISHWASHER
EF – EXHAUST FAN
EHD – ELECTRIC HAND DRYER
EM – EMERGENCY
EMS – ENERGY MANAGEMENT SYSTEM
EP – EXPLOSION PROOF
EWC – ELECTRIC WATER COOLER
EX – EXISTING
FRZ – FREEZER
FA – FIRE ALARM
FCP – FIRE ALARM CONTROL PANEL
GD – GARBAGE DISPOSAL
GND – GROUND
GFI – GROUND FAULT CIRCUIT INTERRUPTER
GFCI – GROUND FAULT CIRCUIT INTERRUPTER
HZL – HAZARDOUS LOCATION
IHW – INSTANT HOT WATER DISPENSER
JB – JUNCTION BOX
LGT(S) – LIGHT(S)
LV – LOW VOLTAGE
MAX – MAXIMUM
MGMT – MANAGEMENT
MIN – MINIMUM
MOP – MOTOR OPERATED PARITITION
MW – MICROWAVE
NC – NORMALLY CLOSED
NL – NIGHT LIGHT
NO – NORMALLY OPEN.
OVN – OVEN
PRJ – CEILING MOUNTED PROJECTOR
PS – ELECTRIC PROJECTOR SCREEN
PB – PULLBOX
RCPT(S) – RECEPTACLE(S)
RNG – RANGE
ST – SHUNT TRIP
SPD – SURGE PROTECTIVE DEVICE
REF – REFRIGERATOR
TV – TELEVISION
UNO – UNLESS NOTED OTHERWISE
UVR – UNDER–VOLTAGE RELEASE
UH – UNIT HEATER
VFD – VARIABLE FREQUENCY DRIVE
XFMR – TRANSFORMER
WP – WEATHERPROOF

ELECTRICAL DRAWING INDEX

DRAWING NUMBER	DRAWING TITLE	ISSUE DATE – DESCRIPTION: 09–20–2016 – ISSUE FOR PERMIT
E0.1	ELECTRICAL LEGEND AND NOTES	●
E0.2	LUMINAIRES	●
E0.3	LIGHTING PLAN	●
E0.4	PHOTOMETRIC PLAN	●

KEY:
● FULL SHEET ISSUE.
Ⓟ PARTIAL SHEET ISSUE (SKETCH).

BUILDING CODE DATA

DISCIPLINE	CODE	EDITION
GENERAL	INTERNATIONAL BUILDING CODE	2012
HVAC / MECHANICAL	INTERNATIONAL MECHANICAL CODE	2012
PLUMBING	INTERNATIONAL PLUMBING CODE	2012
ELECTRICAL	NATIONAL ELECTRIC CODE	2011
FIRE PROTECTION	INTERNATIONAL FIRE CODE	2012
	NFPA STANDARDS	CURRENT
FUEL	INTERNATIONAL FUEL GAS CODE	2012
ENERGY	INTERNATIONAL ENERGY CONSERVATION CODE	2012
ACCESSIBILITY	INTERNATIONAL BUILDING CODE / ANSI	2012
LOCAL AMMENDMENTS	CITY OF FORT LUPTON	2012

NOTES:
A. ALL WORK PERFORMED SHALL COMPLY WITH THE REQUIREMENTS OF THE LISTED CODES, LOCAL CODE AMENDMENTS, AND REFERENCED STANDARDS AS ENFORCED BY THE AUTHORITY HAVING JURISDICTION (AHJ).
B. ALL WORK SUBJECT TO INSPECTION BY THE AHJ AT THE PROJECT SITE FOR COMPLIANCE.

ELECTRICAL SPECIFICATIONS:

1. PROVIDE ALL EQUIPMENT AND SERVICES NECESSARY FOR COMPLETE SYSTEM.
2. EQUIPMENT AND MATERIALS SHALL BE UL–LISTED FOR THE USE INTENDED.
3. SUPPORT CONDUIT AND EQUIPMENT FROM THE STRUCTURE TO PREVENT SAGGING, POCKETING, AND VIBRATION.
4. FIRE–CAULK ALL PIPING PASSING THROUGH FIRE–RATED ASSEMBLIES.
5. PROVIDE COMPLETE SYSTEMS OF CONDUCTORS AND RACEWAYS USING CONDUIT AND/OR CABLE ASSEMBLIES APPROPRIATE TO THE FUNCTION AND LOCATION AND APPROVED PER NEC REQUIREMENTS. CONDUCTORS MUST BE DERATED PER CODE.
6. PROVIDE A COMPLETE GROUNDING SYSTEM PER NEC, SECTION 250.
7. RACEWAYS MAY BE THE FOLLOWING (SUBJECT TO NEC REQUIREMENTS):
   ELECTRICAL METALLIC TUBING, GALVANIZED.
   POLYVINYL CHLORIDE CONDUIT, SCHEDULE 40.
8. CABLE ASSEMBLIES MAY BETHE FOLLOWING (SUBJECT TO NEC REQUIREMENTS):
   METALCLAD CABLE.
9. PROVIDE GALVANIZED STEEL JUNCTION AND OUTLET BOXES, EXCEPT AS INDICATED OTHERWISE. PROVIDE WEATHER–PROOF TYPE CAST BOXES WITH GASKET AND CAST COVERPLATE FOR WET LOCATIONS. THROUGH THE WALL BOXES ARE NOT PERMITTED.
10. POWER CONDUCTORS SHALL BE COPPER, (STRANDED FOR NO. 8 AWG AND LARGER), WITH THE FOLLOWING INSULATION STANDARDS: THHN, THWN, XHHW (90C). THE CONDUCTORS SHALL BE APPLIED USING THE 75C RATING. ALUMINUM CONDUCTORS MAY BE SUBSTITUTED USING THE THE SAME CAPACITY OF THE COPPER CONDUCTORS SPECIFIED.
11. PROVIDE SPECIFICATION GRADE, IVORY COLORED DEVICES THROUGHOUT, UNLESS NOTED OTHERWISE ON THE PLANS. DEVICES SHALL BE HUBBELL. PLATES SHALL BE IVORY PLASTIC, WITH MATCHING SCREWS, UNLESS NOTED OTHERWISE. PROVIDE BLANK COVERPLATES FOR UNUSED OUTLETS. COVERPLATES FOR MULTI–GANG BOXES SHALL BE SIZED FOR THE BOX T COVERS.
12. BRANCH CIRCUITS SHALL USE MINIMUM NO. 12 AWG WIRING. CONTROL WIRING MINIMUM NO. 14 AWG. FOR DISTANCES EXCEEDING 75' FROM THE PANEL, PROVIDE MIN. 10 AWG.
13. DO NOT INSTALL EXPOSED CONDUIT UNLESS APPROVED BY THE ARCHITECT.
14. RUN ALL CONDUIT PARALLEL AND PERPENDICULAR TO BUILDING LINES.
15. USE FLEXIBLE METALLIC CONDUIT FOR CONNECTIONS TO MOTORS, FIXTURES, OR OTHER EQUIPMENT WHERE VIBRATION IS PRESENT. PROVIDE SEALTITE FMC IN WET AREAS.
16. PROVIDE GROUND WIRE IN NON–METALLIC CONDUIT AND FLEXIBLE CONDUIT. GROUND WIRES SHALL BE INCREASED IN SIZE WHERE CIRCUIT WIRING IS INCREASED FOR VOLTAGE DROP.
17. PROVIDE A TYPED PANEL SCHEDULE FOR EACH PANEL, INSERTED IN A PLASTIC SLEEVE.

KEYPLAN

NOTICE: DUTY OF COOPERATION Release of these plans contemplates further coordination among the owner, his contractor(s), the architect and engineers. Design and construction are complex. Although the architect and his consultants have performed their services with due care and diligence, they cannot guarantee perfection. Communication is imperfect, and every contingency cannot be anticipated. Any ambiguity or discrepancy discovered by the use of these plans shall be reported immediately to the architect. Failure to notify the architect compounds misunderstanding and increases construction costs. A failure to cooperate by a notice to the architect shall relieve the architect/engineer from responsibility for all consequences. Changes made from the plans without consent of the architect are unauthorized, and shall relieve the architect/engineer of responsibility for all consequences caused by such changes.

SEAL:

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323 THIRD AVE., #100, LONGMONT, CO 80501
TEL: (303) 678.1108 • FAX: (303) 678.1142 • PCDENGINEERING.COM

REVISIONS

DATE	DESCRIPTION	NO.
09/20/2016	ISSUE FOR PERMIT	0

PROJECT NAME: DAVE'S EARTHWORKS INC
OWNER: DAVE HUNT
ADDRESS: FORT LUPTON CO

SHEET TITLE: ELECTRICAL LEGEND AND NOTES

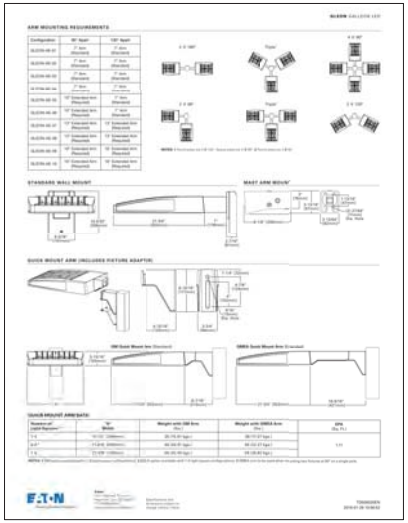
DRAWN BY: AW
CHECKED BY: KC
PROJECT NO: 16049
DATE: 09/20/2016

E0.1

DATE: 9/19/2016, 11:40 AM

33\123

B' FIXTURE – NEW
POLE MOUNTED FIXTURE



B' FIXTURE – NEW
POLE MOUNTED FIXTURE

'A' FIXTURE – EXISTING
POLE MOUNTED FIXTURE

D' FIXTURE – NEW
WALL MOUNTED FIXTURE

NOTICE: DUTY OF COOPERATION Release of these plans contemplates further coordination among the owner, his contractor(s), the architect and engineers. Design and construction are complex. Although the architect and his consultants have performed their services with due care and diligence, they cannot guarantee perfection. Communication is imperfect, and every contingency cannot be anticipated. Any ambiguity or discrepancy discovered by the use of these plans shall be reported immediately to the architect. Failure to notify the architect compounds misunderstanding and increases construction costs. A failure to cooperate by a notice to the architect shall relieve the architect/engineer from responsibility for all consequences. Changes made from the plans without consent of the architect are unauthorized, and shall relieve the architect/engineer of responsibility for all consequences caused by such changes.

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REVISIONS

DATE	DESCRIPTION	NO.
09/20/2016	ISSUE FOR PERMIT	0

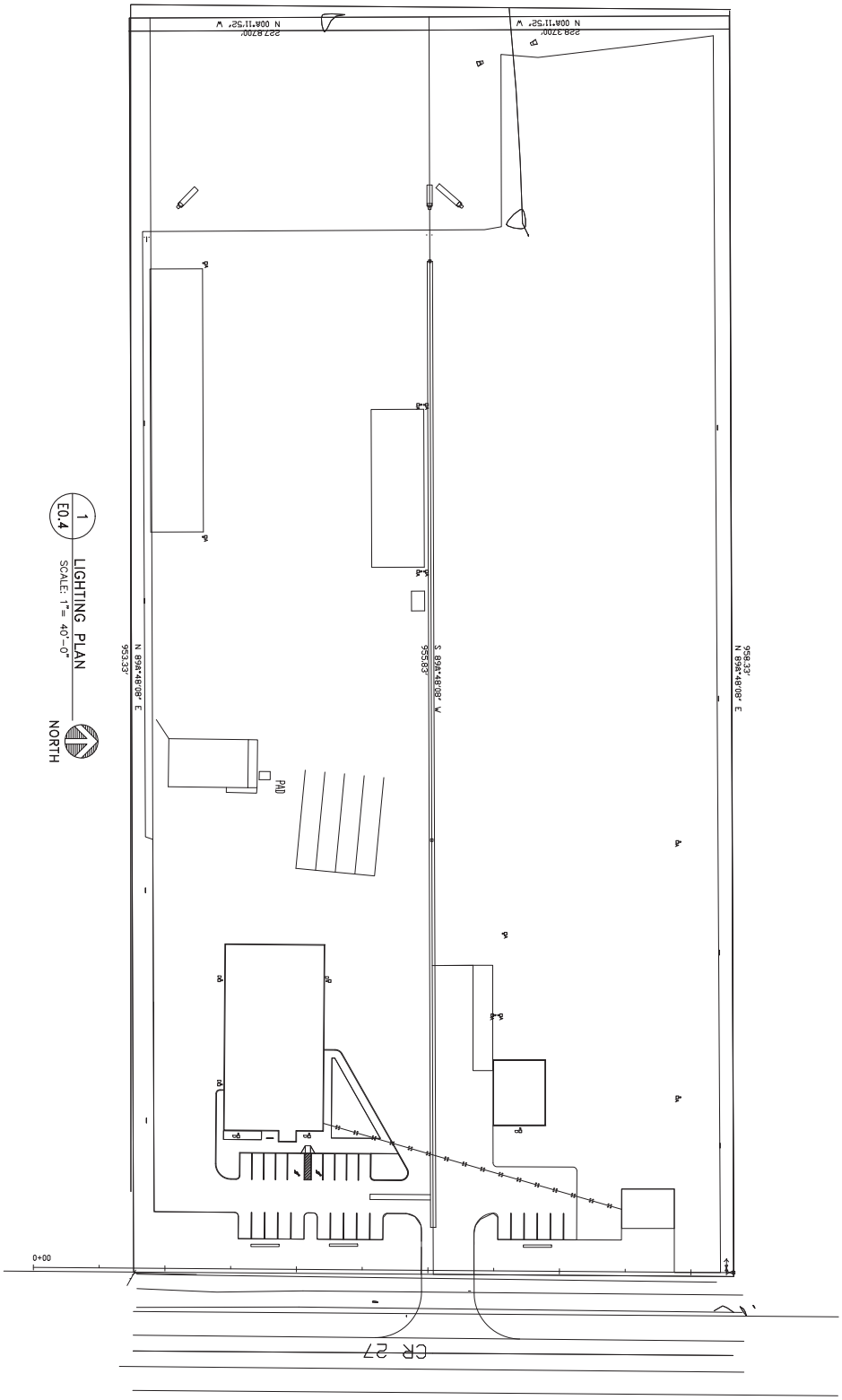
PROJECT TITLE:
PROJECT NAME: DAVE'S EARTHWORKS INC
OWNER: DAVE HUNT
ADDRESS: DENVER AVE
FORT LUPTON CO

SHEET TITLE: LUMINAIRES

DRAWN BY: AW
CHECKED BY: KC
PROJECT NO: 16049
DATE: 09/20/2016

E.02

DATE: 9/19/2016, 4:17 PM
341123



1 E0.4 LIGHTING PLAN
SCALE: 1"= 40'-0"
NORTH

NOTICE: DUTY OF COOPERATION Release of these plans contemplates that construction will be performed according to accepted standards and specifications. Design and construction is complex. Although the architect and his consultants have performed their services with due care, these plans are not guaranteed to be complete. Construction is imperfect, and every contingency cannot be anticipated. Any ambiguity or discrepancy discovered by the use of these plans shall be reported to the architect immediately. Failure to promptly notify the architect compounds misunderstanding and increases construction costs. A contractor's failure to cooperate by a notice to the architect shall relieve the architect of responsibility for costs incurred. Any construction changes made from the plans without the consent of the architect are unauthorized, and shall relieve the architect/engineer of responsibility for all consequences caused by such changes.

PROJECT TITLE:
PROJECT NAME: DAVE'S EARTHWORKS INC
OWNER: DAVE HUNT
ADDRESS: DENVER AVE
FORT LUPTON CO

DRAWN BY: AW
CHECKED BY: KC
PROJECT NO: 16049
DATE: 09/20/2016

SHEET TITLE:
LIGHTING PLAN

E.03

REVISIONS

NO.	DESCRIPTION	DATE
0	ISSUE FOR PERMIT	09/20/2016

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SEAL:

1 E0.4 PHOTOMETRIC PLAN
SCALE: 1" = 40'-0"
NORTH

NOTICE: DUTY OF COOPERATION. Release of these plans contemplates further coordination among the owner, his contractor(s), the architect and engineers. Design and construction are complex. Although the architect and engineers have performed their professional services with care and diligence, they cannot guarantee perfection. Communication is imperfect, and every contingency cannot be anticipated. Any ambiguity, inconsistency or omission discovered by the use of these plans must be reported immediately to the architect. Failure to notify the architect compounds misunderstanding and increases construction costs. A failure to cooperate may result in costly errors and omissions for which the architect/engineer from responsibility for all consequences. Changes made from the plans without consent of the architect are unauthorized, and shall relieve the architect/engineer of responsibility for all consequences caused by such changes.

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REVISIONS		
NO.	DESCRIPTION	DATE
0	ISSUE FOR PERMIT	09/20/2016

PROJECT NAME: DAVE'S EARTHWORKS INC
OWNER: DAVE HUNT
ADDRESS: DENVER AVE
FORT LUPTON CO

SHEET TITLE: PHOTOMETRIC PLAN

E.04

DRAWN BY: AW
CHECKED BY: KC
PROJECT NO: 16049
DATE: 09/20/2016

DATE: 9/19/2016 1:19 PM

REPORTS

WERNSMAN ENGINEERING, INC.

1011 42nd STREET ◆ EVANS, CO 80620
Phone (970) 353-4463 Fax (970) 353-9257

August 7, 2016

Roy Vestal
City of Fort Lupton
130 S. McKinley Ave.
Fort Lupton, CO 80621

RE: Preliminary Drainage Report for Dave Hunt

To whom it may concern;

Attached is the Preliminary Drainage Report and Plan for Dave' Excavation Inc. new facility at 3355 CR 27 in Fort Lupton. This report addresses both the off-site and on-site hydrology that affects or is affected by the proposed development.

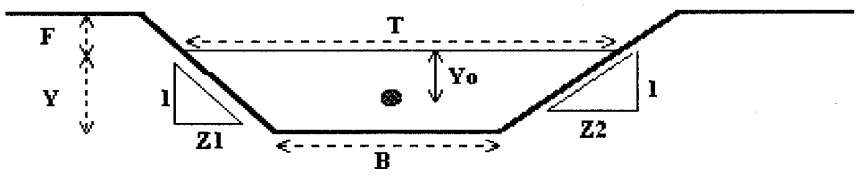
If you have any further questions or comments regarding this matter, please contact this office.

Sincerely,

Eric Wernsman P.E.

Normal Flow Analysis - Trapezoidal Channel

Project: Daves Ex
Channel ID: Sec B-B BASIN 5

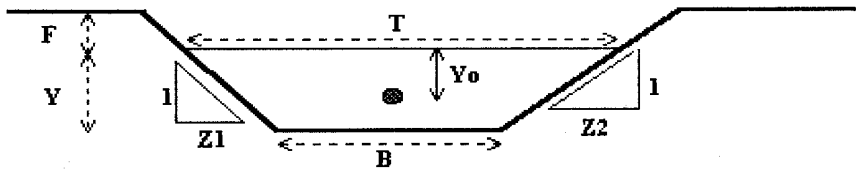


Design Information (Input)			
Channel Invert Slope	So =	0.0085	ft/ft
Manning's n	n =	0.040	
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	4.00	ft/ft
Freeboard Height	F =	1.00	ft
Design Water Depth	Y =	**0.75**	ft

Normal Flow Condtion (Calculated)			
Discharge	**Q =**	**3.94**	cfs
Froude Number	**Fr =**	**0.50**	
Flow Velocity	**V =**	**1.75**	fps
Flow Area	A =	2.25	sq ft
Top Width	T =	6.00	ft
Wetted Perimeter	P =	6.18	ft
Hydraulic Radius	R =	0.36	ft
Hydraulic Depth	D =	0.38	ft
Specific Energy	Es =	0.80	ft
Centroid of Flow Area	Yo =	0.25	ft
Specific Force	Fs =	0.05	kip

Normal Flow Analysis - Trapezoidal Channel

Project: Daves Ex
Channel ID: Sec C-C

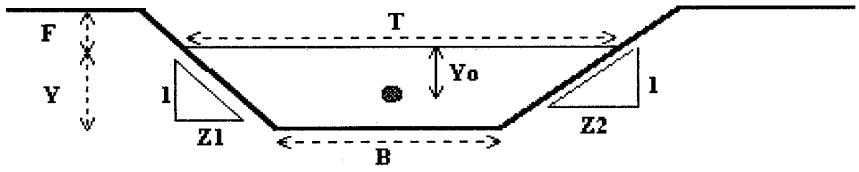


Design Information (Input)			
Channel Invert Slope	So =	0.0050	ft/ft
Manning's n	n =	0.025	
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	42.00	ft/ft
Right Side Slope	Z2 =	33.00	ft/ft
Freeboard Height	F =	1.00	ft
Design Water Depth	Y =	**0.37**	ft

Normal Flow Condtion (Calculated)			
Discharge	**Q =**	**7.02**	cfs
Froude Number	**Fr =**	**0.56**	
Flow Velocity	**V =**	**1.37**	fps
Flow Area	A =	5.13	sq ft
Top Width	T =	27.75	ft
Wetted Perimeter	P =	27.76	ft
Hydraulic Radius	R =	0.18	ft
Hydraulic Depth	D =	0.19	ft
Specific Energy	Es =	0.40	ft
Centroid of Flow Area	Yo =	0.12	ft
Specific Force	Fs =	0.06	kip

Normal Flow Analysis - Trapezoidal Channel

Project: Daves Ex
Channel ID: Sec D-D BASIN S8

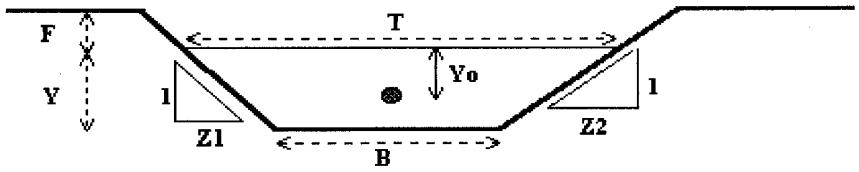


Design Information (Input)			
Channel Invert Slope	So =	0.0040	ft/ft
Manning's n	n =	0.040	
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	33.00	ft/ft
Freeboard Height	F =	1.00	ft
Design Water Depth	Y =	**0.45**	ft

Normal Flow Condtion (Calculated)			
Discharge	**Q =**	**3.26**	cfs
Froude Number	**Fr =**	**0.32**	
Flow Velocity	**V =**	**0.87**	fps
Flow Area	A =	3.75	sq ft
Top Width	T =	16.65	ft
Wetted Perimeter	P =	16.71	ft
Hydraulic Radius	R =	0.22	ft
Hydraulic Depth	D =	0.23	ft
Specific Energy	Es =	0.46	ft
Centroid of Flow Area	Yo =	0.15	ft
Specific Force	Fs =	0.04	kip

Normal Flow Analysis - Trapezoidal Channel

Project: Daves Ex
Channel ID: Sec E-E BASIN S8

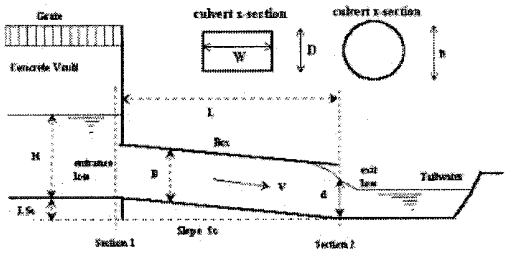


Design Information (Input)			
Channel Invert Slope	So =	0.0100	ft/ft
Manning's n	n =	0.040	
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	4.00	ft/ft
Freeboard Height	F =	1.00	ft
Design Water Depth	Y =	**0.67**	ft

Normal Flow Condtion (Calculated)			
Discharge	**Q =**	**3.12**	cfs
Froude Number	**Fr =**	**0.54**	
Flow Velocity	**V =**	**1.76**	fps
Flow Area	A =	1.78	sq ft
Top Width	T =	5.34	ft
Wetted Perimeter	P =	5.50	ft
Hydraulic Radius	R =	0.32	ft
Hydraulic Depth	D =	0.33	ft
Specific Energy	Es =	0.71	ft
Centroid of Flow Area	Yo =	0.22	ft
Specific Force	Fs =	0.04	kip

CULVERT STAGE-DISCHARGE SIZING (INLET vs. OUTLET CONTROL WITH TAILWATER EFFECTS)

Project: Daves Ex
Basin ID: North Storm Drain CULVERT #1
Status:



Design Information (Input):

Circular Culvert: Barrel Diameter in Inches — D = 24 inches
Inlet Edge Type (choose from pull-down list) — Square End Projection

OR:

Box Culvert: Barrel Height (Rise) in Feet — Height (Rise) = ft.
Barrel Width (Span) in Feet — Width (Span) = ft.
Inlet Edge Type (choose from pull-down list) — Square Edge w/ 90-15 Deg. Headwall

Number of Barrels	No =	1	
Inlet Elevation at Culvert Invert	Inlet Elev =	28.5	ft. elev.
Outlet Elevation at Culvert Invert **OR** Slope of Culvert (ft v./ft h.)	Outlet Elev =	27	ft. elev.
Culvert Length in Feet	L =	814	ft.
Manning's Roughness	n =	0.012	
Bend Loss Coefficient	K_b =	0	
Exit Loss Coefficient	K_x =	1	

Design Information (calculated):

Entrance Loss Coefficient	K_e =	0.50
Friction Loss Coefficient	K_f =	8.56
Sum of All Loss Coefficients	K_s =	10.06
Orifice Inlet Condition Coefficient	C_d =	0.85
Minimum Energy Condition Coefficient	KE_{low} =	0.1121

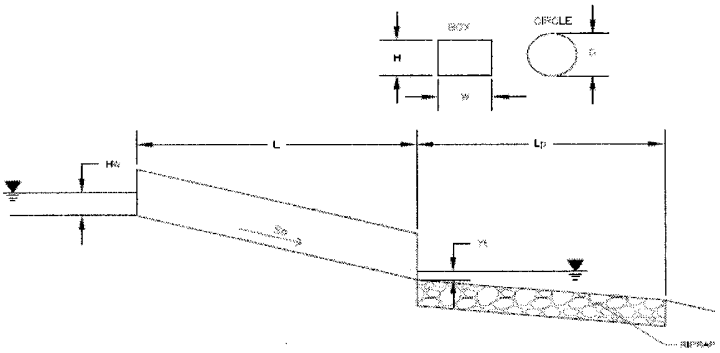
Calculations of Culvert Capacity (output):

Water Surface Elevation (ft., linked)	Tailwater Surface Elevation ft	Culvert Inlet-Control Flowrate cfs	Culvert Outlet-Control Flowrate cfs	Controlling Culvert Flowrate cfs (output)	Inlet Equation Used:	Flow Control Used
31.00	29.00	16.70	11.26	**11.26**	Regression Eqn.	OUTLET
31.25	29.00	18.50	11.94	**11.94**	Regression Eqn.	OUTLET
31.50	29.00	20.10	12.57	**12.57**	Regression Eqn.	OUTLET
31.75	29.00	21.60	13.20	**13.20**	Regression Eqn.	OUTLET
32.00	29.00	23.10	13.78	**13.78**	Regression Eqn.	OUTLET
32.25	29.00	24.40	14.36	**14.36**	Regression Eqn.	OUTLET
32.50	29.00	25.60	14.89	**14.89**	Regression Eqn.	OUTLET
32.75	29.00	26.80	15.41	**15.41**	Regression Eqn.	OUTLET
33.00	29.00	27.90	15.94	**15.94**	Regression Eqn.	OUTLET
33.25	29.00	29.00	16.41	**16.41**	Regression Eqn.	OUTLET
33.50	29.00	30.00	16.89	**16.89**	Regression Eqn.	OUTLET
33.75	29.00	31.00	17.36	**17.36**	Regression Eqn.	OUTLET
34.00	29.00	32.00	17.78	**17.78**	Regression Eqn.	OUTLET
34.25	29.00	32.90	18.25	**18.25**	Regression Eqn.	OUTLET
34.50	29.00	33.80	18.67	**18.67**	Regression Eqn.	OUTLET
34.75	29.00	34.70	19.09	**19.09**	Orifice Eqn.	OUTLET
35.00	29.00	35.50	19.52	**19.52**	Orifice Eqn.	OUTLET
35.25		36.30	19.88	**19.88**	Orifice Eqn.	OUTLET
35.50		37.10	20.30	**20.30**	Orifice Eqn.	OUTLET
35.75		37.80	20.67	**20.67**	Orifice Eqn.	OUTLET
36.00		38.60	21.04	**21.04**	Orifice Eqn.	OUTLET
36.25		39.30	21.41	**21.41**	Orifice Eqn.	OUTLET
36.50		40.00	21.78	**21.78**	Orifice Eqn.	OUTLET
36.75		40.80	22.15	**22.15**	Orifice Eqn.	OUTLET
37.00		41.40	22.51	**22.51**	Orifice Eqn.	OUTLET
37.25		42.10	22.83	**22.83**	Orifice Eqn.	OUTLET
37.50		42.80	23.20	**23.20**	Orifice Eqn.	OUTLET
37.75		43.50	23.51	**23.51**	Orifice Eqn.	OUTLET
38.00		44.10	23.88	**23.88**	Orifice Eqn.	OUTLET
38.25		44.80	24.20	**24.20**	Orifice Eqn.	OUTLET

Processing Time: 00.38 Seconds

Determination of Culvert Headwater and Outlet Protection

Project: DAVES EX
Basin ID: CULVERT #1



Soil Type:
Choose One:
- ○ Sandy
- ◉ Non-Sandy

Design Information (Input):

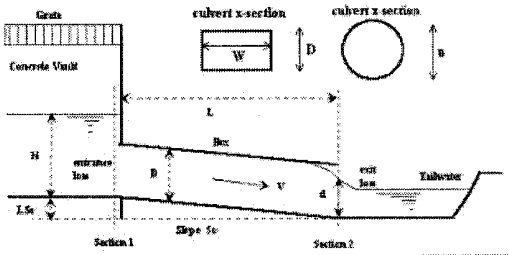
Design Discharge		Q = 11.62	cfs
Circular Culvert:			
Barrel Diameter in Inches		D = 24	inches
Inlet Edge Type (Choose from pull-down list)		Square End Projection	
Box Culvert:		OR	
Barrel Height (Rise) in Feet		Height (Rise) =	ft
Barrel Width (Span) in Feet		Width (Span) =	ft
Inlet Edge Type (Choose from pull-down list)			
Number of Barrels		No = 1	
Inlet Elevation		Elev IN = 28.5	ft
Outlet Elevation **OR** Slope		Elev OUT = 26.9	ft
Culvert Length		L = 814	ft
Manning's Roughness		n = 0.012	
Bend Loss Coefficient		k_b = 0	
Exit Loss Coefficient		k_x = 1	
Tailwater Surface Elevation		Elev Y_t =	ft
Max Allowable Channel Velocity		V = 7	ft/s

Required Protection (Output):

Tailwater Surface Height		Y_t = 0.80	ft
Flow Area at Max Channel Velocity		A_t = 1.66	ft^2
Culvert Cross Sectional Area Available		A = 3.14	ft^2
Entrance Loss Coefficient		k_e = 0.50	
Friction Loss Coefficient		k_f = 8.57	
Sum of All Losses Coefficients		k_s = 10.07	ft
Culvert Normal Depth		Y_n = 1.80	ft
Culvert Critical Depth		Y_c = 1.22	ft
Tailwater Depth for Design		d = 1.61	ft
Adjusted Diameter **OR** Adjusted Rise		D_a = -	ft
Expansion Factor		1/(2*tan(Θ)) = 5.70	
Flow/Diameter$^{2.5}$ **OR** Flow/(Span * Rise$^{1.5}$)		Q/D^2.5 = 2.05	$ft^{0.5}/s$
Froude Number		Fr = 0.43	
Tailwater/Adjusted Diameter **OR** Tailwater/Adjusted Rise		Yt/D = 0.40	
Inlet Control Headwater		HW_I = 1.89	ft
Outlet Control Headwater		HW_O = 2.15	
Design Headwater Elevation		**HW =** 30.65	ft
Headwater/Diameter OR Headwater/Rise Ratio		**HW/D =** 1.08	
Minimum Theoretical Riprap Size		d_{50} = 3	in
Nominal Riprap Size		d_{50} = 6	in
UDFCD Riprap Type		**Type =** VL	
Length of Protection		**L_p =** 6	ft
Width of Protection		**T =** 4	ft

CULVERT STAGE-DISCHARGE SIZING (INLET vs. OUTLET CONTROL WITH TAILWATER EFFECTS)

Project: Daves Ex
Basin ID: Middle Storm Drain culvert #2 18" SECTION
Status:



Design Information (Input):

Circular Culvert:	Barrel Diameter in Inches	D =	18	inches
	Inlet Edge Type (choose from pull-down list)		Square End Projection	
OR:				
Box Culvert:	Barrel Height (Rise) in Feet	Height (Rise) =		ft.
	Barrel Width (Span) in Feet	Width (Span) =		ft.
	Inlet Edge Type (choose from pull-down list)		Square Edge w/ 90-15 Deg. Headwall	
	Number of Barrels	No =	1	
	Inlet Elevation at Culvert Invert	Inlet Elev =	31.5	ft. elev.
	Outlet Elevation at Culvert Invert **OR** Slope of Culvert (ft v./ft h.)	Outlet Elev =	28	ft. elev.
	Culvert Length in Feet	L =	440	ft.
	Manning's Roughness	n =	0.012	
	Bend Loss Coefficient	K_b =	0	
	Exit Loss Coefficient	K_x =	1	

Design Information (calculated):

Entrance Loss Coefficient	K_e =	0.50
Friction Loss Coefficient	K_f =	6.79
Sum of All Loss Coefficients	K_s =	8.29
Orifice Inlet Condition Coefficient	C_d =	0.85
Minimum Energy Condition Coefficient	KE_{low} =	0.0070

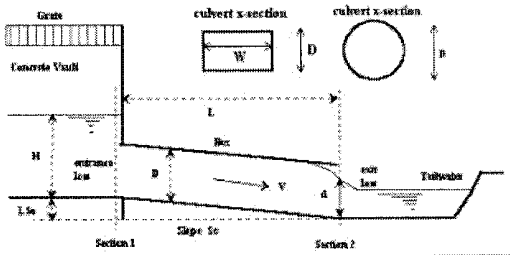
Calculations of Culvert Capacity (output):

Water Surface Elevation (ft., linked)	Tailwater Surface Elevation ft	Culvert Inlet-Control Flowrate cfs	Culvert Outlet-Control Flowrate cfs	Controlling Culvert Flowrate cfs (output)	Inlet Equation Used:	Flow Control Used
34.00	30.00	10.80	9.90	**9.90**	Regression Eqn.	OUTLET
34.25	30.00	11.70	10.20	**10.20**	Regression Eqn.	OUTLET
34.50	30.00	12.50	10.45	**10.45**	Regression Eqn.	OUTLET
34.75	30.00	13.30	10.76	**10.76**	Regression Eqn.	OUTLET
35.00	30.00	14.00	11.01	**11.01**	Regression Eqn.	OUTLET
35.25	30.00	14.70	11.32	**11.32**	Regression Eqn.	OUTLET
35.50	30.00	15.30	11.57	**11.57**	Regression Eqn.	OUTLET
35.75	30.00	15.90	11.82	**11.82**	Regression Eqn.	OUTLET
36.00	30.00	16.50	12.08	**12.08**	Regression Eqn.	OUTLET
36.25		17.10	12.84	**12.84**	Orifice Eqn.	OUTLET
36.50		17.60	13.04	**13.04**	Orifice Eqn.	OUTLET
36.75		18.10	13.30	**13.30**	Orifice Eqn.	OUTLET
37.00		18.60	13.50	**13.50**	Orifice Eqn.	OUTLET
37.25		19.10	13.75	**13.75**	Orifice Eqn.	OUTLET
37.50		19.60	13.96	**13.96**	Orifice Eqn.	OUTLET
37.75		20.00	14.16	**14.16**	Orifice Eqn.	OUTLET
38.00		20.50	14.36	**14.36**	Orifice Eqn.	OUTLET
38.25		20.90	14.62	**14.62**	Orifice Eqn.	OUTLET
38.50		21.40	14.82	**14.82**	Orifice Eqn.	OUTLET
38.75		21.80	15.02	**15.02**	Orifice Eqn.	OUTLET
39.00		22.20	15.22	**15.22**	Orifice Eqn.	OUTLET
39.25		22.60	15.43	**15.43**	Orifice Eqn.	OUTLET
39.50		23.00	15.58	**15.58**	Orifice Eqn.	OUTLET
39.75		23.40	15.78	**15.78**	Orifice Eqn.	OUTLET
40.00		23.80	15.99	**15.99**	Orifice Eqn.	OUTLET
40.25		24.10	16.19	**16.19**	Orifice Eqn.	OUTLET
40.50		24.50	16.34	**16.34**	Orifice Eqn.	OUTLET
40.75		24.90	16.54	**16.54**	Orifice Eqn.	OUTLET
41.00		25.30	16.75	**16.75**	Orifice Eqn.	OUTLET
41.25		25.60	16.90	**16.90**	Orifice Eqn.	OUTLET

Processing Time: 00.38 Seconds

CULVERT STAGE-DISCHARGE SIZING (INLET vs. OUTLET CONTROL WITH TAILWATER EFFECTS)

Project: Daves Ex
Basin ID: CULVERT #2 24"
Status:



Design Information (Input):

Circular Culvert:	Barrel Diameter in Inches	D = 24	inches
	Inlet Edge Type (choose from pull-down list)	Square End Projection	
OR:			
Box Culvert:	Barrel Height (Rise) in Feet	Height (Rise) =	ft.
	Barrel Width (Span) in Feet	Width (Span) =	ft.
	Inlet Edge Type (choose from pull-down list)	Square Edge w/ 90-15 Deg. Headwall	
	Number of Barrels	No = 1	
	Inlet Elevation at Culvert Invert	Inlet Elev = 27.2	ft. elev.
	Outlet Elevation at Culvert Invert **OR** Slope of Culvert (ft v./ft h.)	Outlet Elev = 27	ft. elev.
	Culvert Length in Feet	L = 44	ft.
	Manning's Roughness	n = 0.012	
	Bend Loss Coefficient	K_b = 0	
	Exit Loss Coefficient	K_x = 1	

Design Information (calculated):

Entrance Loss Coefficient	K_e = 0.50
Friction Loss Coefficient	K_f = 0.46
Sum of All Loss Coefficients	K_s = 1.96
Orifice Inlet Condition Coefficient	C_d = 0.85
Minimum Energy Condition Coefficient	KE_{low} = 0.1121

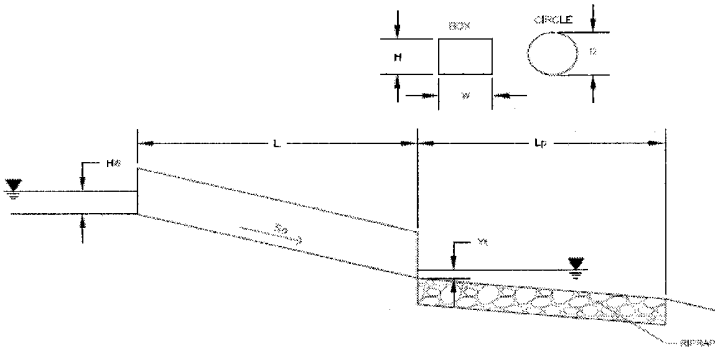
Calculations of Culvert Capacity (output):

Water Surface Elevation (ft., linked)	Tailwater Surface Elevation ft	Culvert Inlet-Control Flowrate cfs	Culvert Outlet-Control Flowrate cfs	Controlling Culvert Flowrate cfs (output)	Inlet Equation Used:	Flow Control Used
33.25	30.00	34.00	32.47	**32.47**	Orifice Eqn.	OUTLET
33.50	30.00	34.80	33.71	**33.71**	Orifice Eqn.	OUTLET
33.75	30.00	35.70	34.86	**34.86**	Orifice Eqn.	OUTLET
34.00	30.00	36.50	36.02	**36.02**	Orifice Eqn.	OUTLET
34.25	30.00	37.20	37.18	**37.18**	Orifice Eqn.	OUTLET
34.50	30.00	38.00	38.25	**38.00**	Orifice Eqn.	INLET
34.75	30.00	38.70	39.24	**38.70**	Orifice Eqn.	INLET
35.00	30.00	39.50	40.32	**39.50**	Orifice Eqn.	INLET
35.25	30.00	40.20	41.31	**40.20**	Orifice Eqn.	INLET
35.50	30.00	40.90	42.22	**40.90**	Orifice Eqn.	INLET
35.75	30.00	41.60	43.21	**41.60**	Orifice Eqn.	INLET
36.00	30.00	42.30	44.12	**42.30**	Orifice Eqn.	INLET
36.25	30.00	42.90	45.03	**42.90**	Orifice Eqn.	INLET
36.50	30.00	43.60	45.93	**43.60**	Orifice Eqn.	INLET
36.75	30.00	44.20	46.76	**44.20**	Orifice Eqn.	INLET
37.00	30.00	44.90	47.67	**44.90**	Orifice Eqn.	INLET
37.25	30.00	45.50	48.50	**45.50**	Orifice Eqn.	INLET
37.50		46.10	52.54	**46.10**	Orifice Eqn.	INLET
37.75		46.80	53.29	**46.80**	Orifice Eqn.	INLET
38.00		47.40	54.03	**47.40**	Orifice Eqn.	INLET
38.25		48.00	54.77	**48.00**	Orifice Eqn.	INLET
38.50		48.60	55.52	**48.60**	Orifice Eqn.	INLET
38.75		49.10	56.26	**49.10**	Orifice Eqn.	INLET
39.00		49.70	56.92	**49.70**	Orifice Eqn.	INLET
39.25		50.30	57.67	**50.30**	Orifice Eqn.	INLET
39.50		50.90	58.33	**50.90**	Orifice Eqn.	INLET
39.75		51.40	59.07	**51.40**	Orifice Eqn.	INLET
40.00		52.00	59.73	**52.00**	Orifice Eqn.	INLET
40.25		52.50	60.39	**52.50**	Orifice Eqn.	INLET
40.50		53.10	61.05	**53.10**	Orifice Eqn.	INLET

Processing Time: 00.38 Seconds

Determination of Culvert Headwater and Outlet Protection

Project: DAVES EX
Basin ID: CULVERT #2 24"



Soil Type:
Choose One:
○Sandy
◉Non-Sandy

Design Information (Input):

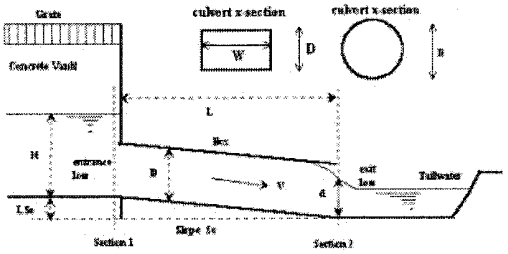
	Design Discharge	Q = 10.94	cfs
Circular Culvert:			
	Barrel Diameter in Inches	D = 24	inches
	Inlet Edge Type (Choose from pull-down list)	Square End Projection	
Box Culvert:		OR	
	Barrel Height (Rise) in Feet	Height (Rise) =	ft
	Barrel Width (Span) in Feet	Width (Span) =	ft
	Inlet Edge Type (Choose from pull-down list)		
	Number of Barrels	No = 1	
	Inlet Elevation	Elev IN = 27.2	ft
	Outlet Elevation **OR** Slope	Elev OUT = 27	ft
	Culvert Length	L = 44	ft
	Manning's Roughness	n = 0.012	
	Bend Loss Coefficient	k_b = 0	
	Exit Loss Coefficient	k_x = 1	
	Tailwater Surface Elevation	Elev Y_t =	ft
	Max Allowable Channel Velocity	V = 7	ft/s

Required Protection (Output):

	Tailwater Surface Height	Y_t = 0.80	ft
	Flow Area at Max Channel Velocity	A_t = 1.56	ft^2
	Culvert Cross Sectional Area Available	A = 3.14	ft^2
	Entrance Loss Coefficient	k_e = 0.50	
	Friction Loss Coefficient	k_f = 0.46	
	Sum of All Losses Coefficients	k_s = 1.96	ft
	Culvert Normal Depth	Y_n = 1.19	ft
	Culvert Critical Depth	Y_c = 1.19	ft
	Tailwater Depth for Design	d = 1.59	ft
	Adjusted Diameter **OR** Adjusted Rise	D_a = -	ft
	Expansion Factor	1/(2*tan(Θ)) = 5.83	
	Flow/Diameter$^{2.5}$ **OR** Flow/(Span * Rise$^{1.5}$)	Q/D^2.5 = 1.93	$ft^{0.5}$/s
	Froude Number	Fr = 1.00	
	Tailwater/Adjusted Diameter **OR** Tailwater/Adjusted Rise	Yt/D = 0.40	
	Inlet Control Headwater	HW_I = 1.81	ft
	Outlet Control Headwater	HW_O = 1.76	
	Design Headwater Elevation	**HW = 29.01**	**ft**
	Headwater/Diameter OR Headwater/Rise Ratio	**HW/D = 0.90**	
	Minimum Theoretical Riprap Size	d_{50} = 3	in
	Nominal Riprap Size	d_{50} = 6	in
	UDFCD Riprap Type	**Type = VL**	
	Length of Protection	**L_p = 6**	**ft**
	Width of Protection	**T = 4**	**ft**

CULVERT STAGE-DISCHARGE SIZING (INLET vs. OUTLET CONTROL WITH TAILWATER EFFECTS)

Project: **Daves Ex**
Basin ID: **South Storm Drain (CULVERT #3)**
Status:



Design Information (Input):

Circular Culvert:	Barrel Diameter in Inches	D = 24	inches
	Inlet Edge Type (choose from pull-down list)	Square End Projection	
OR:			
Box Culvert:	Barrel Height (Rise) in Feet	Height (Rise) =	ft.
	Barrel Width (Span) in Feet	Width (Span) =	ft.
	Inlet Edge Type (choose from pull-down list)	Square Edge w/ 90-15 Deg. Headwall	
	Number of Barrels	No = 1	
	Inlet Elevation at Culvert Invert	Inlet Elev = 29.85	ft. elev.
	Outlet Elevation at Culvert Invert **OR** Slope of Culvert (ft v./ft h.)	Outlet Elev = 27	ft. elev.
	Culvert Length in Feet	L = 710	ft.
	Manning's Roughness	n = 0.012	
	Bend Loss Coefficient	K_b = 0	
	Exit Loss Coefficient	K_x = 1	

Design Information (calculated):

Entrance Loss Coefficient	K_e =	0.50
Friction Loss Coefficient	K_f =	7.47
Sum of All Loss Coefficients	K_s =	8.97
Orifice Inlet Condition Coefficient	C_d =	0.85
Minimum Energy Condition Coefficient	KE_{low} =	0.1121

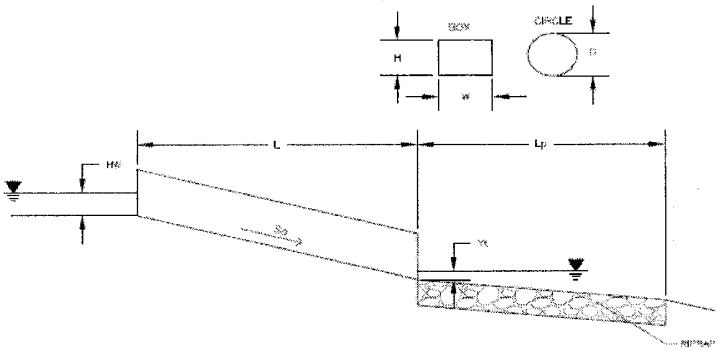
Calculations of Culvert Capacity (output):

Water Surface Elevation (ft., linked)	Tailwater Surface Elevation ft	Culvert Inlet-Control Flowrate cfs	Culvert Outlet-Control Flowrate cfs	Controlling Culvert Flowrate cfs (output)	Inlet Equation Used:	Flow Control Used
31.50	29.00	9.60	13.35	**9.60**	Regression Eqn.	INLET
31.75	29.00	11.80	13.97	**11.80**	Regression Eqn.	INLET
32.00	29.00	14.00	14.60	**14.00**	Regression Eqn.	INLET
32.25	29.00	16.00	15.22	**15.22**	Regression Eqn.	OUTLET
32.50	29.00	17.80	15.76	**15.76**	Regression Eqn.	OUTLET
32.75	29.00	19.50	16.30	**16.30**	Regression Eqn.	OUTLET
33.00	29.00	21.10	16.85	**16.85**	Regression Eqn.	OUTLET
33.25	29.00	22.50	17.39	**17.39**	Regression Eqn.	OUTLET
33.50	29.00	23.90	17.93	**17.93**	Regression Eqn.	OUTLET
33.75	29.00	25.10	18.40	**18.40**	Regression Eqn.	OUTLET
34.00	29.00	26.30	18.87	**18.87**	Regression Eqn.	OUTLET
34.25	29.00	27.50	19.33	**19.33**	Regression Eqn.	OUTLET
34.50	29.00	28.60	19.80	**19.80**	Regression Eqn.	OUTLET
34.75	29.00	29.60	20.19	**20.19**	Regression Eqn.	OUTLET
35.00	29.00	30.60	20.65	**20.65**	Regression Eqn.	OUTLET
35.25	29.00	31.60	21.12	**21.12**	Regression Eqn.	OUTLET
35.50	29.00	32.50	21.51	**21.51**	Regression Eqn.	OUTLET
35.75	29.00	33.40	21.89	**21.89**	Regression Eqn.	OUTLET
36.00	29.00	34.40	22.28	**22.28**	Orifice Eqn.	OUTLET
36.25		35.20	22.67	**22.67**	Orifice Eqn.	OUTLET
36.50		36.00	23.06	**23.06**	Orifice Eqn.	OUTLET
36.75		36.80	23.45	**23.45**	Orifice Eqn.	OUTLET
37.00		37.50	23.83	**23.83**	Orifice Eqn.	OUTLET
37.25		38.30	24.22	**24.22**	Orifice Eqn.	OUTLET
37.50		39.00	24.61	**24.61**	Orifice Eqn.	OUTLET
37.75		39.80	24.92	**24.92**	Orifice Eqn.	OUTLET
38.00		40.50	25.31	**25.31**	Orifice Eqn.	OUTLET
38.25		41.20	25.62	**25.62**	Orifice Eqn.	OUTLET
38.50		41.90	26.01	**26.01**	Orifice Eqn.	OUTLET
38.75		42.50	26.32	**26.32**	Orifice Eqn.	OUTLET

Processing Time: 00.33 Seconds

Determination of Culvert Headwater and Outlet Protection

Project: DAVES EX
Basin ID: CULVERT #3



Soil Type: (Choose One)
- ○ Sandy
- ◉ Non-Sandy

Design Information (Input):

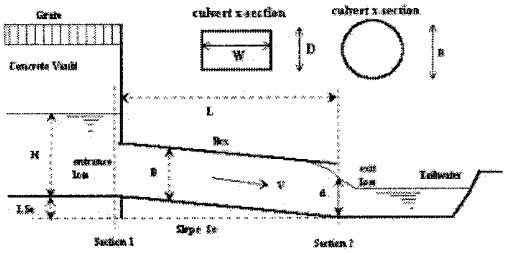
Design Discharge		Q = 11.84	cfs
Circular Culvert:			
Barrel Diameter in Inches		D = 24	inches
Inlet Edge Type (Choose from pull-down list)	Square End Projection		
Box Culvert:		**OR**	
Barrel Height (Rise) in Feet		Height (Rise) =	ft
Barrel Width (Span) in Feet		Width (Span) =	ft
Inlet Edge Type (Choose from pull-down list)			
Number of Barrels		No = 1	
Inlet Elevation		Elev IN = 29.85	ft
Outlet Elevation **OR** Slope		Elev OUT = 27	ft
Culvert Length		L = 710	ft
Manning's Roughness		n = 0.012	
Bend Loss Coefficient		k_b = 0	
Exit Loss Coefficient		k_x = 1	
Tailwater Surface Elevation		Elev Y_t =	ft
Max Allowable Channel Velocity		V = 7	ft/s

Required Protection (Output):

Tailwater Surface Height		Y_t = 0.80	ft
Flow Area at Max Channel Velocity		A_t = 1.69	ft^2
Culvert Cross Sectional Area Available		A = 3.14	ft^2
Entrance Loss Coefficient		k_e = 0.50	
Friction Loss Coefficient		k_f = 7.47	
Sum of All Losses Coefficients		k_s = 8.97	ft
Culvert Normal Depth		Y_n = 1.30	ft
Culvert Critical Depth		Y_c = 1.24	ft
Tailwater Depth for Design		d = 1.62	ft
Adjusted Diameter **OR** Adjusted Rise		D_a = -	ft
Expansion Factor	1/(2*tan(Θ)) =	5.64	
Flow/Diameter$^{2.5}$ **OR** Flow/(Span * Rise$^{1.5}$)	Q/D^2.5 =	2.09	$ft^{0.5}/s$
Froude Number	Fr =	0.90	
Tailwater/Adjusted Diameter **OR** Tailwater/Adjusted Rise	Yt/D =	0.40	
Inlet Control Headwater		HW_I = 1.91	ft
Outlet Control Headwater		HW_O = 0.75	
Design Headwater Elevation		**HW = 31.76**	ft
Headwater/Diameter OR Headwater/Rise Ratio		**HW/D = 0.95**	
Minimum Theoretical Riprap Size		d_{50} = 3	in
Nominal Riprap Size		d_{50} = 6	in
UDFCD Riprap Type		**Type = VL**	
Length of Protection		**L_p = 6**	ft
Width of Protection		**T = 4**	ft

CULVERT STAGE-DISCHARGE SIZING (INLET vs. OUTLET CONTROL WITH TAILWATER EFFECTS)

Project: **Daves Ex**
Basin ID: **West Culvert (#4)**
Status:



Design Information (Input):

Circular Culvert:	Barrel Diameter in Inches	D = 15	inches
	Inlet Edge Type (choose from pull-down list)	Square End Projection	
OR:			
Box Culvert:	Barrel Height (Rise) in Feet	Height (Rise) =	ft.
	Barrel Width (Span) in Feet	Width (Span) =	ft.
	Inlet Edge Type (choose from pull-down list)	Square Edge w/ 90-15 Deg. Headwall	
	Number of Barrels	No = 1	
	Inlet Elevation at Culvert Invert	Inlet Elev = 29	ft. elev.
	Outlet Elevation at Culvert Invert **OR** Slope of Culvert (ft v./ft h.)	Outlet Elev = 28.8	ft. elev.
	Culvert Length in Feet	L = 52	ft.
	Manning's Roughness	n = 0.012	
	Bend Loss Coefficient	K_b = 0	
	Exit Loss Coefficient	K_x = 1	

Design Information (calculated):

Entrance Loss Coefficient	K_e =	0.50
Friction Loss Coefficient	K_f =	1.02
Sum of All Loss Coefficients	K_s =	2.52
Orifice Inlet Condition Coefficient	C_d =	0.85
Minimum Energy Condition Coefficient	KE_{low} =	0.0560

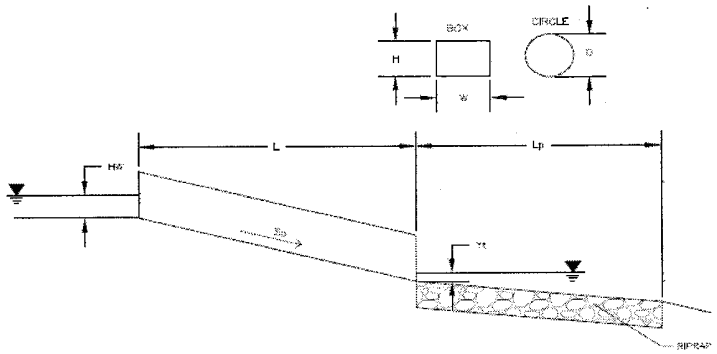
Calculations of Culvert Capacity (output):

Water Surface Elevation (ft., linked)	Tailwater Surface Elevation ft	Culvert Inlet-Control Flowrate cfs	Culvert Outlet-Control Flowrate cfs	Controlling Culvert Flowrate cfs (output)	Inlet Equation Used:	Flow Control Used
29.00	30.00	0.00	0.00	**0.00**	No Flow (WS < inlet)	N/A
29.25	30.00	0.30	0.00	**0.00**	Min. Energy. Eqn.	N/A
29.50	30.00	0.90	0.00	**0.00**	Min. Energy. Eqn.	N/A
29.75	30.00	1.80	0.00	**0.00**	Regression Eqn.	N/A
30.00	30.00	2.80	0.00	**0.00**	Regression Eqn.	N/A
30.25	30.00	4.00	3.10	**3.10**	Regression Eqn.	OUTLET
30.50	30.00	5.00	4.25	**4.25**	Regression Eqn.	OUTLET
30.75	30.00	5.90	5.23	**5.23**	Regression Eqn.	OUTLET
31.00	30.00	6.60	6.05	**6.05**	Regression Eqn.	OUTLET
31.25	30.00	7.30	6.79	**6.79**	Regression Eqn.	OUTLET
31.50	30.00	7.90	7.46	**7.46**	Regression Eqn.	OUTLET
31.75	30.00	8.50	8.09	**8.09**	Regression Eqn.	OUTLET
32.00	30.00	9.10	8.66	**8.66**	Regression Eqn.	OUTLET
32.25	30.00	9.60	9.20	**9.20**	Regression Eqn.	OUTLET
32.50	30.00	10.00	9.72	**9.72**	Regression Eqn.	OUTLET
32.75	30.00	10.50	10.20	**10.20**	Regression Eqn.	OUTLET
33.00	30.00	11.00	10.65	**10.65**	Orifice Eqn.	OUTLET
33.25	30.00	11.40	11.11	**11.11**	Orifice Eqn.	OUTLET
33.50	30.00	11.70	11.52	**11.52**	Orifice Eqn.	OUTLET
33.75	30.00	12.10	11.94	**11.94**	Orifice Eqn.	OUTLET
34.00	30.00	12.50	12.33	**12.33**	Orifice Eqn.	OUTLET
34.25		12.80	12.72	**12.72**	Orifice Eqn.	OUTLET
34.50		13.20	13.09	**13.09**	Orifice Eqn.	OUTLET
34.75		13.50	13.45	**13.45**	Orifice Eqn.	OUTLET
35.00		13.80	13.80	**13.80**	Orifice Eqn.	INLET
35.25		14.10	14.15	**14.10**	Orifice Eqn.	INLET
35.50		14.40	14.47	**14.40**	Orifice Eqn.	INLET
35.75		14.70	14.82	**14.70**	Orifice Eqn.	INLET
36.00		15.00	15.13	**15.00**	Orifice Eqn.	INLET
36.25		15.30	15.45	**15.30**	Orifice Eqn.	INLET

Processing Time: 00.45 Seconds

Determination of Culvert Headwater and Outlet Protection

Project: **DAVES EX**
Basin ID: **CULVERT #4**



Soil Type:
Choose One:
- ○ Sandy
- ◉ Non-Sandy

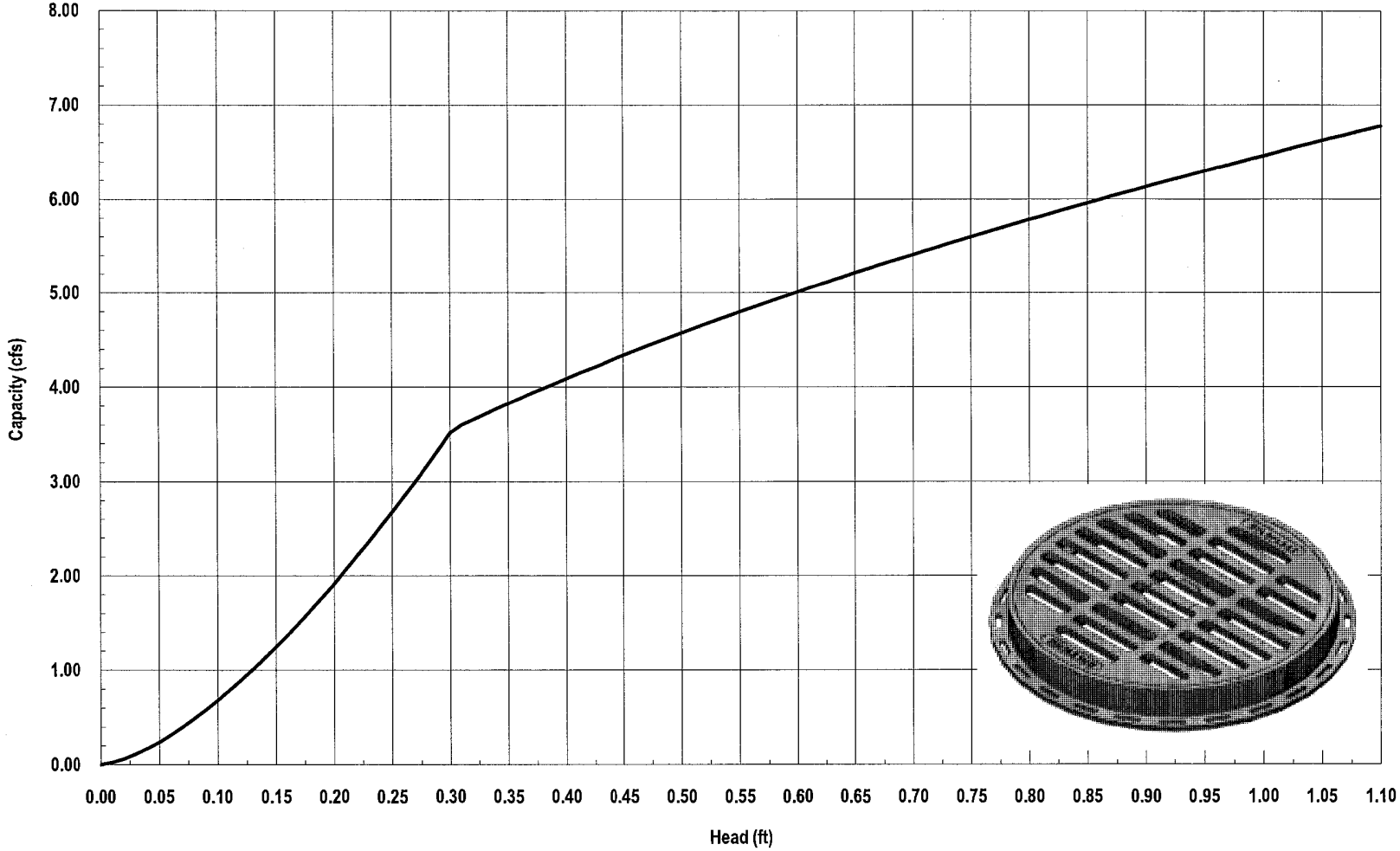
Design Information (Input):

Design Discharge	Q =	3.63	cfs
Circular Culvert:			
Barrel Diameter in Inches	D =	15	inches
Inlet Edge Type (Choose from pull-down list)		Square End Projection	
		OR	
Box Culvert:			
Barrel Height (Rise) in Feet	Height (Rise) =		ft
Barrel Width (Span) in Feet	Width (Span) =		ft
Inlet Edge Type (Choose from pull-down list)			
Number of Barrels	No =	1	
Inlet Elevation	Elev IN =	29	ft
Outlet Elevation **OR** Slope	Elev OUT =	28.8	ft
Culvert Length	L =	50	ft
Manning's Roughness	n =	0.012	
Bend Loss Coefficient	k_b =	0	
Exit Loss Coefficient	k_x =	1	
Tailwater Surface Elevation	Elev Y_t =		ft
Max Allowable Channel Velocity	V =	7	ft/s

Required Protection (Output):

Tailwater Surface Height	Y_t =	0.50	ft
Flow Area at Max Channel Velocity	A_t =	0.52	ft^2
Culvert Cross Sectional Area Available	A =	1.23	ft^2
Entrance Loss Coefficient	k_e =	0.50	
Friction Loss Coefficient	k_f =	0.98	
Sum of All Losses Coefficients	k_s =	2.48	ft
Culvert Normal Depth	Y_n =	0.86	ft
Culvert Critical Depth	Y_c =	0.77	ft
Tailwater Depth for Design	d =	1.01	ft
Adjusted Diameter **OR** Adjusted Rise	D_a =	-	ft
Expansion Factor	1/(2*tan(Θ)) =	5.66	
Flow/Diameter$^{2.5}$ **OR** Flow/(Span * Rise$^{1.5}$)	Q/D^2.5 =	2.08	$ft^{0.5}/s$
Froude Number	Fr =	0.81	
Tailwater/Adjusted Diameter **OR** Tailwater/Adjusted Rise	Yt/D =	0.40	
Inlet Control Headwater	HW_I =	1.19	ft
Outlet Control Headwater	HW_O =	1.15	
Design Headwater Elevation	**HW =**	**30.19**	**ft**
Headwater/Diameter OR Headwater/Rise Ratio	**HW/D =**	**0.95**	
Minimum Theoretical Riprap Size	d_{50} =	2	in
Nominal Riprap Size	d_{50} =	6	in
UDFCD Riprap Type	Type =	VL	
Length of Protection	L_p =	4	ft
Width of Protection	T =	2	ft

Nyloplast 24" Standard Grate Inlet Capacity Chart



Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490

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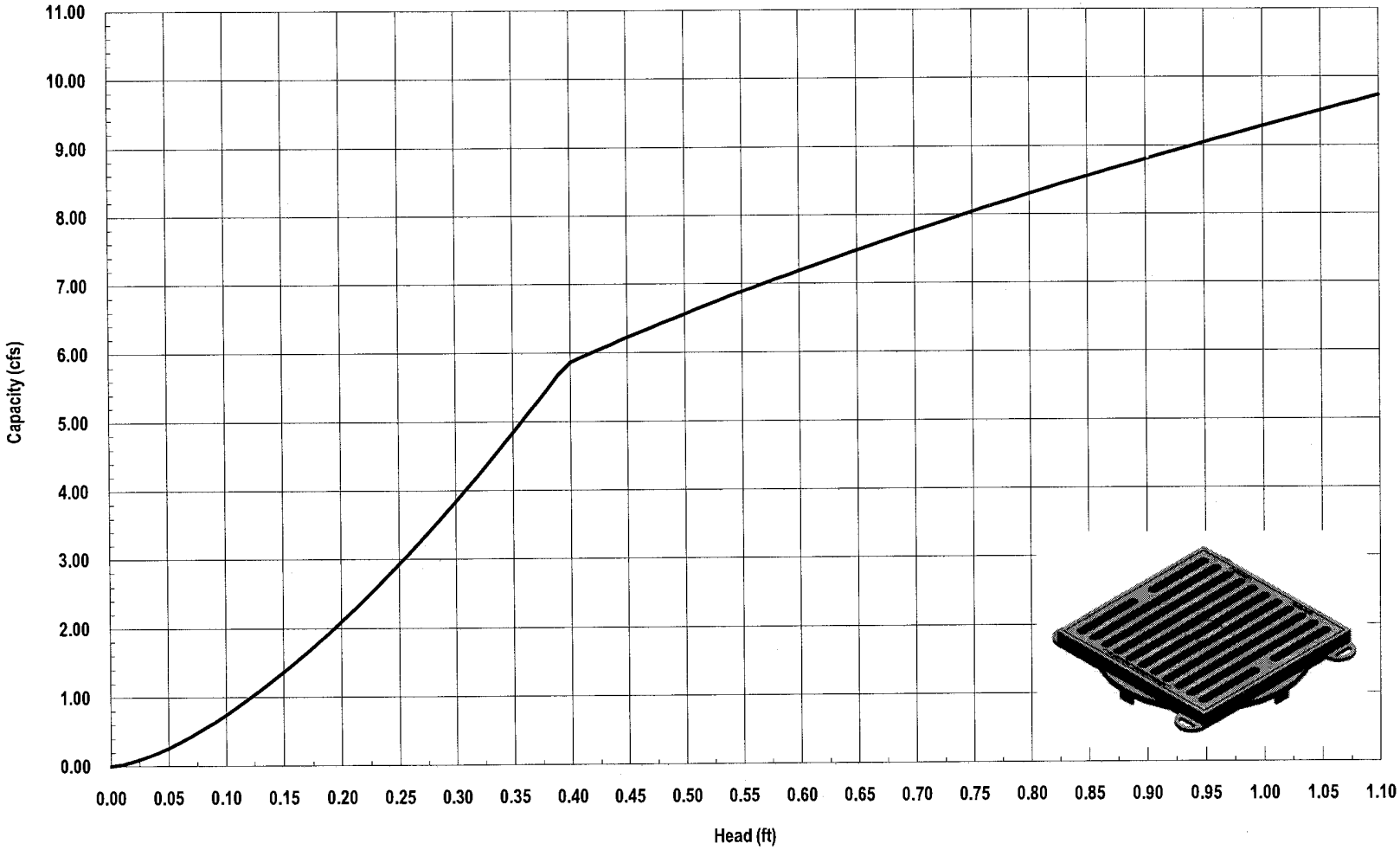
Nyloplast 2' x 2' Road & Highway Grate Inlet Capacity Chart



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Total Site and Sub-Basin Weighted Imperviousness Calculations

ENTIRE SITE

	AREAS	C VALUE	CXA	I VALUE	I X A
Proposed Building Area	12902	0.9	11611.8	90	1161180
CONCRETE/ASPHALT	29292	0.93	27241.56	100	2929200
GRAVEL	306668	0.65	199334.2	40	12266720
LANDSCAPE	87201	0.3	26160.3	2	174402
TOTAL	436063		264347.9		16531502
		COMP C =	**0.61**	I =	**37.91**
ACRES	10.01				

RETENTION VOLUME WORKSHEET

	TIME minutes	INT(100)	Q(CFS)	STORM VOL	RELEASE VOL	NET VOL.
USE	1440	0.26	1.58	136180.10	0.00	**136,180.10**

Urban Drainage Manual recommends Retention pond sizing for 1.5 times 100-yr 24 hr event

204,270.15 c.f. required

C(100)	0.61
ACRES	10.00
C*A	6.06

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hh

CONTOUR ELEVATIONS	AREA	DEPTH	AVG AREA	Volume Provided
25	21613			
		1	22914	22914
26	24215			
		1	25580.5	25580.5
27	26946			
		1	28374.5	28374.5
28	29803			
		1	31296.5	31296.5
29	32790			
		1	34592	34592
30	36394			
		1	41283.5	41283.5
31	46173			
		0.5	47444.5	23722.25
31.5	48716			

TOTAL OF **207763.25** C.F. PROVIDED

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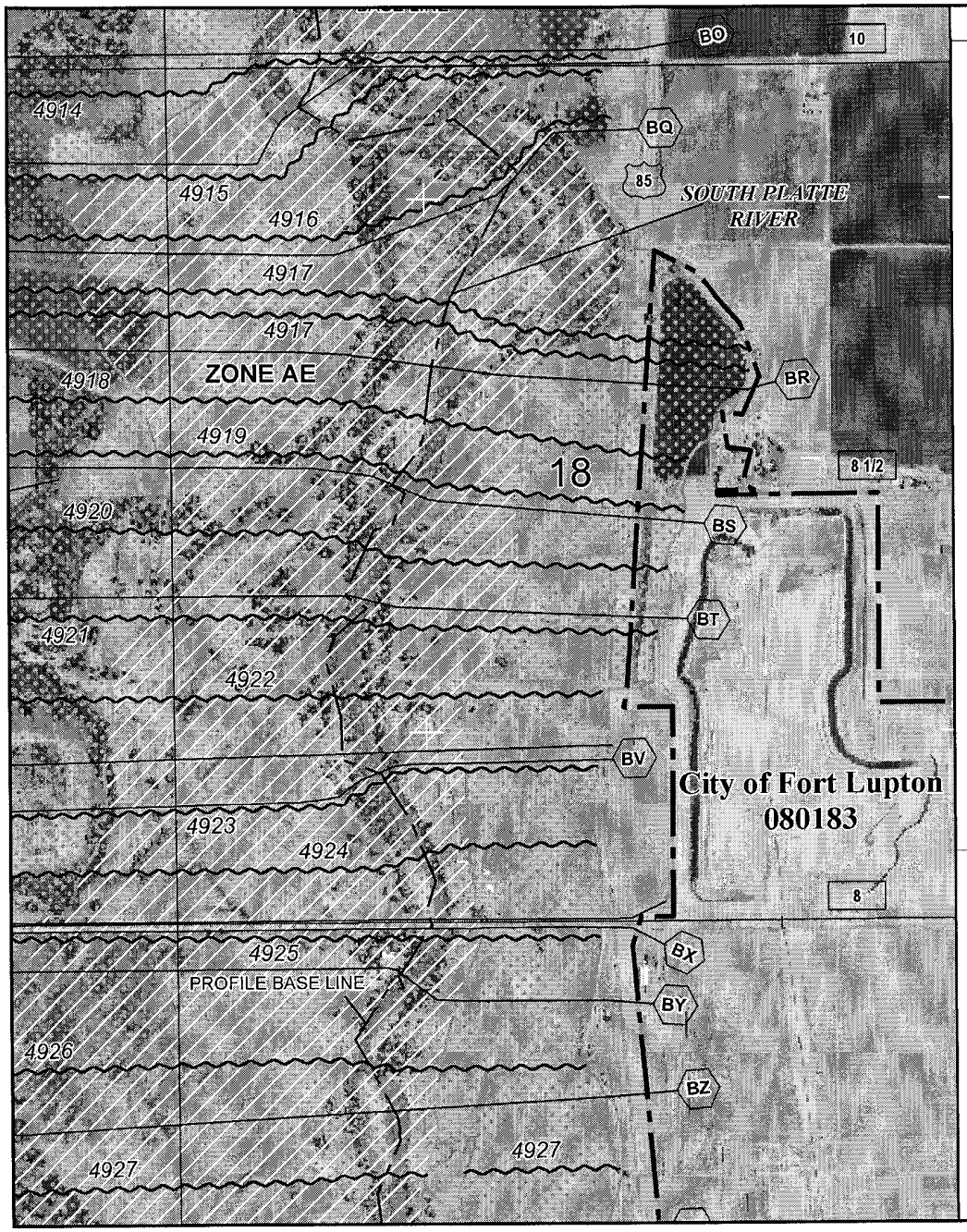

1265000 F

1260000 F

MAP SCALE 1" = 1000'

500 0 1000 2000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2115E

FIRM

FLOOD INSURANCE RATE MAP

WELD COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 2115 OF 2250

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FORT LUPTON, CITY OF	080183	2115	E
WELD COUNTY	080266	2115	E

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

MAP NUMBER
08123C2115E

EFFECTIVE DATE
JANUARY 20, 2016

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

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USDA **Natural Resources Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

57/123

LH

MAP LEGEND

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

Soils

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

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

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

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: Weld County, Colorado, Southern Part
Survey Area Data: Version 14, Sep 22, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 16, 2012—Apr 13, 2012

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

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Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Weld County, Colorado, Southern Part (CO618)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
1	Altvan loam, 0 to 1 percent slopes	B	1.5	12.5%
21	Dacono clay loam, 0 to 1 percent slopes	C	10.2	87.5%
Totals for Area of Interest			11.7	100.0%

Description

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

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

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

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

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

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

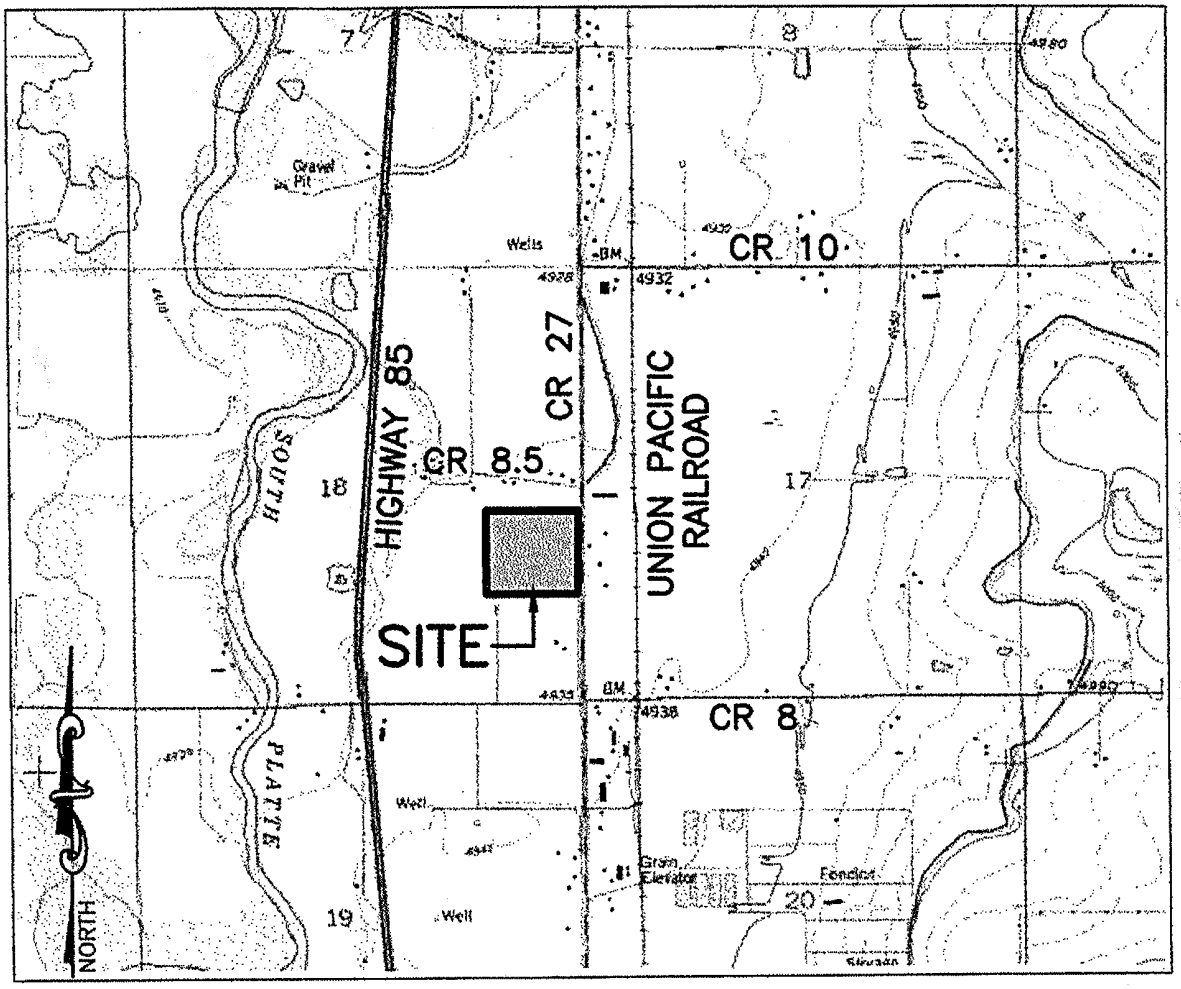
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher



VICINITY MAP

SCALE: 1" = 2000'

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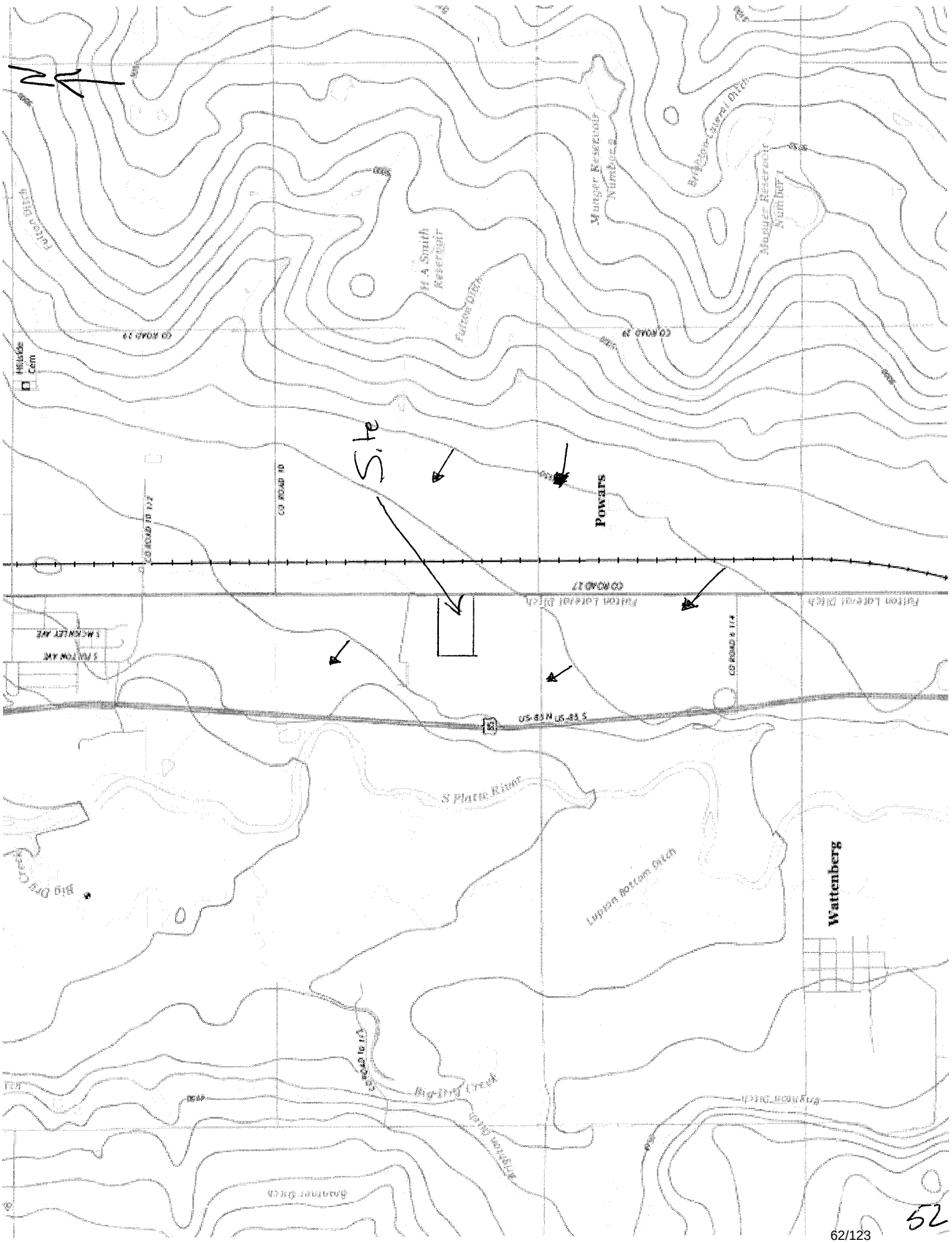
Site
Powars
Wattenberg
S Platte River
Big Dry Creek
Lupton Bottom Ditch
Fulton Lateral Ditch
Munger Reservoir
H.A. Smith Reservoir
Briggs-Lateral Ditch
CO ROAD 37
CO ROAD 10
CO ROAD 19
CO ROAD 29
US-85 N US-85 S
S FULTON AVE
S MCKINLEY AVE

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REFERENCES

Urban Storm Drainage Criteria Manual, Volumes 1, 2 and 3 (June 2001 and November 2010, Urban Drainage and Flood Control District, Denver, Colorado)

STANDARD FORM SF-1

CHECKLIST

Item	Description	Received or not applicable	To Be Submitted
1.	Typed, Bound Report		
2.	Professional Engineers Certificate		
	Standard Statement 1		
	Standard Statement 2		
	Standard Form 2		
	Standard Form 3		
3.	General Location and Description		
A.	Location Map		
B.	Existing Site Description		
C.	Description of Existing Drainage Patterns and Facilities		
4.	Drainage Basins and Sub-Basins		
A.	Major Basin Description		
B.	Sub-Basin Description		
5.	Design Criteria		
A.	Development Master Plan Discussion		
B.	Hydrologic Criteria Discussion		
C.	Hydraulic Criteria Discussion		
6.	Drainage Facility Design		
A.	Discussion of Proposed Facilities		
B.	Discussion of Drainage Patterns		
C.	Impact on Offsite Facilities		
D.	Impact on Master Plan		
7.	Drainage Plan		
A.	Topographic Contours		
B.	ROW and Easements		
C.	Delineation of Basin and Sub-Basins		
D.	Existing Drainage Patterns & Facilities		
E.	Proposed Drainage Patterns & Facilities		
F.	Proposed Outfall Points		
G.	Routing of Offsite Drainage		
H.	Routing from Site to Major Drainageway		
I.			
J.			
K.			

Standard Statement 1

"I hereby affirm that this report and plan for the Phase ___ drainage design of the development, Dave Hunts, New Facility, was prepared by me (or under my direct supervision) in accordance with the provisions of the City of Fort Lupton Storm Drainage Design and Technical Criteria for the owners thereof. I understand that the City of Fort Lupton does not and will not assume liability for drainage facilities designed by others. I am also aware of the provisions of the City CODE as it pertains to the City's review."

Registered Professional Engineer
State of Colorado No. 33371
(Affix Seal)

Standard Statement 2

_____ hereby affirms that the drainage facilities for the development, _____, shall be constructed according to the design presented in this report. I understand that the City of Fort Lupton does not and will not assume liability for drainage facilities designed and/or certified by my engineer. I understand that the City of Fort Lupton reviews drainage plans but cannot, on behalf of __(Name of Developer)__ and/or their successors and/or assigns assume future liability for improper design. I am also aware of the provisions of the City CODE as it pertains to the City's review."

_____
Name of Developer/Owner

_____
Authorized Signature/Title

STANDARD FORM SF-2

DRAINAGE AGREEMENT DOCUMENT

_____, the owner of the property commonly known as_____, and _____, the owner of property commonly known as _____, do hereby covenant and agree, on with the other that:

WHEREAS, the development known as _____ has developed land from its natural state which may cause alteration of that land's natural drainage; and

WHEREAS, _____has reviewed the Preliminary Drainage Study for _____ and concurs with the content, concept, and design details presented therein; and

WHEREAS, the drainage from _____ will flow onto the _____property in a manner and quantity probably different from natural drainage flow, and _____ is the owner of drainage facilities downstream from _____; and

WHEREAS, the City of Fort Lupton requires alternately detention and release of drainage at historical flows, or acceptance of drainage by the downstream property owner, and holding the City harmless from claims resulting from drainage.

NOW, THEREFORE, in consideration of the sum of Ten Dollars ($10.00), the mutual benefit of the parties, and other good and valuable consideration, the parties agree as follows:

1. That _____ does hereby accept and grant to _____, the right to release all drainage caused by said development, onto and across the property of _____, in accordance with the drainage study done by _____ and concurred in by _____.
2. _____ shall have the right to use the easement premises in any manner that will not prevent the exercise of the rights granted to , and _____ shall have the right to grant other non-exclusive easements over, along, or upon the easement premises, provided, however, that any such other easements shall be subject to the rights granted hereby;
3. That neither _____ nor _____ shall have any right or recourse against the City of Fort Lupton on account of any matter arising out of the subject drainage or the rights granted hereunder.
4. Grantor _____ hereby reserves the right to modify and change the location of the drainage easement premises providing that such relocated

easement shall be of appropriate character and subject to the same uses herein established and equally suitable for the drainage purposes created herein.

5. All rights, title, and privilege herein granted, including all benefits and burdens, shall run with the land and inure to the benefit of the parties and beneficiaries hereto, including the City of Fort Lupton, their respective heirs, executors, administrators, successors, assigns, and legal representatives.

IN WITNESS WHEREOF, the parties hereto have executed or have caused this instrument to be executed by their proper officers duly authorized to create the same.

_____ _____

By: _____ By: _____

ATTEST:

_____

STANDARD FORM SF-3

INDEMNIFICATION STATEMENT

I am the Owner of _____, and as such am preparing to begin construction _____.

I hereby promise to indemnify and hold harmless the City of Fort Lupton for any liability the City may have on account of any change in the nature, direction, quantity, or quality of historical drainage flow resulting from the development of my property or from the construction of streets or storm sewers therein. In addition, I promise to reimburse the City for any and all costs including, but not limited to, attorney's fees, which the City incurs in acquiring or condemning any rights-of-way or easements which the City is required to acquire or condemn or which the City is held to have acquired or condemned, for drainage as a result of the development of my property.

I understand that I will be afforded a full opportunity to participate in the settlement and defense of any claims for which indemnity may be required under this paragraph.

_____

By: _____

ATTEST:

_____

Index

INTRODUCTION

Property Location and Description:

The site is located Lots 2 and 3 Yarbrough Acres Minor Subdivision, City of Fort Lupton which is part of the Northeast quarter of the Southeast quarter of Section 18, Township 1 North, Range 66 West of the 6th Principal Meridian, Fort Lupton, Weld County Colorado. The address for the site is 3355 CR 27, Fort Lupton CO. The site is bordered on the east by Weld County Road 27 which is also known as Denver Ave further north. There is an existing irrigation ditch along the west side of CR 27 (Fulton Lateral Ditch) which will have to be crossed with the access point to the property. The south border is Lot 1 of the same subdivision and it is currently a commercial facility that is mostly developed. The site has an existing retention pond towards the west end of the property. The west side of the lot is bordered by a gravel pit that is owned by the City and County of Denver. The north boundary is a residence that is mainly undeveloped. The project site has an existing barn that will be removed in the future.

The existing vegetation on the site consists of fairly dense weeds and grasses. The exiting soils on the site are classified as Altvan Loam and Dacono Clay Loam. The majority of the soils on the site are Hydrologic group "C". There are no wetlands on the property at this time. This report and design considers on and off-site storm water that is generated by the new construction surfaces. (See Grading and Drainage Plan for location)

The proposed commercial improvements to this project site include 12,800 square foot of metal buildings, concrete and asphalt paving, and gravel driveways. One retention pond will serve the retention requirements for both lots. The 2 lots combined contain 10 acres.

DRAINAGE BASINS AND SUB-BASINS

Major Basin Description

No major drainage ways exist on this property. There is an existing irrigation ditch east of the property (Fulton Lateral Ditch). The site lies within the South Platte River Basin, but does not appear to lie within the floodplain. The FEMA FIRM panel for the property is 08123C2155E . The panel became effective Jan 20, 2016

Existing Drainage Basin Conditions

The existing 10-acre site historically slopes to the northwest at 0.3% slope. Presently the site to the south of the site has a retention facility. The property along the north boundary appears to drain to the west and north west away from the site. The property along the west side of the project drains west towards the South Platte River. The property to the east mainly drains to the west but the combination of CR 27 being slightly elevated and the Fulton Lateral Ditch create a barrier that will in effect prevent offsite flows from entering the site. Therefore the basin considered for this design will consist of the site itself.

Proposed Drainage Basin Conditions

The site flows were calculated using thirteen on-site basins to determine the various requirements of the onsite swales, culverts and inlets.

Sub-Basin S1 which is in the north-east corner of the lot was used to determine the swale capacity along the north side of the property and the requirements of culvert #1 and the inlets. S1 has building, pavement, gravel and landscape surfaces within its boundaries. S1 contains 0.6 acres, has a developed imperviousness of 40% and produces 2.75 cfs in the 100-yr event.

Sub-Basin S2 is directly west of S1 along the north property boundary and was used to determine the swale capacity along the north side of the property and the requirements of culvert #1 and the inlets. S2 has gravel and landscape surfaces within its boundaries. S2 contains 0.79 acres, has a developed imperviousness of 38% and produces 2.55 cfs in the 100-yr event.

Sub-Basin S3 is directly west of S2 along the north property boundary and was used to determine the swale capacity along the north side of the property and the requirements of culvert #1 and the inlets. S3 has gravel and landscape surfaces within its boundaries. S3 contains 0.70 acres, has a developed imperviousness of 38% and produces 2.97 cfs in the 100-yr event.

Sub-Basin S4 is directly west of S3 along the north property boundary and was used to determine the swale capacity along the north side of the property and the requirements of culvert #1 and the inlets. S4 has gravel and landscape surfaces within its boundaries. S4 contains 0.79 acres, has a developed imperviousness of 38% and produces 3.34 cfs in the 100-yr event.

Sub-Basin S5 is directly west of S4 in the north-west corner of the site and was used to determine the swale capacity along the north side of the property and the requirements of the culvert #4 that drains the swale. S5 has gravel and landscape surfaces within its boundaries. S5 contains 0.91 acres, has a developed imperviousness of 32% and produces 3.63 cfs in the 100-yr event.

Sub-Basin S6 which is south of basins S1, S2 and S3 was used to determine the central swale capacity and the requirements of culvert #2 and inlets. S6 has building, pavement, gravel and landscape surfaces within its boundaries. S6 contains 1.57 acres, has a developed imperviousness of 56% and produces 6.92 cfs in the 100-yr event.

Sub-Basin S7 which is south of basins S3, S4 and S5 was used to determine the central swale capacity and the requirements of culvert #2 and inlets. S7 has pavement, gravel and landscape surfaces within its boundaries. S7 contains 0.98 acres, has a developed imperviousness of 41% and produces 4.02 cfs in the 100-yr event.

Sub-Basin S8 which is in the southeast corner of the property was used to determine the central swale capacity and the requirements of culvert #3 and inlets. S has building, pavement, gravel and landscape surfaces within its boundaries. S8 contains 0.7 acres, has a developed imperviousness of 55% and produces 3.09 cfs in the 100-yr event.

Sub-Basin S9 which is west of S8 along the south side of the property was used to determine the southern swale capacity and the requirements of culvert #3 and inlets. S9 has

building, gravel and landscape surfaces within its boundaries. S9 contains 0.49 acres, has a developed imperviousness of 55% and produces 2.05 cfs in the 100-yr event.

Sub-Basin S10 which is west of S9 along the south side of the property was used to determine the southern swale capacity and the requirements of culvert #3 and inlets. S10 has building, gravel and landscape surfaces within its boundaries. S10 contains 0.78 acres, has a developed imperviousness of 38% and produces 3.28 cfs in the 100-yr event.

Sub-Basin S11 which is west of S10 along the south side of the property was used to determine the southern swale capacity and the requirements of culvert #3 and inlets. S11 has gravel and landscape surfaces within its boundaries. S11 contains 0.45 acres, has a developed imperviousness of 37% and produces 1.91 cfs in the 100-yr event.

Sub-Basin S12 which is west of S11 along the south side of the property was used to determine the southern swale capacity and the requirements of culvert #3 and inlets. S12 has gravel and landscape surfaces within its boundaries. S12 contains 0.36 acres, has a developed imperviousness of 37% and produces 1.51 cfs in the 100-yr event.

Sub-Basin S13 which is in the south west corner of the property and west of S12 along the south side of the property. S13 has gravel and landscape surfaces within its boundaries. S13 contains 1.01 acres, has a developed imperviousness of 3% and produces 5.36 cfs in the 100-yr event.

The entire developed site contains 10.01 acres and has an imperviousness of 38%. The 100-yr developed runoff rate is 37.65 cfs.

DRAINAGE DESIGN CRITERIA

Development Criteria Reference and Constraints

The 100-year design rainfalls are used to analyze runoff rates and retention parameters, in accordance with the commercial requirements set forth in the Urban Drainage Manual. Due to the small basin size the Rational Method has been utilized to determine peak runoff rates and required detention pond volumes. The retention pond was designed volume with 150% of the 100-year 24 hour developed storm. The runoff coefficients used in the design are as follows.

SITE IMPERVIOUSNESS / RUNOFF VALUES

	Imperviousness	100 –yr Runoff Coefficient
Landscaping/ Existing	2%	0.3
Building Roofs	90%	0.9
Asphalt and Concrete	100%	0.93
Gravel	40%	0.65

Using the NOAA Atlas 14 Volume 8 Version 2 maps an IDF table was generated. A one hour rainfall depth of 1.31 inches and 2.81 inches was determined for a five-year and 100-year event. The rational method was used to calculate runoff and release rates. The retention pond was sized using the 100-yr 24 hour developed storm. The retention pond volume is required to have the capacity to hold 150% of the 100-yr 24 hour storm. The on site features (swales, culverts etc.) were sized to pass the 100-year events. The runoff for specific design points was calculated by inputting the area, imperviousness, soil type, one hour precipitation values, slope, length of travel and conveyance into the peak runoff spreadsheet. Please see the corresponding peak runoff and feature design for each point. The release rate and developed runoff amounts were calculated using the rational method.

Storm Water Quality Considerations

Storm water quality will be controlled with the installation of the retention pond. Sedimentation from the site to the retention pond is reduced by surfaces of gravel, concrete and asphalt surfaces. These surfaces will mitigate erosion by protecting the soils underneath. The remainder of the site is protected by vegetation, which mitigate erosion and reduce sedimentation.

During construction, erosion control features will be utilized and remain onsite until all surfaces are constructed and vegetation has been established. Structural features include the retention pond, a concrete washout area, a vehicle tracking control pad and silt fence. A concrete washout area will aid in maintaining water quality on-site by containing concrete material. A vehicle tracking control pad is located at the construction entrance to reduce sedimentation into the public right-of-way. Silt Fence is placed at all locations where on-site flows will sheet flow off of the property. Non-structural features, including roughening of soil stockpiles and re-vegetation of disturbed areas will also be included in the construction phase of this project. All stockpiles shall be roughened to reduce erosion and all areas that have been disturbed and aren't protected by solid surfaces shall be seeded and mulched.

DRAINAGE FACILITY DESIGN

The storm water retention is provided in the landscaped area in the south west corner of the property. The required volume was determined by multiplying the volume from the 24 HR 100-yr event by 150%. The retention volume required is 204,270 cubic feet. The retention volume provided will be approximately 207,763 cubic feet. Sheet flow, concrete pans and storm pipe will carry storm water to the retention pond. The elevation around the top of the retention pond shall have a minimum elevation of 4932.5. Once the water reaches an elevation that is higher than the existing ground the storm water will travel along the historical path to the north.

Swale Sec A-A is a typical section that collects flow from basins S1, S2, S3, S4, S5, S9, S10, S11 and S12 and conveys it to inlets and/ or other swale sections . At a minimum slope of

0.8% Sec A-A has the ability to pass 5.11 cfs when the flow depth is 0.5'. The velocity is 1.32 fps, and the Froude number is 0.46 with an "n" value of 0.04. The maximum runoff entering the swale is 3.34 cfs

Swale Sec B-B collects flow from S5 (3.63 cfs) Sec B-B has the ability to pass 3.94 cfs when the flow depth is 0.75'. The velocity is 1.75 fps, and the Froude number is 0.5 with an "n" value of 0.04.

Swale Sec C-C collects flow from S6 and S7 (6.92 cfs max) and empties into storm inlets. Sec C-C has the ability to pass 7.02 cfs when the flow depth is 0.37'. The velocity is 0.55 fps, and the Froude number is 0.56 with an "n" value of 0.025.

Swale Sec D-D collects flow from S8 (3.09 cfs) and empties into a storm inlet on culvert #3. Sec D-D has the ability to pass 3.26 cfs when the flow depth is 0.45'. The velocity is 0.87 fps, and the Froude number is 0.32 with an "n" value of 0.004.

Swale Sec E-E also collects flow from S8 (3.09 cfs) and empties into a storm inlet on culvert #3. Sec E-E has the ability to pass 3.12 cfs when the flow depth is 0.67'. The velocity is 1.76 fps, and the Froude number is 0.54 with an "n" value of 0.004.

Culvert #1 is a 24" ADS pipe that will collect flows from S1, S2, S3 and S4. The total combined flow from these basins is 11.61 cfs. Culvert #1 has the ability to pass this flow when the water elevation reaches 4931.25. This will induce approx. 6.5" of water above the farthest west inlet elevation. The outlet of the pipe is set 2' above the bottom of the retention pond so that in minor events the pipe is cleaned. At the discharge point of the culvert a 22' x 4' x 18" Type "L" rip rap pad is placed to prevent erosion. A single inlet will drain each basin. A 24" Nyoplast inlet Grate has the capacity to accept approximately 4.5 cfs when the sump condition reaches 6".

Culvert #2 is a 18" and a 24" ADS pipe that will collect flows from S6 and S7. The total combined flow from these basins is 10.94 cfs. Culvert #2 is an 18" diameter in between the inlets. The 18" section has the ability to pass this flow from S6 (6.92 cfs) when the water elevation reaches 4934, which is the rim elevation of the inlet. The western section of the pipe has the capacity to pass the combined flows when the elevation reaches 4933.25, which is the rim elevation of the inlet. The outlet of the pipe is set 2' above the bottom of the retention pond so that in minor events the pipe is cleaned. At the discharge point of the culvert a 16' x 4' x 18" Type "L" rip rap pad is placed to prevent erosion. A single inlet will drain each basin. A 2' square Nyoplast Roadway inlet Grate has the capacity to accept approximately 6.9 cfs when the sump condition reaches 6.5".

Culvert #3 is a 24" ADS pipe that will collect flows from S8, S9, S10, S11 and S12. The total combined flow from these basins is 11.84 cfs. Culvert #3 has the ability to pass this flow when the water elevation reaches 4931.75. This will induce approx. 4" of water above the farthest west inlet elevation. The outlet of the pipe is set 2' above the bottom of the retention pond so that in minor events the pipe is cleaned. At the discharge point of the culvert a 18' x 4' x 18" Type "L" rip rap pad is placed to prevent erosion. A single inlet will drain each basin. A

24" Nyoplast inlet Grate has the capacity to accept approximately 4.5 cfs when the sump condition reaches 6".

Culvert #4 is a 15" ADS pipe that will collect flows from S5. The flow from this basin is 3.63 cfs. Culvert #4 has the ability to pass this flow when the water elevation reaches 4930.75. The outlet of the pipe is set 3.8' above the bottom of the retention pond so that in minor events the pipe is cleaned. At the discharge point of the culvert a 17' x 3' x 18" Type "L" rip rap pad is placed to prevent erosion.

CONCLUSION

The attached calculations show that the developed condition imperviousness for the proposed development for a 100-yr storm is 38%. The corresponding runoff coefficient is 0.61. Based on an area of 10.01 Acres, 150% of the 24- hour 100-yr event a storm-volume of 204,270 cubic feet is required. A volume of 204,270 cubic feet is provided.

The project design for Dave Hunt's new facility is completed in compliance with the Urban Storm Drainage Criteria Manual and the City of Fort Lupton.

SITE MAINTENANCE

Drainage/ Site Maintenance Plan for Dave's Excavation

1. At all times any erosion that may occur shall be corrected as soon as possible to mitigate the chance of erosion leaving the site.
2. All culverts shall be inspected regularly and cleaned if necessary.
3. Any seeded areas that are not covered with vegetation shall be re-seeded and irrigated as necessary to establish permanent vegetation.
4. Snow should not be piled in swales or near detention pond outlet.

NOAA Atlas 14, Volume 8, Version 2
Location name: Fort Lupton, Colorado, US*
Latitude: 40.0491°, Longitude: -104.8120°
Elevation: 4936 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.230 (0.177-0.299)	0.281 (0.216-0.365)	0.377 (0.289-0.492)	0.470 (0.358-0.615)	0.617 (0.464-0.859)	0.745 (0.544-1.04)	0.887 (0.627-1.27)	1.04 (0.709-1.53)	1.27 (0.832-1.91)	1.46 (0.925-2.20)
10-min	0.337 (0.259-0.438)	0.411 (0.316-0.535)	0.552 (0.423-0.720)	0.688 (0.524-0.901)	0.903 (0.679-1.26)	1.09 (0.797-1.53)	1.30 (0.918-1.86)	1.53 (1.04-2.24)	1.86 (1.22-2.80)	2.14 (1.35-3.22)
15-min	0.411 (0.316-0.534)	0.501 (0.385-0.652)	0.673 (0.515-0.878)	0.839 (0.639-1.10)	1.10 (0.829-1.53)	1.33 (0.972-1.86)	1.58 (1.12-2.27)	1.86 (1.27-2.73)	2.27 (1.49-3.41)	2.61 (1.65-3.92)
30-min	0.561 (0.432-0.730)	0.680 (0.523-0.885)	0.909 (0.696-1.19)	1.13 (0.862-1.48)	1.48 (1.12-2.07)	1.79 (1.31-2.52)	2.14 (1.51-3.06)	2.52 (1.71-3.69)	3.08 (2.01-4.62)	3.54 (2.24-5.32)
60-min	0.685 (0.527-0.891)	0.829 (0.637-1.08)	1.11 (0.849-1.45)	1.38 (1.05-1.81)	1.82 (1.37-2.54)	2.20 (1.61-3.08)	2.63 (1.86-3.76)	3.10 (2.11-4.55)	3.79 (2.48-5.70)	4.37 (2.77-6.57)
2-hr	0.809 (0.629-1.04)	0.978 (0.759-1.26)	1.31 (1.01-1.69)	1.63 (1.25-2.11)	2.15 (1.64-2.96)	2.60 (1.93-3.61)	3.11 (2.23-4.41)	3.68 (2.53-5.33)	4.51 (2.98-6.68)	5.20 (3.33-7.71)
3-hr	0.875 (0.684-1.12)	1.05 (0.824-1.35)	1.41 (1.09-1.80)	1.75 (1.36-2.25)	2.30 (1.77-3.16)	2.79 (2.08-3.85)	3.34 (2.40-4.69)	3.95 (2.73-5.67)	4.84 (3.22-7.11)	5.58 (3.59-8.20)
6-hr	1.04 (0.819-1.31)	1.23 (0.972-1.56)	1.61 (1.27-2.04)	1.99 (1.55-2.53)	2.59 (2.00-3.50)	3.12 (2.34-4.23)	3.71 (2.69-5.14)	4.37 (3.05-6.19)	5.33 (3.59-7.73)	6.13 (3.99-8.89)
12-hr	1.27 (1.02-1.59)	1.49 (1.19-1.86)	1.90 (1.51-2.38)	2.30 (1.82-2.89)	2.93 (2.29-3.90)	3.49 (2.65-4.66)	4.10 (3.01-5.59)	4.78 (3.38-6.67)	5.77 (3.92-8.24)	6.59 (4.34-9.42)
24-hr	1.52 (1.23-1.88)	1.79 (1.45-2.22)	2.29 (1.84-2.83)	2.74 (2.19-3.40)	3.42 (2.68-4.45)	4.00 (3.05-5.24)	4.62 (3.41-6.17)	5.29 (3.76-7.24)	6.24 (4.28-8.74)	7.01 (4.67-9.88)
2-day	1.73 (1.41-2.10)	2.10 (1.71-2.56)	2.72 (2.21-3.32)	3.25 (2.63-3.99)	4.00 (3.14-5.08)	4.61 (3.54-5.90)	5.22 (3.88-6.84)	5.86 (4.20-7.86)	6.74 (4.65-9.25)	7.42 (5.00-10.3)
3-day	1.88 (1.55-2.28)	2.26 (1.86-2.74)	2.90 (2.37-3.52)	3.44 (2.80-4.19)	4.20 (3.32-5.29)	4.81 (3.72-6.12)	5.43 (4.07-7.06)	6.08 (4.38-8.09)	6.97 (4.84-9.48)	7.65 (5.19-10.5)
4-day	2.01 (1.66-2.42)	2.39 (1.97-2.88)	3.01 (2.48-3.64)	3.55 (2.90-4.31)	4.32 (3.43-5.41)	4.93 (3.83-6.25)	5.57 (4.19-7.19)	6.23 (4.51-8.23)	7.13 (4.98-9.64)	7.83 (5.33-10.7)
7-day	2.31 (1.92-2.75)	2.69 (2.24-3.21)	3.34 (2.77-3.99)	3.89 (3.21-4.67)	4.68 (3.75-5.79)	5.31 (4.16-6.64)	5.95 (4.52-7.60)	6.62 (4.84-8.64)	7.53 (5.31-10.1)	8.24 (5.67-11.1)
10-day	2.56 (2.14-3.03)	2.96 (2.48-3.51)	3.64 (3.03-4.32)	4.21 (3.49-5.02)	5.02 (4.04-6.16)	5.66 (4.46-7.02)	6.31 (4.82-7.99)	6.99 (5.13-9.05)	7.90 (5.60-10.5)	8.61 (5.95-11.5)
20-day	3.27 (2.77-3.83)	3.73 (3.16-4.37)	4.50 (3.79-5.28)	5.13 (4.31-6.05)	6.02 (4.89-7.26)	6.70 (5.34-8.18)	7.39 (5.70-9.21)	8.09 (6.01-10.3)	9.03 (6.47-11.8)	9.74 (6.82-12.9)
30-day	3.83 (3.27-4.46)	4.36 (3.72-5.08)	5.23 (4.44-6.09)	5.94 (5.02-6.95)	6.91 (5.65-8.26)	7.65 (6.13-9.26)	8.39 (6.52-10.4)	9.14 (6.83-11.5)	10.1 (7.29-13.0)	10.8 (7.64-14.2)
45-day	4.51 (3.87-5.20)	5.15 (4.42-5.94)	6.17 (5.28-7.14)	7.00 (5.96-8.13)	8.12 (6.68-9.62)	8.96 (7.22-10.7)	9.79 (7.64-12.0)	10.6 (7.97-13.2)	11.7 (8.46-14.9)	12.4 (8.82-16.1)
60-day	5.06 (4.37-5.81)	5.80 (5.00-6.67)	6.99 (6.00-8.04)	7.94 (6.79-9.17)	9.21 (7.60-10.8)	10.2 (8.21-12.1)	11.1 (8.68-13.4)	12.0 (9.03-14.8)	13.1 (9.53-16.6)	13.9 (9.92-17.9)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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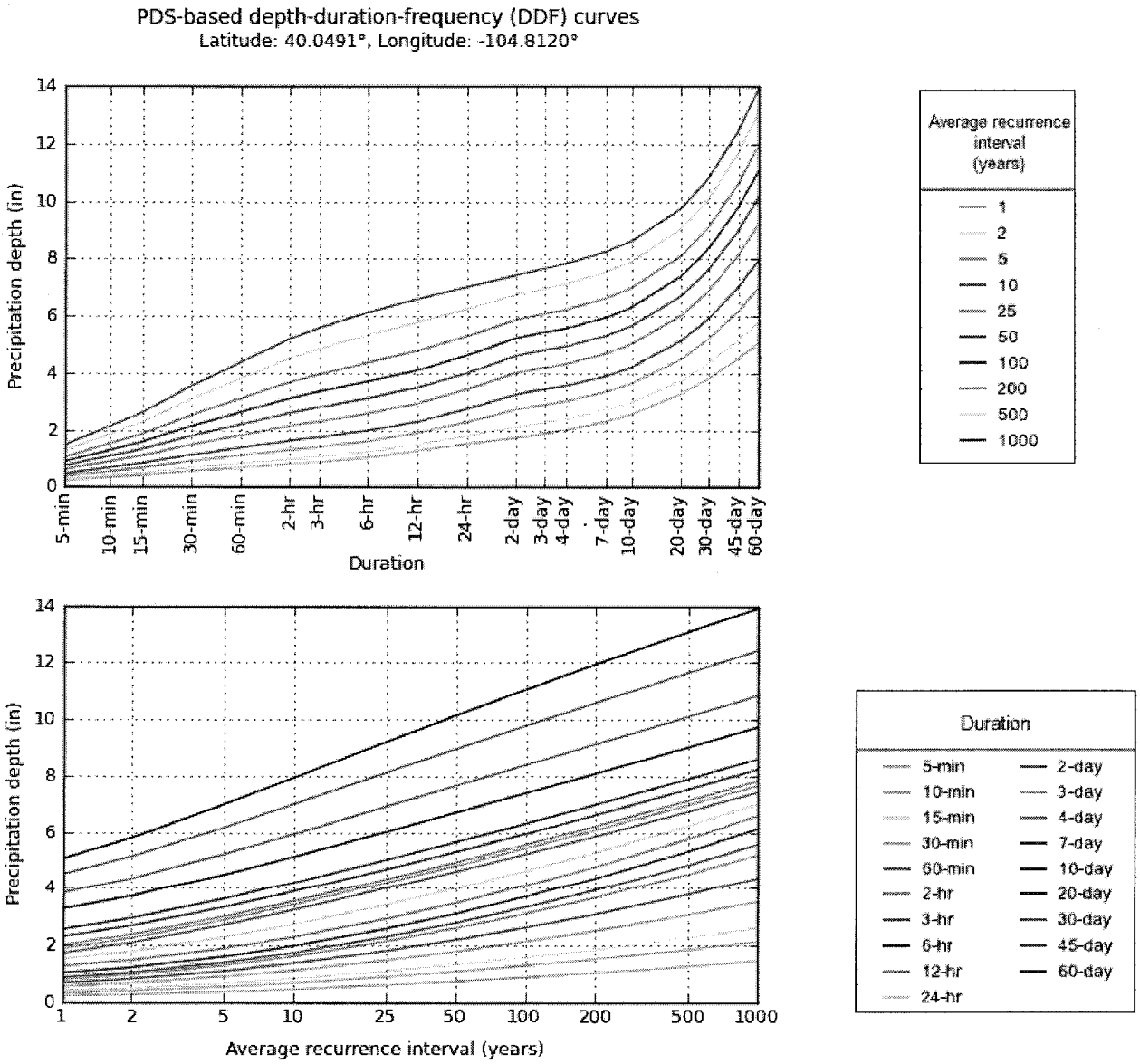
PF graphical



NOAA Atlas 14, Volume 8, Version 2

Created (GMT): Mon Jun 27 20:15:12 2016

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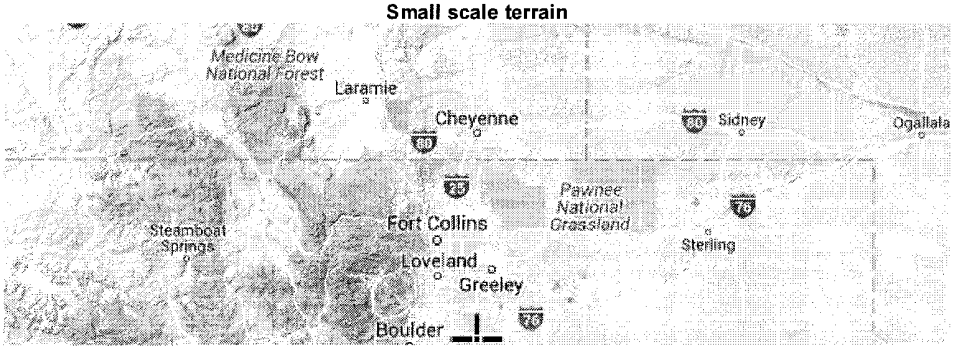
Maps & aerials

Small scale terrain



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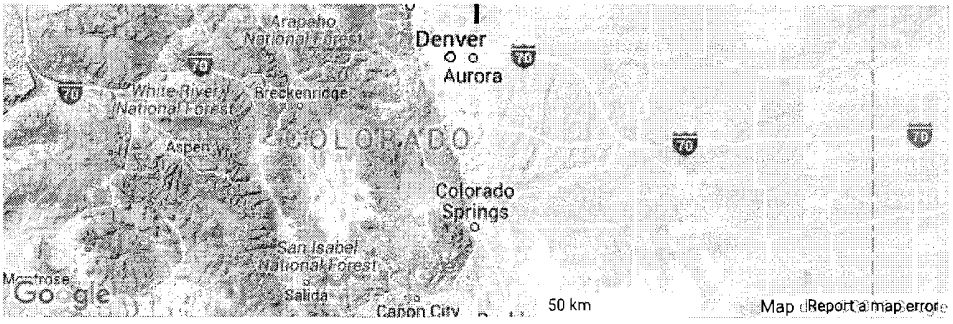
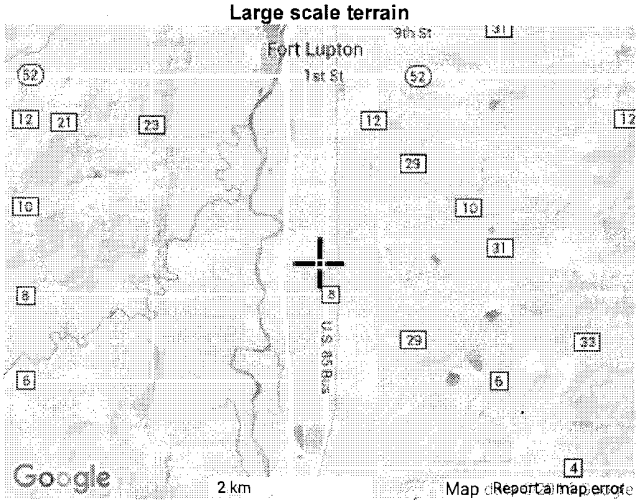
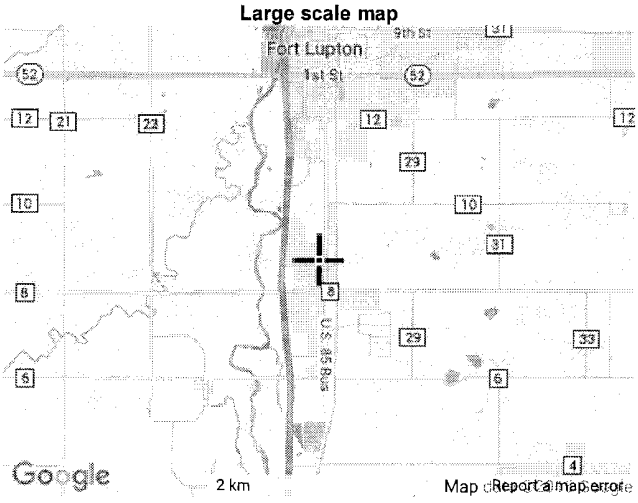


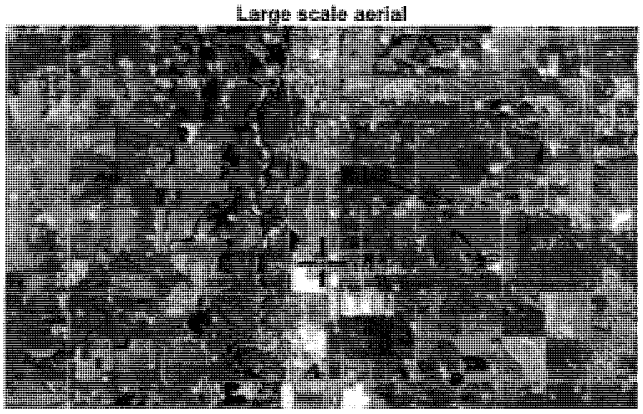
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

Depth-Duration-Frequency and Intensity-Duration-Frequency Tables for Colorado Hydrologic Zones 1 through 4

Blue cells are inputs.

Project: Daves

Where is the Watershed Located?

○ Located within UDFCD Boundary

◉ Located outside of UDFCD Boundary

Hydrologic Zone (1, 2, 3, or 4) =	1	(see map)
Elevation at Center of Watershed =	4,936	ft
Watershed Area (Optional) =	N/A	sq. mi.

(Optional) Select a location within the UDFCD boundary:

1. Rainfall Depth-Duration-Frequency Table

If within the UDFCD Boundary, Enter the 1-hour and 6-hour rainfall depths from the USDCM Volume 1.
Otherwise, Enter the 6-hour and 24-hour rainfall depths from the NOAA Atlas 2 Volume III.

Return Period	Rainfall Depth in Inches at Time Duration								
	5-min	*10-min*	*15-min*	*30-min*	*1-hr*	*2-hr*	*3-hr*	*6-hr*	*24-hr*
2-yr	0.23	0.37	0.46	0.54	0.82	0.96	1.06	1.23	1.79
5-yr	0.37	0.59	0.75	0.86	1.31	1.42	1.49	1.61	2.29
10-yr	0.46	0.74	0.93	1.08	1.64	1.76	1.85	1.99	2.74
25-yr	0.58	0.93	1.17	1.35	2.06	2.24	2.37	2.59	3.42
50-yr	0.69	1.10	1.39	1.60	2.44	2.68	2.85	3.12	4.00
100-yr	0.79	1.27	1.59	1.84	2.81	3.12	3.35	3.71	4.62
500-yr	1.02	1.62	2.04	2.36	3.60	3.94	4.20	4.60	5.68

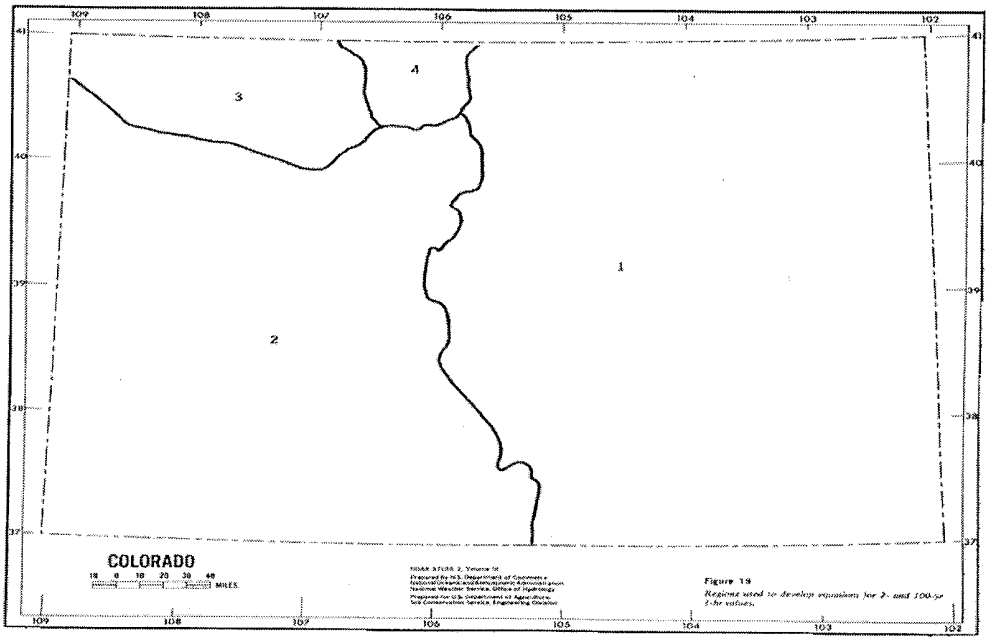
Note: Refer to Figures 4-1 through 4-12 of USDCM Volume 1 for 1-hr and 6-hr rainfall depths.
Refer to NOAA Atlas 2 Volume III isopluvial maps for 6-hr and 24-hr rainfall depths.
Rainfall depths for durations less than 1-hr are calculated using Equation 4-4 in USDCM Volume 1.

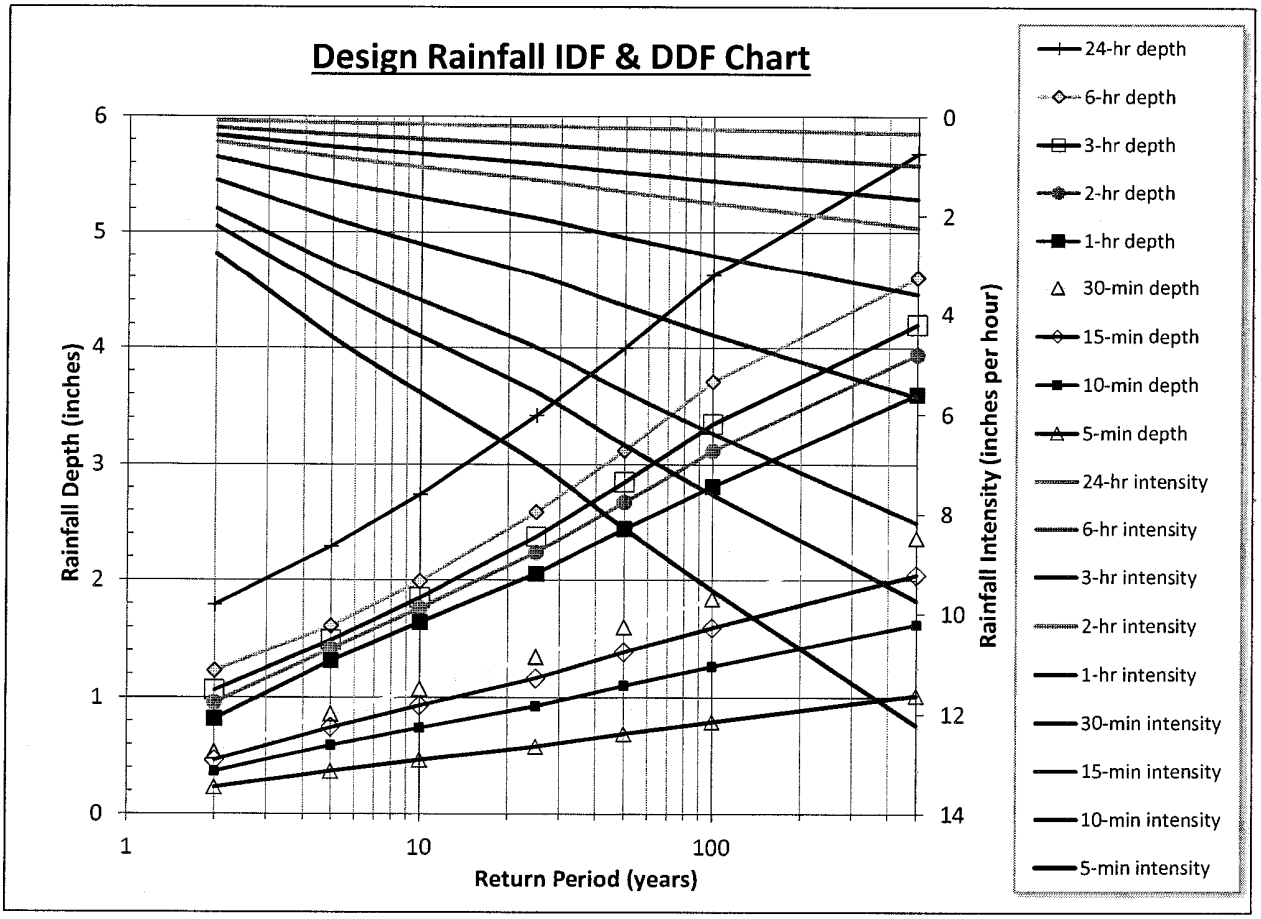
2. Rainfall Intensity-Duration-Frequency Table

Return Period	Rainfall Intensity in Inches Per Hour at Time Duration								
	5-min	*10-min*	*15-min*	*30-min*	*1-hr*	*2-hr*	*3-hr*	*6-hr*	*24-hr*
2-yr	2.77	2.21	1.86	1.28	0.82	0.51	0.38	0.22	0.08
5-yr	4.46	3.56	2.98	2.06	1.31	0.82	0.61	0.36	0.12
10-yr	5.57	4.44	3.73	2.58	1.64	1.02	0.76	0.45	0.15
25-yr	6.97	5.56	4.67	3.22	2.06	1.28	0.95	0.56	0.19
50-yr	8.29	6.61	5.55	3.83	2.44	1.52	1.13	0.67	0.23
100-yr	9.53	7.60	6.38	4.41	2.81	1.75	1.30	0.77	0.26
500-yr	12.21	9.74	8.17	5.65	3.60	2.24	1.66	0.98	0.34

Note: Intensity approximated using 1-hr rainfall depths and Equation 4-3 in USDCM Volume 1.

Depth-Duration-Frequency and Intensity-Duration-Frequency Tables for Colorado Hydrologic Zones 1 through 4





Sub-basin Imperviousness

Daves Earthworks

H1: HISTORIC

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	436063	2
Roofs	0	90
Concrete Surfaces	0	100
Driveways, Gravel	0	40
Wghtd Avg & Total Area	436063	2
Acres	10.01	

ENTIRE SITE

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	87201	2
Roofs	12902	90
Concrete Surfaces	29292	100
Driveways, Gravel	306668	40
Wghtd Avg & Total Area	436063	38
Acres	10.01	

S1

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	4762	2
Roofs	1000	90
Concrete Surfaces	2213	100
Driveways, Gravel	18154	40
Wghtd Avg & Total Area	26129	40
Acres	0.600	

S2

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	1650	2
Roofs	0	90
Concrete Surfaces	0	100
Driveways, Gravel	24591	40
Wghtd Avg & Total Area	26241	38
Acres	0.602	

S3

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	1947	2
Roofs	0	90
Concrete Surfaces	0	100
Driveways, Gravel	28365	40
Wghtd Avg & Total Area	30312	38
Acres	0.696	

S4

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	2244	2
Roofs	0	90
Concrete Surfaces	0	100
Driveways, Gravel	31948	40
Wghtd Avg & Total Area	34192	38
Acres	0.785	

S5

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	8752	2
Roofs	0	90
Concrete Surfaces	0	100
Driveways, Gravel	30858	40
Wghtd Avg & Total Area	39610	32
Acres	0.909	

S6

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	3038	2
Roofs	6392	90
Concrete Surfaces	15351	100
Driveways, Gravel	43561	40
Wghtd Avg & Total Area	68342	56
Acres	1.569	

S7

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	924	2
Roofs	0	90
Concrete Surfaces	1285	100
Driveways, Gravel	40620	40
Wghtd Avg & Total Area	42829	41
Acres	0.983	

S8

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	8718	2
Roofs	3814	90
Concrete Surfaces	10183	100
Driveways, Gravel	7897	40
Wghtd Avg & Total Area	30612	55
Acres	0.703	

S9

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	2547	2
Roofs	1696	90
Concrete Surfaces	0	100
Driveways, Gravel	16930	40
Wghtd Avg & Total Area	21173	39
Acres	0.486	

S10

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	2111	2
Roofs	0	90
Concrete Surfaces	0	100
Driveways, Gravel	31754	40
Wghtd Avg & Total Area	33865	38
Acres	0.777	

S11

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	1302	2
Roofs	0	90
Concrete Surfaces	0	100
Driveways, Gravel	18441	40
Wghtd Avg & Total Area	19743	37
Acres	0.453	

S12

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	2324	2
Roofs	0	90
Concrete Surfaces	0	100
Driveways, Gravel	13549	40
Wghtd Avg & Total Area	15873	34
Acres	0.364	

S13

Land Use	Area (ft2)	I (%)
Impervious Area, Grass	43616	2
Roofs	0	90
Concrete Surfaces	260	100
Driveways, Gravel	0	40
Wghtd Avg & Total Area	43876	3
Acres	1.007	

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S1

I. Catchment Hydrologic Data

Catchment ID = S1
Area = 0.60 Acres
Percent Imperviousness = 40.00 %
NRCS Soil Type = C A, B, C, or D

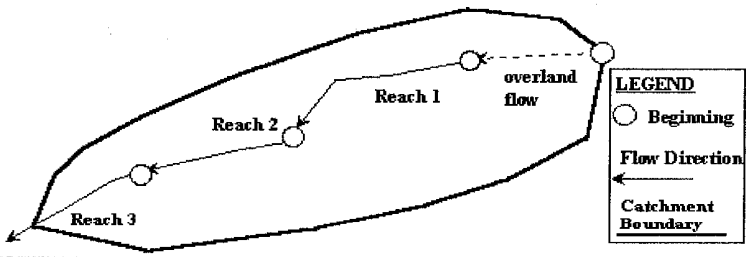
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.58
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.35
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0190	62	0.35	N/A	0.12	8.64
1	0.0349	109		20.00	3.74	0.49
2						
3						
4						
5						
	Sum	171				

Computed Tc = 9.13
Regional Tc = 10.95
User-Entered Tc = 9.13

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	7.87	inch/hr	Peak Flowrate, Qp =	2.75 cfs
Rainfall Intensity at Regional Tc, I =	7.33	inch/hr	Peak Flowrate, Qp =	2.56 cfs
Rainfall Intensity at User-Defined Tc, I =	7.87	inch/hr	Peak Flowrate, Qp =	2.75 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S2

I. Catchment Hydrologic Data

Catchment ID = S2
Area = 0.60 Acres
Percent Imperviousness = 38.00 %
NRCS Soil Type = C A, B, C, or D

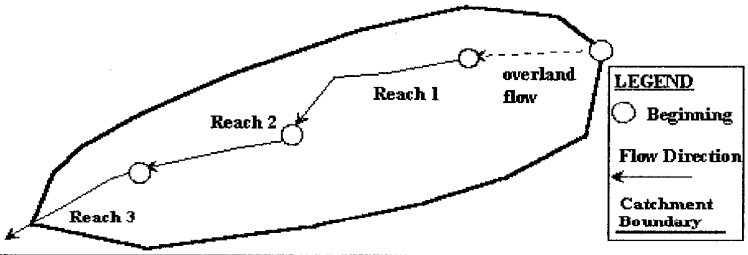
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.58
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.34
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0230	174	0.34	N/A	0.21	13.76
1						
2						
3						
4						
5						
	Sum	174				

Computed Tc = 13.76
Regional Tc = 10.97
User-Entered Tc = 10.97

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	6.64	inch/hr	Peak Flowrate, Qp =	2.31	cfs
Rainfall Intensity at Regional Tc, I =	7.32	inch/hr	Peak Flowrate, Qp =	2.55	cfs
Rainfall Intensity at User-Defined Tc, I =	7.32	inch/hr	Peak Flowrate, Qp =	2.55	cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S3

I. Catchment Hydrologic Data

Catchment ID = S3
Area = 0.70 Acres
Percent Imperviousness = 38.00 %
NRCS Soil Type = C A, B, C, or D

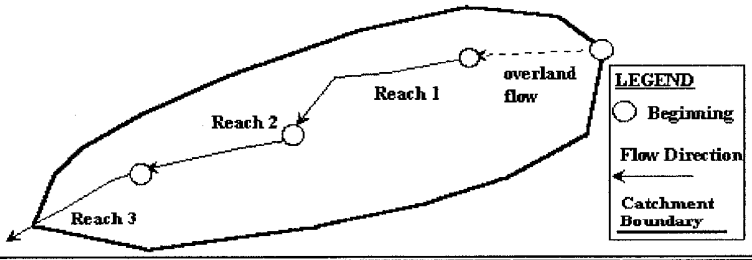
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.58
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.34
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0240	183	0.34	N/A	0.22	13.91
1						
2						
3						
4						
5						
	Sum	183				

Computed Tc = 13.91
Regional Tc = 11.02
User-Entered Tc = 11.02

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	6.61	inch/hr	Peak Flowrate, Qp =	2.68 cfs
Rainfall Intensity at Regional Tc, I =	7.31	inch/hr	Peak Flowrate, Qp =	2.97 cfs
Rainfall Intensity at User-Defined Tc, I =	7.31	inch/hr	Peak Flowrate, Qp =	2.97 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S4

I. Catchment Hydrologic Data

Catchment ID = S4
Area = 0.79 Acres
Percent Imperviousness = 38.00 %
NRCS Soil Type = C A, B, C, or D

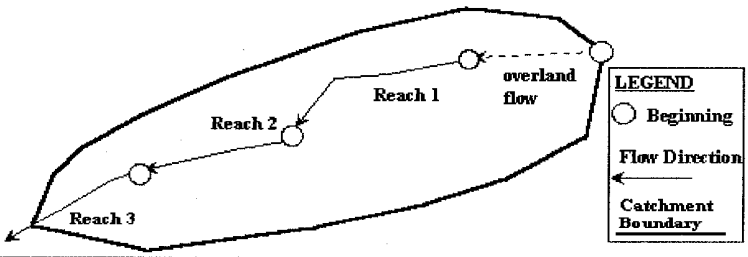
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.58
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.34
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0280	191	0.34	N/A	0.24	13.51
1						
2						
3						
4						
5						
	Sum	191				

Computed Tc = 13.51
Regional Tc = 11.06
User-Entered Tc = 11.06

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	6.69	inch/hr	Peak Flowrate, Qp =	3.06	cfs
Rainfall Intensity at Regional Tc, I =	7.30	inch/hr	Peak Flowrate, Qp =	3.34	cfs
Rainfall Intensity at User-Defined Tc, I =	7.30	inch/hr	Peak Flowrate, Qp =	3.34	cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S5

I. Catchment Hydrologic Data

Catchment ID = S5
Area = 0.91 Acres
Percent Imperviousness = 32.00 %
NRCS Soil Type = C A, B, C, or D

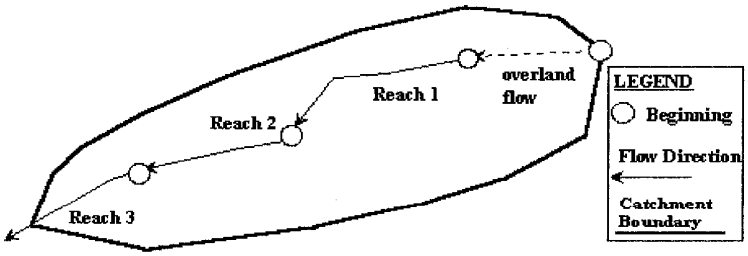
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr = 100 years (input return period for design storm)
C1 = 28.50 (input the value of C1)
C2= 10.00 (input the value of C2)
C3= 0.786 (input the value of C3)
P1= 2.81 inches (input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.57
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.31
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0170	263	0.31	N/A	0.23	19.33
1	0.0085	135		15.00	1.38	1.63
2						
3						
4						
5						
	Sum	398				

Computed Tc = 20.96
Regional Tc = 12.21
User-Entered Tc = 12.21

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I = 5.39 inch/hr — Peak Flowrate, Qp = 2.80 cfs
Rainfall Intensity at Regional Tc, I = 7.00 inch/hr — Peak Flowrate, Qp = 3.63 cfs
Rainfall Intensity at User-Defined Tc, I = 7.00 inch/hr — Peak Flowrate, Qp = 3.63 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S6

I. Catchment Hydrologic Data

Catchment ID = S6
Area = 1.57 Acres
Percent Imperviousness = 56.00 %
NRCS Soil Type = C A, B, C, or D

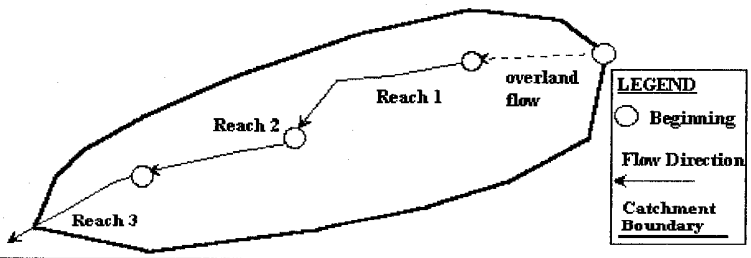
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.62
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.43
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0050	46	0.43	N/A	0.07	10.29
1	0.0050	270		20.00	1.41	3.18
2						
3						
4						
5						
	Sum	316				

Computed Tc = 13.47
Regional Tc = 11.76
User-Entered Tc = 11.76

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	6.70	inch/hr	Peak Flowrate, Qp =	6.52	cfs
Rainfall Intensity at Regional Tc, I =	7.11	inch/hr	Peak Flowrate, Qp =	6.92	cfs
Rainfall Intensity at User-Defined Tc, I =	7.11	inch/hr	Peak Flowrate, Qp =	6.92	cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S7

I. Catchment Hydrologic Data

Catchment ID = S7
Area = 0.98 Acres
Percent Imperviousness = 41.00 %
NRCS Soil Type = C A, B, C, or D

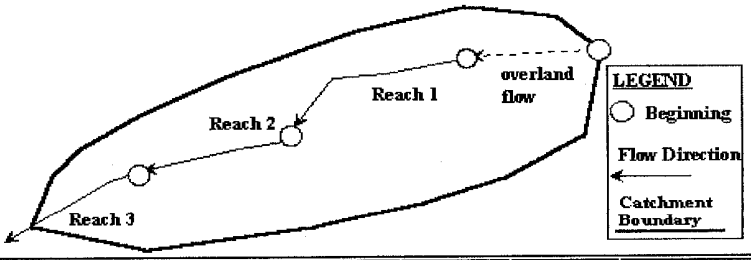
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.58
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.35
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0200	68	0.35	N/A	0.13	8.84
1	0.0050	313		20.00	1.41	3.69
2						
3						
4						
5						
	Sum	381				

Computed Tc = 12.53
Regional Tc = 12.12
User-Entered Tc = 12.12

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	6.92	inch/hr	Peak Flowrate, Qp =	3.97 cfs
Rainfall Intensity at Regional Tc, I =	7.02	inch/hr	Peak Flowrate, Qp =	4.02 cfs
Rainfall Intensity at User-Defined Tc, I =	7.02	inch/hr	Peak Flowrate, Qp =	4.02 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S8

I. Catchment Hydrologic Data

Catchment ID = S8
Area = 0.70 Acres
Percent Imperviousness = 55.00 %
NRCS Soil Type = C A, B, C, or D

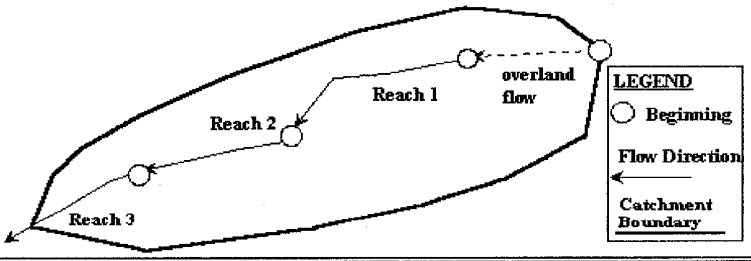
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.62
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.43
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0200	70	0.43	N/A	0.14	8.10
1	0.0050	75		15.00	1.06	1.18
2	0.0080	102		15.00	1.34	1.27
3	0.0100	100		15.00	1.50	1.11
4						
5						
	Sum	347			Computed Tc =	11.66
					Regional Tc =	11.93
					User-Entered Tc =	11.66

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	7.14	inch/hr	Peak Flowrate, Qp =	3.09 cfs
Rainfall Intensity at Regional Tc, I =	7.07	inch/hr	Peak Flowrate, Qp =	3.06 cfs
Rainfall Intensity at User-Defined Tc, I =	7.14	inch/hr	Peak Flowrate, Qp =	3.09 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S9

I. Catchment Hydrologic Data

Catchment ID = S9
Area = 0.48 Acres
Percent Imperviousness = 39.00 %
NRCS Soil Type = C A, B, C, or D

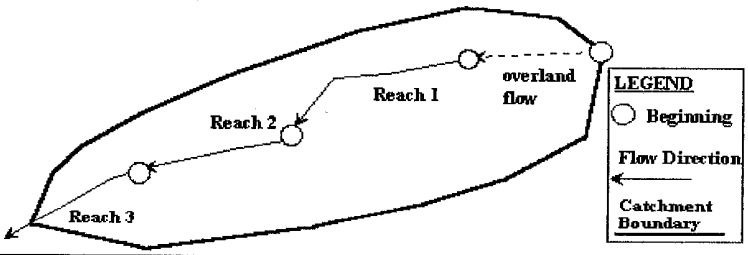
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.58
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.34
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0250	156	0.34	N/A	0.21	12.60
1						
2						
3						
4						
5						
	Sum	156				

Computed Tc = 12.60
Regional Tc = 10.87
User-Entered Tc = 10.87

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	6.91	inch/hr	Peak Flowrate, Qp =	1.93 cfs
Rainfall Intensity at Regional Tc, I =	7.35	inch/hr	Peak Flowrate, Qp =	2.05 cfs
Rainfall Intensity at User-Defined Tc, I =	7.35	inch/hr	Peak Flowrate, Qp =	2.05 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S10

I. Catchment Hydrologic Data

Catchment ID = S10
Area = 0.78 Acres
Percent Imperviousness = 38.00 %
NRCS Soil Type = C A, B, C, or D

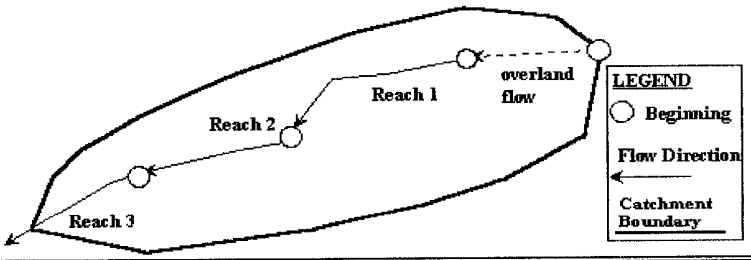
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.58
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.34
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0200	213	0.34	N/A	0.22	15.94
1						
2						
3						
4						
5						
	Sum	213				

Computed Tc = 15.94
Regional Tc = 11.18
User-Entered Tc = 11.18

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	6.20	inch/hr	Peak Flowrate, Qp = 2.80 cfs
Rainfall Intensity at Regional Tc, I =	7.27	inch/hr	Peak Flowrate, Qp = 3.28 cfs
Rainfall Intensity at User-Defined Tc, I =	7.27	inch/hr	Peak Flowrate, Qp = 3.28 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S11

I. Catchment Hydrologic Data

Catchment ID = S11
Area = 0.45 Acres
Percent Imperviousness = 37.00 %
NRCS Soil Type = C A, B, C, or D

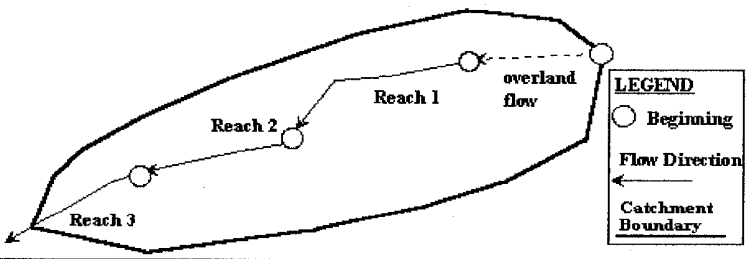
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.58
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.34
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0230	167	0.34	N/A	0.21	13.56
1						
2						
3						
4						
5						
	Sum	167				

Computed Tc = 13.56
Regional Tc = 10.93
User-Entered Tc = 10.93

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	6.68	inch/hr	Peak Flowrate, Qp =	1.74 cfs
Rainfall Intensity at Regional Tc, I =	7.34	inch/hr	Peak Flowrate, Qp =	1.91 cfs
Rainfall Intensity at User-Defined Tc, I =	7.34	inch/hr	Peak Flowrate, Qp =	1.91 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S12

I. Catchment Hydrologic Data

Catchment ID = S12
Area = 0.36 Acres
Percent Imperviousness = 34.00 %
NRCS Soil Type = C A, B, C, or D

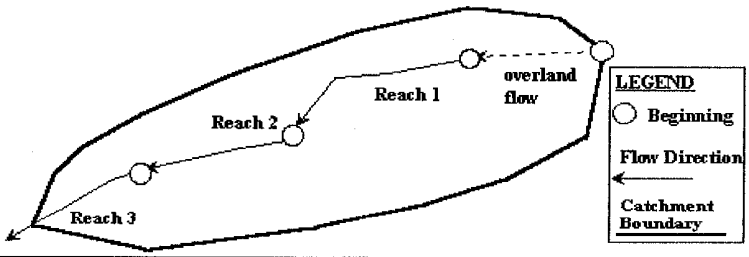
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.57
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.32
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0210	175	0.32	N/A	0.20	14.55
1						
2						
3						
4						
5						
	Sum	175				

Computed Tc = 14.55
Regional Tc = 10.97
User-Entered Tc = 10.97

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	6.47	inch/hr	Peak Flowrate, Qp =	1.34	cfs
Rainfall Intensity at Regional Tc, I =	7.32	inch/hr	Peak Flowrate, Qp =	1.51	cfs
Rainfall Intensity at User-Defined Tc, I =	7.32	inch/hr	Peak Flowrate, Qp =	1.51	cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Ex
Catchment ID: S13

I. Catchment Hydrologic Data

Catchment ID = S13
Area = 1.01 Acres
Percent Imperviousness = 3.00 %
NRCS Soil Type = C A, B, C, or D

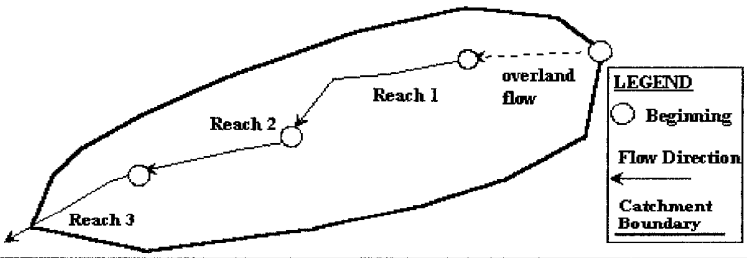
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.51
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.17
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.2500	35	0.17	N/A	0.17	3.44
1						
2						
3						
4						
5						
	Sum	35				

Computed Tc = 3.44
Regional Tc = 10.19
User-Entered Tc = 5.00

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	10.39	inch/hr	Peak Flowrate, Qp = 5.36 cfs
Rainfall Intensity at Regional Tc, I =	7.55	inch/hr	Peak Flowrate, Qp = 3.89 cfs
Rainfall Intensity at User-Defined Tc, I =	9.53	inch/hr	Peak Flowrate, Qp = 4.92 cfs

CALCULATION OF A PEAK RUNOFF USING RATIONAL METHOD

Project Title: Daves Excavation
Catchment ID: ENTIRE SITE

I. Catchment Hydrologic Data

Catchment ID = ENTIRE SITE
Area = 10.01 Acres
Percent Imperviousness = 38.00 %
NRCS Soil Type = C A, B, C, or D

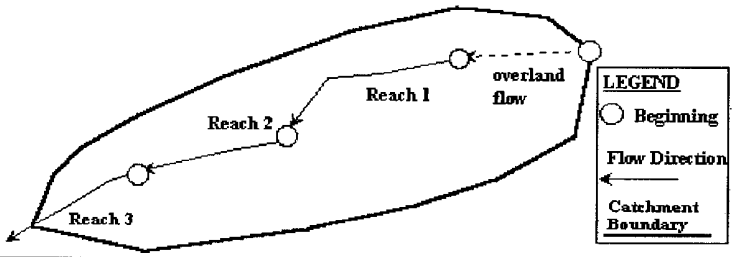
II. Rainfall Information I (inch/hr) = C1 * P1 /(C2 + Td)^C3

Design Storm Return Period, Tr =	100	years	(input return period for design storm)
C1 =	28.50		(input the value of C1)
C2=	10.00		(input the value of C2)
C3=	0.786		(input the value of C3)
P1=	2.81	inches	(input one-hr precipitation--see Sheet "Design Info")

III. Analysis of Flow Time (Time of Concentration) for a Catchment

Runoff Coefficient, C = 0.58
Overide Runoff Coefficient, C = (enter an overide C value if desired, or leave blank to accept calculated C.)
5-yr. Runoff Coefficient, C-5 = 0.34
Overide 5-yr. Runoff Coefficient, C = (enter an overide C-5 value if desired, or leave blank to accept calculated C-5.)

Illustration



NRCS Land Type	Heavy Meadow	Tillage/ Field	Short Pasture/ Lawns	Nearly Bare Ground	Grassed Swales/ Waterways	Paved Areas & Shallow Paved Swales (Sheet Flow)
Conveyance	2.5	5	7	10	15	20

Calculations:

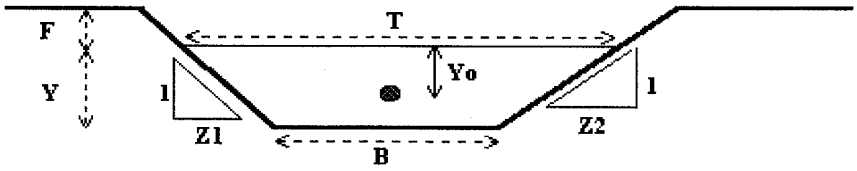
Reach ID	Slope S ft/ft input	Length L ft input	5-yr Runoff Coeff C-5 output	NRCS Convey-ance input	Flow Velocity V fps output	Flow Time Tf minutes output
Overland	0.0200	37	0.34	N/A	0.09	6.64
1	0.0050	326		20.00	1.41	3.84
2	0.0079	440		20.00	1.78	4.13
3						
4						
5						
	Sum	803			Computed Tc =	14.61
					Regional Tc =	14.46
					User-Entered Tc =	14.46

IV. Peak Runoff Prediction

Rainfall Intensity at Computed Tc, I =	6.46	inch/hr	Peak Flowrate, Qp =	37.47	cfs
Rainfall Intensity at Regional Tc, I =	6.49	inch/hr	Peak Flowrate, Qp =	37.65	cfs
Rainfall Intensity at User-Defined Tc, I =	6.49	inch/hr	Peak Flowrate, Qp =	37.65	cfs

Normal Flow Analysis - Trapezoidal Channel

Project: Daves Ex
Channel ID: Sec A-A



Design Information (Input)			
Channel Invert Slope	So =	0.0080	ft/ft
Manning's n	n =	0.040	
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	27.00	ft/ft
Freeboard Height	F =	1.00	ft
Design Water Depth	Y =	**0.50**	ft

Normal Flow Condtion (Calculated)			
Discharge	**Q =**	**5.11**	cfs
Froude Number	**Fr =**	**0.46**	
Flow Velocity	**V =**	**1.32**	fps
Flow Area	A =	3.88	sq ft
Top Width	T =	15.50	ft
Wetted Perimeter	P =	15.57	ft
Hydraulic Radius	R =	0.25	ft
Hydraulic Depth	D =	0.25	ft
Specific Energy	Es =	0.53	ft
Centroid of Flow Area	Yo =	0.17	ft
Specific Force	Fs =	0.05	kip

REFERRAL RESPONSES

Fort Lupton Fire Protection District
1121 Denver Avenue • Fort Lupton, Colorado 80621
Office: (303)857-4603 • Fax: (303)857-6619 • Website: www.fortluptonfire.org

Date: 10/4/2016
Project name: Dave's Earthworks Site Plan Review
Project address: 3355 CR 27, Fort Lupton, CO 80621
FLFPD Project # 2016-099
Plan reviewer: Randall S. Weigum

The Fire District has reviewed the submitted Site Plan for Dave's Earthworks located at 3355 CR 27. The plans were reviewed for compliance with *2012 International Fire Code (IFC)* as adopted by the Fort Lupton Fire Protection District and the City of Fort Lupton. The site plan is approved with the following comments and requirements:

1. A dedicated emergency access road 20' in width shall be delineated on the plans. The emergency access road shall extend to within 150' of all portions of the exterior walls of the first story of the buildings as measured by an approved route around the exterior of the building and fuel tank area (See Sheet SP2 for comments). *2012 IFC 503.1.1*

2. Fire Flow Requirements:

   The fire flow test from the property to the south (3117 CR 27) on 11/17/2015 had a fire flow of 2,157gpm. The purposed building is listed at 10,780ft^2. Below are the requirements for each building construction classification:

   The fire flow for a Type VB building classification at the above noted square footage would be 2,750gpm for two (2) hours. This building classification type would require a fire sprinkler system installed throughout the building to meet the fire flow requirement of 2,750gpm for two (2) hours.

   If the building construction type is classified as Type IIB or IIIB, a 10,780ft^2 building shall have a fire flow of 2,250gpm for two (2) hours. This leaves a deficiency of 93gpm per minute or 11,260 gallons for two (2) hours. If either a IIB or IIIB construction type is used, I will use Appendix B Fire Flow Requirements for Buildings Section B103.1 Decreases to justify the reduced fire flow of 2,157gpm for two (2) hours. The water system is not looped at this time, but is planned when future development occurs. When the water line is looped, 93gpm should be able to be met and the building will be in compliance with the fire flow of 2,250gpm.

   If the building construction type is classified as Type VA, IV, IIA, IIIA, IB or IA the site will have the required fire flow.
   2012 IFC 507.3 and Appendix B

3. Fire Hydrants

   With the existing building on the property, the purposed building, and the future building two (2) additional fire hydrants shall be added to meet the requirements of the required fire flows and a fire hydrant within 400 feet of all the exterior ground floor walls of the buildings.

   Install one of the fire hydrants on the south side of the main entrance and the second fire hydrant at the southeast side of the building across the drive lane in the landscaped area. (See sheet C2 for location of additional fire hydrants). Any additional water lines and fire hydrants, shall be constructed in accordance with the City of Fort Lupton. *2012 IFC 507.5 and Appendix C*

4. A three (3) foot clear space shall be maintained around the circumference of fire hydrants (See Sheet L1 for comments). *2012 IFC 507.5.5*

5. The site plan does not show any gates associated with the fence that goes around the property. The installation of security gates across a fire apparatus access road shall be approved by the fire chief. Where security gates are installed, they shall have an approved means of emergency operation. The security gates and the emergency operation shall be maintained operational at all times. Electric gate operators, where provided, shall be listed in accordance with UL 325. Gates intended for automatic operation shall be designed, constructed and installed to comply with the requirements of ASTM F 2200. *2012 IFC 503.6*

6. New buildings shall have approved address numbers, building numbers or plainly legible and visible from the street or road fronting the property. These numbers shall contrast with their background. Address numbers shall be Arabic numbers or alphabetical letters. Numbers shall be a minimum of four (4) inches high with a minimum stroke width of 0.5 inch. The address may be posted on the monument sign or on the building's east side. *2012 IFC 505.*1

7. Construction plans for the facility, building, and aboveground fuel tanks shall be submitted to the Fort Lupton Fire Protection District for review and comment prior to any construction commencing. The plan review process, plan review application, and plan review fee schedule for the Fort Lupton Fire Protection District may be found at: https://fortluptonfire.org/directions-for-plan-review-submittals/

Shop & Office

Site Plan Review

Project Information

2012 International Building Code
2012 Mechanical Code
2012 Plumbing Code
2012 Fuel Gas Code
2006 Energy Conservation Code
2011 National Electrical Code
2012 International Fire Code

Jurisdiction: City of Fort Lupton
Parcel No. 147118401002 & 147118401003
Lot Area: 5 Acres each parcel, 10 acres total

Zoning: I-1 Light Industrial
Setbacks: 10' Rear, 0' Side, 25' Front
Offstreet Parking:
- 1 space per employee, maximum per shift
- Min. of one off-street loading space, 12' x 50'
- Parking Spaces 9' x 19' with 25' wide (2-way) aisle
- Oversized Spaces 10' x 20', min. 40% of spaces
- Accessible Parking Space 13' x 20'
- Bicycle parking min. 2% of vehicle parking spaces

Building Height: 28' +/-
Building Area: 10,780 s.f.

Water District: Central Colorado Water (CCW)
Central Colorado Water Subdistrict (CCS)
Northern Colorado Water (NCW)
Fire District: Fort Lupton Fire

2 Fire hydrants with an average spacing of 450 feet between fire hydrants. A fire hydrant shall be within 400ft of all exterior walls of the first floor.

Maximum distance from any point on street or road frontage to a fire hydrant is 225 feet

Fire flow test conducted on 11/17/2015 at the fire hydrant located at 3112 CR 27 (Northeast fire hydrant) had a flow of 2,157gpm.

Land Use Areas

North Parcel
(future phase TBD)

Land Use	Area	% of Lot
Building Footprint	3200 s.f.	1%
Asphalt Paving	11,826 s.f.	6%
Concrete Walk	N/A	N/A
Total Impervious	15,026 s.f.	7%
Lot Size	217,800 s.f.	100%
Pervious Area	202,774 s.f.	93%

South Parcel

Land Use	Area	% of Lot
Building Footprint	10,907 s.f.	5%
Asphalt Paving	11,192 s.f.	5%
Concrete Walk	3,725 s.f.	2%
Total Impervious	25,824 s.f.	12%
Lot Size	217,800 s.f.	100%
Pervious Area	191,976 s.f.	88%

Sheet Index

Fort Lupton Fire Protection District
This Preliminary Development Plan was
reviewed with the 2012 IFC adopted by FLFPD.
By: *Randall S. Weigum, Fire Marshal*
Not Approved – See Red Lined Comments on Plans & Attached Comment Letter

PROPERTY DESCRIPTION

A parcel of land in the City of Fort Lupton, Colorado, located in the NE4 of SE4 of Section 18, T1, R66 of the 6th P.M. and more particularly described as follows: Lot 2 of the Yarbrough Acres Minor Subdivision.

OWNER'S APPROVAL

Know All Men By These Presents, that _____, being the sole owner of the land described herein, and _____ are all of the mortgagees and holders of liens upon the property, and each and all hereby consent to this plat and join the conveyance and dedication of all streets, roads, alleys, easements, public ways and places shown hereon.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this ___ day of _____, 2016.

_____

STATE OF COLORADO,)
) ss
COUNTY OF WELD)

The foregoing instrument was acknowledged before me by _____ on this ___ day of _____, 2016. Witness my hand and seal.

My commission expires _____

_____
Notary Public

CITY ENGINEER'S APPROVAL

Approved this ___ day of _____, 2016.

_____
City Engineer

CITY WATER AND SEWER DEPARTMENT APPROVAL

Approved this ___ day of _____, 2016.

_____
Director of Public Works

CITY ADMINISTATOR'S APPROVAL

Approved this ___ day of _____, 2016.

_____
City Administrator

PLANNING COMMISSION RECOMMENDATION

Recommended this ___ day of _____, 2016, by Resolution No. _____.

_____
Chairperson, Fort Lupton
Planning Commission

MAYOR'S CERTIFICATE

This is to certify that a plat of the above-described property was approved by _____ No. ___ _____ of the City of Fort Lupton passed and adopted on the ___ day of _____, A.D., 2016 and that the Mayor of the City of Fort Lupton, as authorized by said _____ on behalf of the City of Fort Lupton, hereby acknowledges and adopts the said plat upon which this certificate is endorsed for all purposes indicated thereon.

_____
Mayor

Attest:

_____
City Clerk
(Seal)

Architect:

Kelly Deitman
Halcyon Design LLC
PO Box 30
Frederick, CO 80516

Civil Engineer:

Eric Wernsman
Wernsman Engineering
1011 42nd Street
Evans, CO 80620

102/123

Dave's Earthworks Inc. Shop & Office
Site Plan Review
3355 County Rd 27
Fort Lupton, Colorado 80621

Halcyon Design LLC
PO Box 30
Frederick, CO 80530
303.906.2617

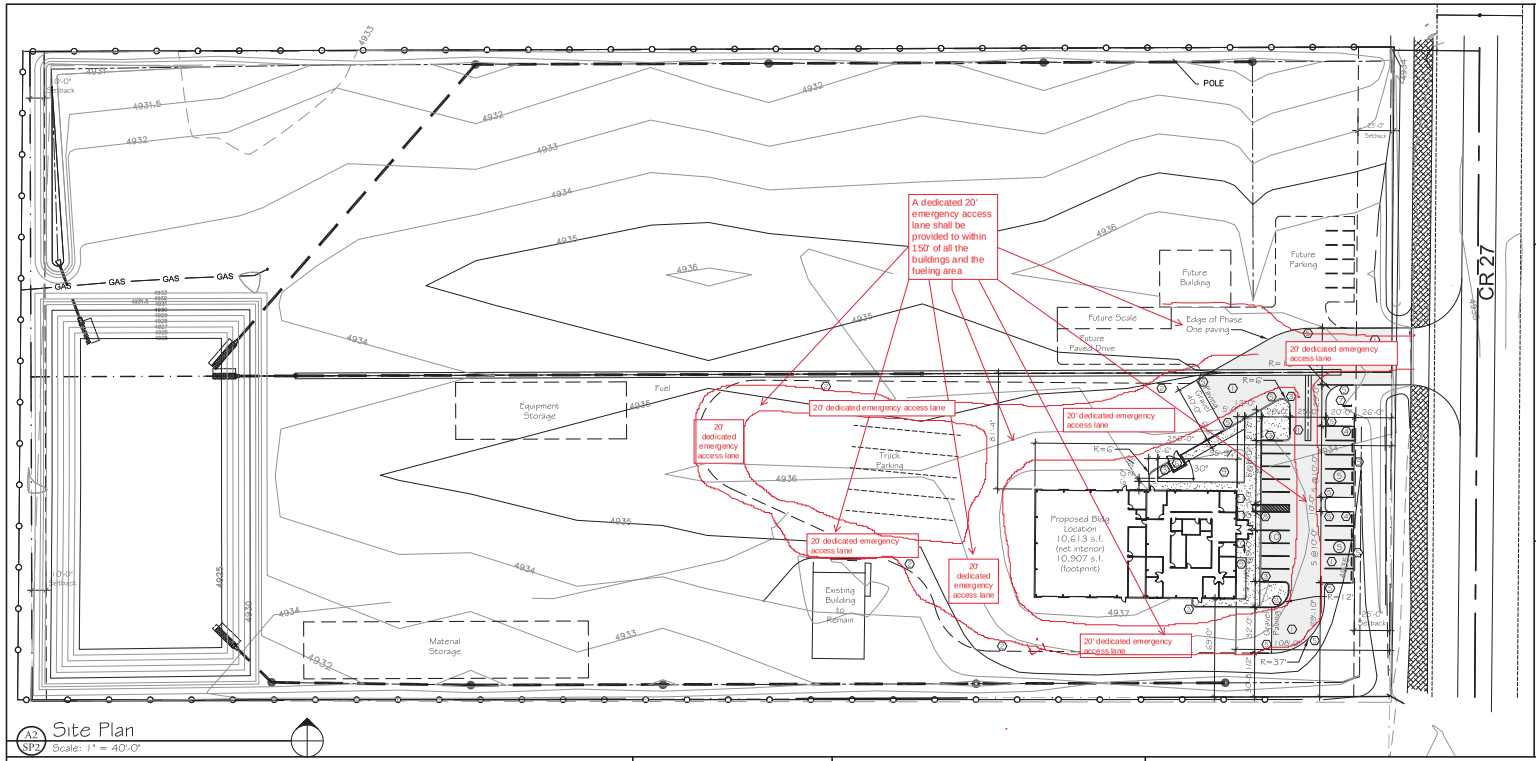
DATE
8.31.16

REVISIONS

SHEET TITLE
Cover Sheet & Project Info.

SHEET NUMBER
SP1

Project No. 1607



A2 SP2 Site Plan
Scale: 1" = 40'-0"

Site Legend

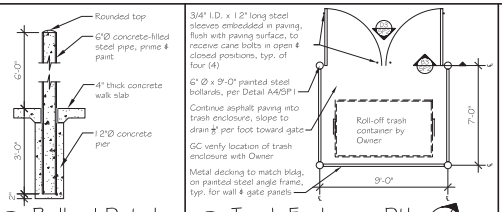
- Property Line
- Setback Line
- Existing Contours
- New Contours
- Existing Water Line
- New Water Service
- Existing Sanitary Sewer Line
- New Sanitary Sewer Service
- New Telephone Service
- New Electrical Service
- Transformer (existing)
- Existing Gas Line
- New Gas Service

General Notes

1. This project consists of work on two separate parcels to include Parcel #147118401003 and Parcel #147118401002 also known as 3355 County Rd 37. Parcels will remain separate no minor subdivision process is intended for this phase of the project.
2. See Civil Drawings for grading, drainage, and horizontal control.
3. See Landscaping Drawings for planting and irrigation information.
4. Building dimensions are to the outside face of foundation.
5. Proposed structure is approximately 28' +/- high from finished floor height to highest roof fascia.
6. The proposed office and shop building will have ten full-time employees.
7. Concrete curb radius shall be 3'-0" to outside face of curb, unless noted otherwise on plan.

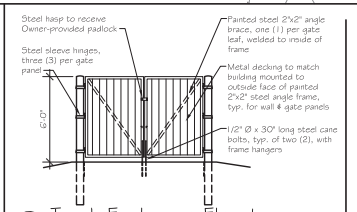
Plan Key Notes

1. Asphalt paving per Geotechnical Report.
2. Approximate edge of gravel paving, verify with Owner.
3. 6" Concrete curb per Civil.
4. 6' Wide concrete wheel stops in locations shown.
5. Edge of asphalt paving.
6. Trash enclosure per Details, this Sheet.
7. Monument sign per Details, this Sheet.
8. Accessible curb ramp per Detail E3/SP2.
9. Planter bed per Landscape Plans.
10. Bicycle Rack.
11. Accessible parking signage per Detail C4/SP2.

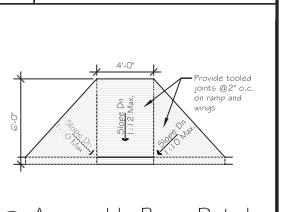


B3 SP3 Bollard Detail
Scale: 1/2" = 1'-0"

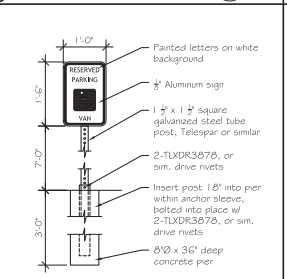
C3 SP2 Trash Enclosure Dtl
Scale: 1/4" = 1'-0"



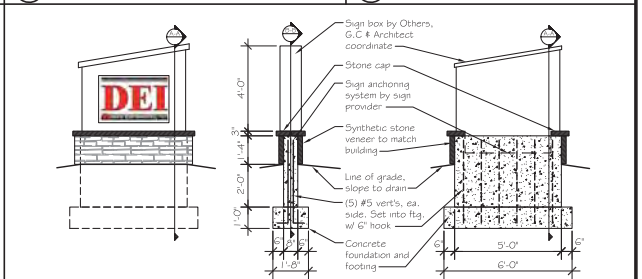
D3 SP2 Trash Enclosure Elevation
Scale: 1/4" = 1'-0"



E3 SP2 Accessible Ramp Detail
Scale: 1/4" = 1'-0"



C4 SP2 Accessible Parking Sign
Scale: 3/4" = 1'-0"



Elevation
D4 SP2 Monument Sign Details
Scale: 3/8" = 1'-0"

103/123

Dave's Earthworks Inc. Shop & Office
Site Plan Review
3355 County Rd 27
Fort Lupton, Colorado 80621

Halcyon Design LLC
PO Box 30
Frederick, CO 80530
303.906.2617

DATE
8.31.16

REVISIONS

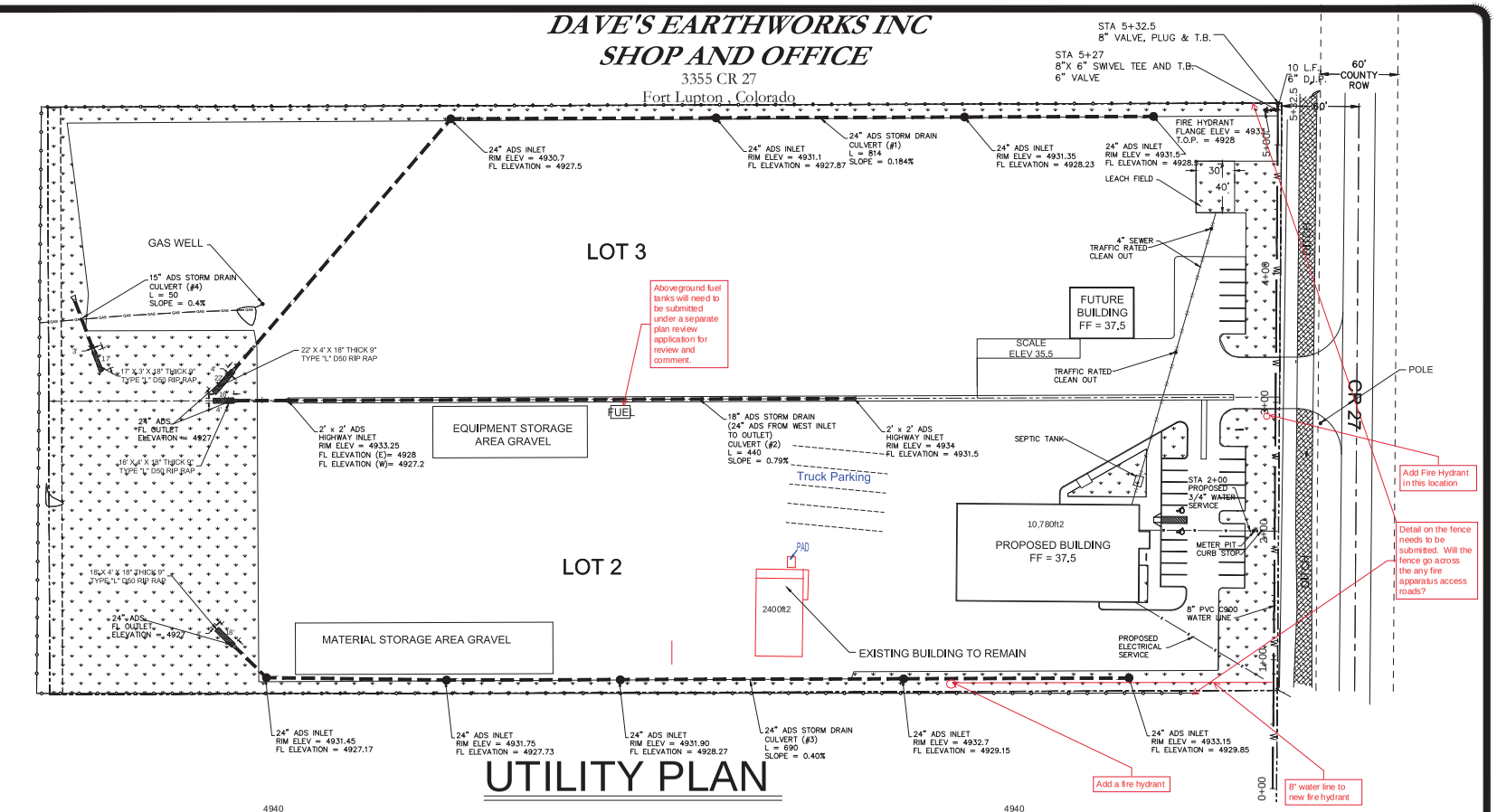
SHEET TITLE
Site Plan Map

SHEET NUMBER
SP2

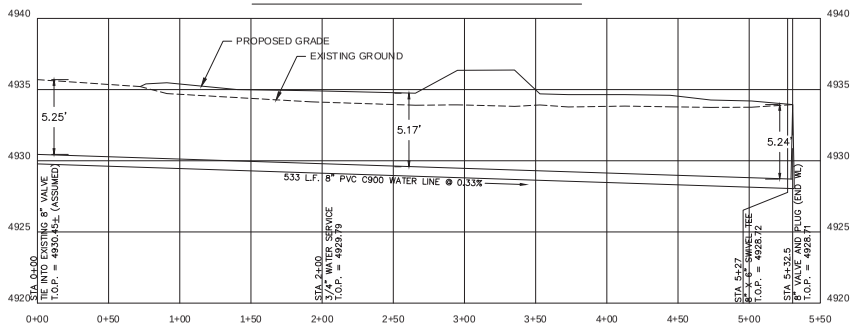
Project No. 1607

DAVE'S EARTHWORKS INC
SHOP AND OFFICE

3355 CR 27
Fort Lupton , Colorado



UTILITY PLAN



WATER LINE PROFILE

1 " = 40' HORIZONTALLY
1 " = 4' VERTICALLY

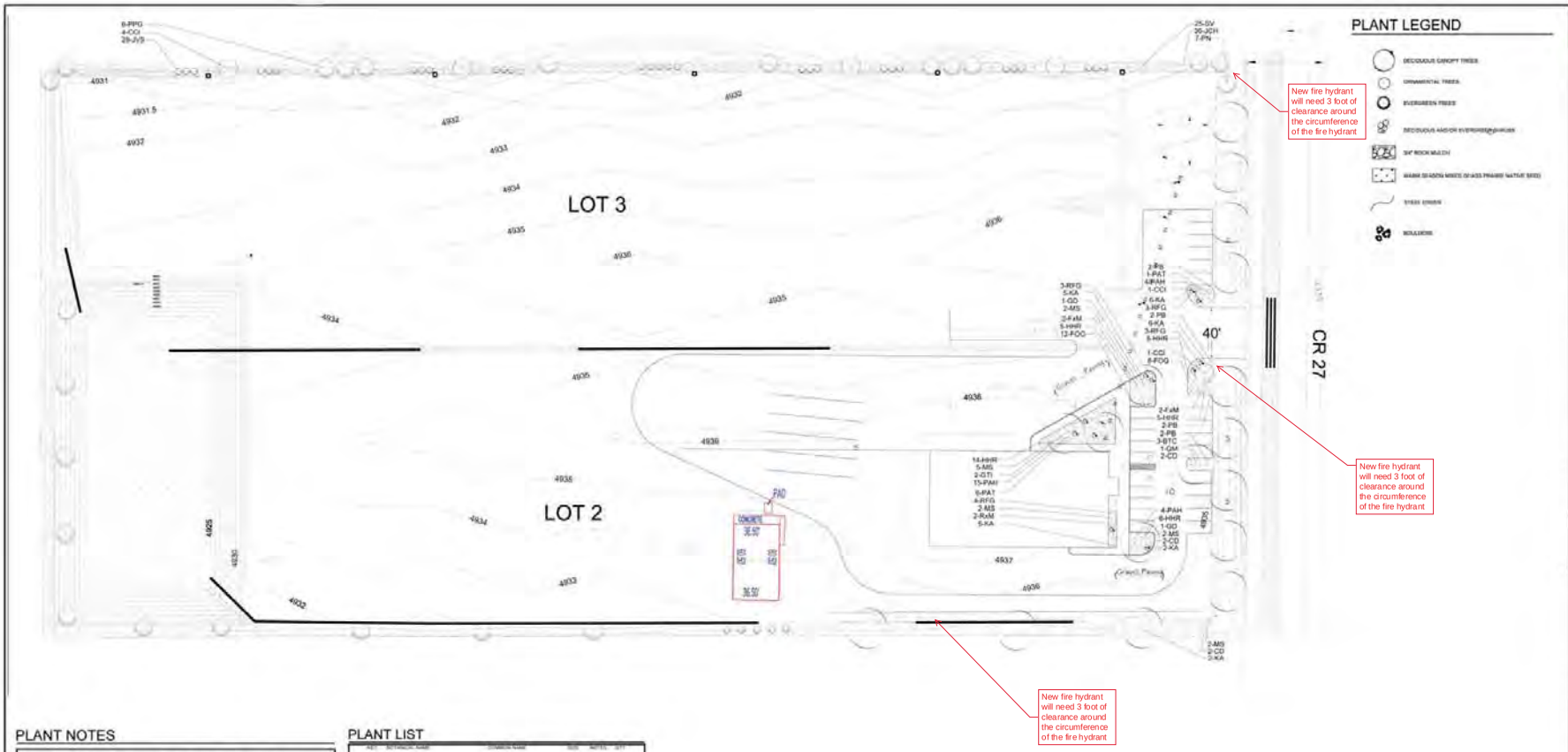
DRAWN FOR
DAVE HUNT
P.O. Box 322
Brighton, CO 80601

DAVES
EARTHWORKS INC
3355 CR 27
FORT LUPTON COLORADO

WERNSMAN ENGINEERING
STEVE WERNSMAN
801 42nd STREET
EVANS, CO 80620
(970) 353-4403

DRAWN
CHECKED
DATE 8/31/2016
SCALE 1" = 40'
PROJECT #
SHEET C2
OF OF SHEETS

1047123



PLANT NOTES

1. ALL PLANT MATERIAL SHALL MEET SPECIFICATIONS OF "THE AMERICAN ASSOCIATION OF NURSERYMEN (AAN)" FOR NUMBER ONE GRADE. ALL TREES SHALL BE BALLED AND BURLAPPED OR EQUIVALENT.
2. NO PLANT MATERIAL WITH MATURE GROWTH GREATER THAN THREE FEET (3') IN HEIGHT SHALL BE PLANTED WITHIN WATER AND SEWER EASEMENTS.
3. NO SHRUBS SHALL BE PLANTED WITHIN FIVE FEET (5') RADIUS OR TREES WITHIN TEN FEET (10') OF WATER METERS, FIRE HYDRANTS, OR SANITARY SEWER MANHOLES.
4. DEVELOPER SHALL ENSURE THAT THE LANDSCAPE PLAN IS COORDINATED WITH THE PLANS DONE BY OTHER CONSULTANTS SO THAT THE PROPOSED GRADING, STORM DRAINAGE, OR OTHER CONSTRUCTION DOES NOT CONFLICT NOR PRECLUDE INSTALLATION AND MAINTENANCE OF LANDSCAPE ELEMENTS ON THIS PLAN.
5. ALL LANDSCAPE AREAS WITHIN THE SITE SHALL BE IRRIGATED WITH AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. AN IRRIGATION PLAN WILL BE REQUIRED PRIOR TO ISSUANCE OF A BUILDING PERMIT.
6. ALL "TURF" AREAS TO BE IRRIGATED WITH AN AUTOMATIC POP-UP IRRIGATION SYSTEM. ALL SHRUB BEDS AND TREES ARE TO BE IRRIGATED WITH AN AUTOMATIC IRRIGATION (TRICKLE) IRRIGATION SYSTEM, OR ACCEPTABLE ALTERNATIVE. THE IRRIGATION SYSTEM IS TO BE ADJUSTED TO MEET THE WATER REQUIREMENTS OF THE INDIVIDUAL PLANT MATERIAL.
7. ALL SHRUB BEDS TO BE MULCHED 3" DEEP WITH 3/4" RIVER ROCK PLACED ON WEED BARRIER FABRIC.
8. EDGING BETWEEN GRASS AND SHRUB BEDS SHALL BE 4" X 4" STEEL SET LEVEL WITH TOP OF GRADE.
9. **SHORT GRASS PRAIRIE NATIVE SEED MIXTURE. THIS MIXTURE IS TO BE USED BETWEEN OCTOBER 15th AND March 30th ONLY AT A RATE OF 30.75 PLS LBS/ACRE**
10. TOPSOIL TO THE MAXIMUM EXTENT FEASIBLE, TOPSOIL THAT IS REMOVED DURING CONSTRUCTION ACTIVITY SHALL BE CONSERVED FOR LATER USE.
11. SOIL AMENDMENTS. PRIOR TO INSTALLATION OF PLANT MATERIALS, AREAS THAT HAVE BEEN COMPACTED OR DISTURBED BY CONSTRUCTION ACTIVITY SHALL BE THOROUGHLY LOOSENED. ORGANIC AMENDMENTS SUCH AS COMPOST, PEAT, OR AGED MANURE SHALL BE THOROUGHLY INCORPORATED.

PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE	NOTES	QTY
DECIDUOUS TREES					
CO	Celtis occidentalis	Hackberry	2" cal.	B&B	4
QM	Quercus Macrocarpa	Bur Oak	2" cal.	B&B	4
MS	Acer x freemanii 'Autumn Blaze'	Autumn Blaze Maple	2" cal.	B&B	7
GT	Gleditsia triacanthos inermis 'Imperial'	Imperial Locust	2" cal.	B&B	3
GT	Gymnocladus dioicus	Kentucky Coffeetree	2" cal.	B&B	3
GTI	Gleditsia triacanthos inermis 'Shademaster'	Shademaster Locust	2" cal.	B&B	5
ORNAMENTAL TREES					
CO	Crataegus crus-galli inermis	Thornless Cockspur Hawthorne	1.5" cal.	B&B	4
PCC	Prunus cerasifera 'Crimson Pear'	Crimson Pear	1.5" cal.	B&B	3
EVERGREEN TREES					
PA	Picea glauca	Dwarf Alberta Spruce	6 ft.	B&B	4
PPG	Picea pungens glauca	Colorado Blue Spruce	6 ft.	B&B	9
JV	Juniperus virginiana 'Brodtmilli'	Brodtmilli Juniper	6 ft.	B&B	14
DECIDUOUS SHRUBS					
GBW	Grossularia setosa 'Broadtown'	Broadtown Gooseberry	5 gal.	3 ft.	13
GCH	Grossularia Missouriensis 'Hillbelt'	Hillbelt Gooseberry	5 gal.	3 ft.	16
RA	Rhus Aromatica	Fragrant Sumac	5 gal.	3 ft.	9
PVT	Physocarpus monogynus	Mountain Ninebark	5 gal.	4 ft.	7
PS	Prunus besseyi	Western Sandcherry	5 gal.	3 ft.	11
RAN	Rosa x Meidiland White	White Meidiland Rose	5 gal.	4 ft.	2
SPV	Spiraea prunifolia 'Viking'	Dwarf Bridal Wreath	5 gal.	3 ft.	11
RTC	Rhus trilobata 'Cismontana'	Rabbitbrush	5 gal.	3 ft.	9
SV	Syringa vulgaris	Adam Holden Lilac	5 gal.	6 ft.	10
CD	Cotoneaster dielsianus	Spreading Cotoneaster	5 gal.	4 ft.	4
FJM	Forsythia x 'Meadowlark'	Meadowlark Forsythia	5 gal.	7 ft.	6
PERENNIALS AND ORNAMENTAL GRASSES					
KA	Calamagrostis x acutiflora 'Karl Foerster'	Karl Foerster Grass	1 gal.	24" o.c.	33
MS	Miscanthus sinensis 'Morning Light'	Morning Light Feather Grass	2 gal.	4 ft.	11
PAH	Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	1 gal.	18" o.c.	10
HHR	Hemerocallis 'Happy Returns'	Daylily	1 gal.	18" o.c.	16
PFG	Hydrastylis Kalmia 'Goldsturm'	Black-eyed Susan	1 gal.	18" o.c.	15
PDC	Festuca ovina glauca	Blue Fescue	1 gal.	18" o.c.	29

NOTE: SHORT GRASS PRAIRIE NATIVE SEED MIXTURE, THIS MIXTURE IS TO BE USED BETWEEN OCTOBER 15th AND March 30th ONLY AT A RATE OF 30.75 PLS LBS/ACRE

A TREE PLANTING – IRRIGATED AREAS
NOT TO SCALE

B CONIFER TREE PLANTING – GUY WIRES
NOT TO SCALE

C SHRUB PLANTING
NOT TO SCALE

Planscapes
Planning | Landscape Architecture

ENGINEER
Eric Wenaman
Wenaman Engineering
Cell 970-532-2858

LANDSCAPE ARCHITECT
ROB MOLLOY
860 NORWAY MAPLE DRIVE
LOVELAND, CO
970-988-5301

DAVE'S EARTHWORKS INC.
PRELIMINARY PLAN
PORT LUPTON, COLORADO

LANDSCAPE PLAN

DATE 10/30/2015
JOB NO.
DRAWN MM
CHECKED
REVISED 04/27/2016

L1

From:	Hice-Idler - CDOT, Gloria
To:	Alyssa Knutson; Todd Hodges
Subject:	Dave"s Earthworks, Inc. - Site Plan; Project No. SPR2016-001
Date:	Monday, September 26, 2016 5:22:15 PM
Attachments:	image001.png

CDOT has no comment regarding this proposal.

Gloria Hice-Idler
Region 4 Permits Manager
Region 4 Permits Unit - Traffic

P 970.350.2148 | C 970.381.2475 | F 970.350.2198

10601 W. 10th Street, Greeley, CO 80634
gloria.hice-idler@state.co.us | www.codot.gov | www.cotrip.org

On Fri, Sep 23, 2016 at 1:57 PM, Alyssa Knutson <AKnutson@fortlupton.org> wrote:

> Good Afternoon,
>
> The documentation located at the link http://co-fortlupton.civicplus.com/577/Daves-Earthworks-Inc is submitted to you for review and recommendation for a site plan review. Any comments you consider relevant to this request would be appreciated. Please reply by **October 14, 2016** so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department. If you have any questions, you may either contact me or Todd A. Hodges, Planning Director, at thodges@fortlupton.org or 303-857-6694.
>
> The hearings for this matter are scheduled for **Tuesday, November 1, 2016 at 6:00 P.M.** with the Fort Lupton Planning Commission and **Monday, November 7, 2016 at 7:00 P.M.** with the Fort Lupton City Council.
>
> Comments may be sent via mail, faxed to 303.857.0351 or emailed to

thodges@fortlupton.org and aknutson@fortlupton.org.

Your time in this matter is greatly appreciated!

Best,

Alyssa Knutson

Planner

130 S. McKinley Ave.

Fort Lupton, CO 80621

Office: 303.857.6694

Direct: 720.466.6128

Mobile: 303.304.4498

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MEMO

To: Alyssa Knutson

From: Mari Peña

Date: October 6, 2016

Subject: Review-Dave's Earthworks, Inc., Site Plan
SPR2016-001 & SUP 2016-002

---

1. A permit is required for the monument sign. Setbacks and requirements for the monument sign and any other signs shall be per Article VII of the Fort Lupton Municipal Code.

From:	Marilyn Conley
To:	Alyssa Knutson
Cc:	Todd Hodges; Mari Pena
Subject:	RE: Dave"s Earthworks, Inc. - Site Plan; Project No. SPR2016-001
Date:	Monday, September 26, 2016 4:59:04 PM
Attachments:	image003.png

Hello Alyssa

Thank you for sending over the attached information. Both of these parcels have been included within both the Northern Colorado Water Conservancy District and the Municipal Subdistrict, Northern Colorado Water Conservancy District boundaries.

If you have any questions, please let me know.

Have a great weekend.

Marilyn

Marilyn Conley | Inclusions Administrator
220 Water Ave | Berthoud, CO 80513
Direct 970-622-2216
Main 800-369-RAIN (7246) | Fax 877-851-0018
www.northernwater.org | Find us on Facebook

From: Alyssa Knutson [mailto:AKnutson@fortlupton.org]
Sent: Friday, September 23, 2016 1:57 PM
Cc: Todd Hodges; Mari Pena
Subject: Dave's Earthworks, Inc. - Site Plan; Project No. SPR2016-001

Good Afternoon,

The documentation located at the link http://co-fortlupton.civicplus.com/577/Daves-Earthworks-Inc is submitted to you for review and recommendation for a site plan review. Any comments you consider relevant to this request would be appreciated. Please reply by **October 14, 2016** so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department. If you have any questions, you may either contact me or Todd A. Hodges, Planning Director, at thodges@fortlupton.org or 303-857-6694.

The hearings for this matter are scheduled for **Tuesday, November 1, 2016 at 6:00**

P.M. with the Fort Lupton Planning Commission and **Monday, November 7, 2016 at 7:00 P.M.** with the Fort Lupton City Council.

Comments may be sent via mail, faxed to 303.857.0351 or emailed to thodges@fortlupton.org and aknutson@fortlupton.org.

Your time in this matter is greatly appreciated!

Best,
Alyssa Knutson
Planner
130 S. McKinley Ave.
Fort Lupton, CO 80621
Office: 303.857.6694
Direct: 720.466.6128
Mobile: 303.304.4498

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MEMO

To: Todd Hodges
Alyssa Knutson

From: Roy Vestal

Date: September 26, 2016

Subject: Dave's Earthworks, Inc.
(SPR2016-001)
Public Works Review

Public Works has reviewed the submitted documents for the above referenced development project with the following comments:

1. Construction Drawings
    a. Include survey basis of bearing and reference datum.
        i. Is additional 30' ROW being dedicated for CR 27?
    b. Sheet C2 – Waterline should show connection to existing water line. Existing utilities need to be shown. Waterline needs to be located within the ROW. If fire hydrant is to be located on the property, an easement is required. I would prefer to locate the fire hydrant in the ROW.
        i. No design provided for storm drainage pipes. I would prefer to see profiles of storm pipes rather than the water line.
        ii. No design provided for ditch culvert at entrance. If it is existing it should show that way on the plans. This must be coordinated with the ditch company.
    c. Sheet C3 – Future Building pad FF elevation would require lowering the proposed grading and may create a sump condition at time of implementation. Should consider minimum FF of 38.5.
    d. Sheet L1 – CR 27 frontage trees proposed may create sight issues at the drive when the road is widened in the future. Consider removing the closest trees to the drive access
    e. Be advised, review of construction drawings is for general compliance with city standards. Final approval of drawings does not infer the drawings are error free and the design engineer and owner are still responsible for any erroneous or missing details.

2. Drainage Report
    a. Please provide a cover for the report
    b. Please revise report order to have text at front of the report and calculations as appendices.
    c. Please complete the Standard Statement 2 with developer's signature.
    d. Remove the Drainage agreement document, this is not needed.
    e. Complete the Standard Form 3 Indemnification Statement and have the owner sign.

WERNSMAN ENGINEERING, INC.

1011 42nd STREET ◆ EVANS, CO 80620
Phone (970) 353-4463 Fax (970) 353-9257

October 14, 2016

Roy Vestal
City of Fort Lupton
130 S. McKinley Ave.
Fort Lupton, CO 80621

RE: Dave Hunt Project on CR 27

Dear Mr. Vestal

Here are my written replies to the Public Works Comments

1. a. Survey Datum and Basis of Bearings will be provided on the next submittal site plan
    i. There is already 60' of ROW dedicated on the west side of CR 27

    b. A note will be added to water line drawing that states connect to existing valve at assumed location. Also please contact Roy Vestal at 720-966-3613 when the end of the existing water line is exposed.
    i. The storm pipe design is provided in the drainage report. If profiles are required they can be provided
    ii. We are currently working with Deere & Ault Consultants on the Crossing Design. We will provide that as it gets finalized

    c. I will discuss this further with your office at a later time to clarify the comment

    d. Trees can be moved

    e. Noted

2. a. Cover sheet will be provided
    b. Noted
    c. Statement 2 will be provided with Developers signature
    d. Drainage Agreement will be removed
    e. Indemnification statement will be completed and signed.

Thank you for speaking with me on 10/14, I appreciate your time. If I can answer any further questions please feel free to contact me.

Sincerely

Eric Wernsman

From: Marisa Dale
To: Alyssa Knutson
Subject: RE: Dave"s Earthworks, Inc. - Site Plan; Project No. SPR2016-001
Date: Tuesday, September 27, 2016 2:23:13 PM
Attachments: image003.png

Thank you for allowing United Power, Inc. to review and comment on the Dave's Earthworks, Inc. referral.

United Power, Inc. has no objection and looks forward to providing electric service to this site.

Developer must contact Brett Thomas at 303-1213 for any new installation or modification of existing electric service.

Thank you,
Marisa

Marisa Dale, RWA| Engineering & Rates ROW
500 Cooperative Way, Brighton, CO 80603 | O 303.637.1387 | C 720.334.5282

Schedule: M-T-W-F 7:00-4:30, Th 7:00-3:30
Off Friday Oct 7 & 21, Nov 4 & 18, Dec 2, 16 & 30

UNITEDPOWER
Your Touchstone Energy® Cooperative

From: Alyssa Knutson [mailto:AKnutson@fortlupton.org]
Sent: Friday, September 23, 2016 1:57 PM
Cc: Todd Hodges; Mari Pena
Subject: Dave's Earthworks, Inc. - Site Plan; Project No. SPR2016-001

Good Afternoon,

The documentation located at the link http://co-fortlupton.civicplus.com/577/Daves-Earthworks-Inc is submitted to you for review and recommendation for a site plan review. Any comments you consider relevant to this request would be appreciated. Please reply by **October 14, 2016** so that we may give full consideration to your recommendation. Any response not received before or on this date may be deemed to be a favorable response to the Planning & Building Department. If you have any questions, you may either contact me or Todd A. Hodges, Planning Director, at thodges@fortlupton.org or 303-857-6694.

The hearings for this matter are scheduled for **Tuesday, November 1, 2016 at 6:00 P.M.** with the Fort Lupton Planning Commission and **Monday, November 7, 2016 at 7:00 P.M.** with the Fort Lupton City Council.

Comments may be sent via mail, faxed to 303.857.0351 or emailed to

thodges@fortlupton.org and aknutson@fortlupton.org.

Your time in this matter is greatly appreciated!

Best,

Alyssa Knutson
Planner
130 S. McKinley Ave.
Fort Lupton, CO 80621
Office: 303.857.6694
Direct: 720.466.6128
Mobile: 303.304.4498

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Right of Way & Permits
1123 West 3rd Avenue
Denver, Colorado 80223
Telephone: **303.571.3306**
Facsimile: 303. 571.3284
donna.l.george@xcelenergy.com

October 13, 2016

City of Fort Lupton Planning Department
130 South McKinley Avenue
Fort Lupton, CO 80621

Attn: Alyssa Knutson and Todd Hodges

Re: Dave's Earthworks, Case # SPR2016-001

Public Service Company of Colorado's (PSCo) Right of Way & Permits Referral Desk has reviewed the site plans for **Dave's Earthworks** and has **no apparent conflict**.

The property owner/developer/contractor must contact the **Builder's Call Line** at 1-800-628-2121 **or** https://xcelenergy.force.com/FastApp (register, application can then be tracked) and complete the application process for any new gas service or modification to existing facilities. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details. Additional easements may need to be acquired by separate document for new facilities.

As a safety precaution, PSCo would like to remind the developer to call the **Utility Notification Center** at 1-800-922-1987 to have all utilities located prior to any construction.

If you have any questions about this referral response, please contact me at (303) 571-3306.

Donna George
Contract Right of Way Referral Processor
Public Service Company of Colorado

LEGAL NOTIFICATIONS

CERTIFICATE OF MAILING

I, the undersigned, hereby certify that on the 5th day of October 2016, a true and correct copy of the foregoing Notice of Public Hearings and site plan map for Dave's Earthworks, Inc was sent via United States Mail, postage pre-paid, to the following addresses:

27-SQ LLC
1137 Bridge Street
Brighton, CO 80601-2232

Maxum Enterprises LLC
P.O. Box 54446
Lexington, KY 40555-4446

City and Council of Denver
Board of Water Commissioners
1600 W 12th Avenue
Denver, CO 80204-3412

Leon A. & Linda L. Scheel
3429 County Road 27
Fort Lupton, CO 80621-8313

Anadarko Petroleum Corporation
Attn: Manager Land, Western Division & Manager Property & Rights of Way
P.O. Box 9149
The Woodlands, TX 77387-9147

Kerr-McGee Oil & Gas Onshore LP
Attn: Land Manager/Wattenburg
1099 18th Street, #1500
Denver, CO 80202

Noble Energy, Inc
Attn: Wattenberg Land Department
1625 Broadway, Suite 2000
Denver, CO 80202

City Official

CITY OF
Fort Lupton
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CITY OF FORT LUPTON
NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application for a site plan for a proposed storage yard, maintenance shop and commercial office and special use permit for proposed above-ground fuel tanks, referred to as the Dave's Earthworks, Inc.'s Site Plan and Special Use Permit located west and adjacent to CR 27 and approximately one-half mile north of CR 8, Fort Lupton, Colorado in the I-1 Light Industrial Zone District, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

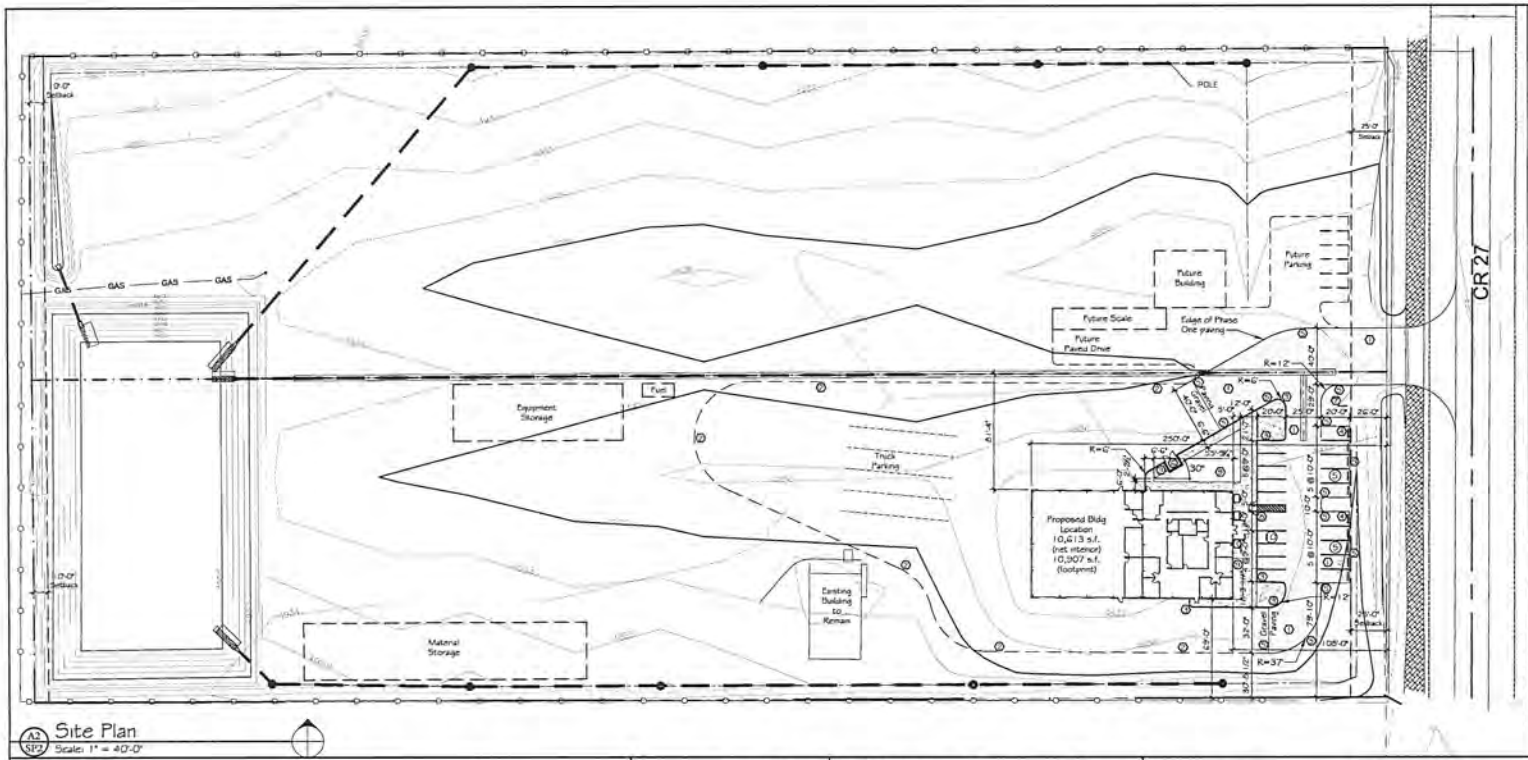
The public hearings are to be held before the Planning Commission on November 1, 2016, at 6:00 P.M., and before the City Council on November 7, 2016, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held in the City Hall, 130 South McKinley Avenue, Fort Lupton, Colorado, or at such other time or place in the event this hearing is adjourned. Further information is available through the City Planning and Building Department at (303) 857-6694, Extension 128.

ALL INTERESTED PERSONS MAY ATTEND.

LEGAL DESCRIPTION

LOTS 2 AND 3 OF THE YARBROUGH ACRES MINOR SUBDIVISION, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO.



A2 SP2 Site Plan
Scale: 1" = 40'-0"

Site Legend

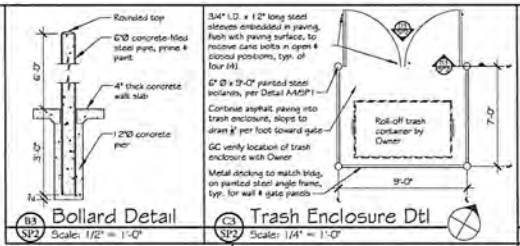
- Property Line
- Setback Line
- Existing Contours
- New Contours
- Existing Water Line
- New Water Service
- Existing Sanitary Sewer Line
- New Sanitary Sewer Service
- New Telephone Service
- New Electrical Service
- Transformer (existing)
- Existing Gas Line
- New Gas Service

General Notes

1. This project consists of work on two separate parcels to include Parcel #1471116401003 and Parcel #1471116401002 also known as 3355 County Rd 27. Parcels will remain separate - no minor subdivision process is intended for this phase of the project.
2. See Civil Drawings for grading, drainage, and horizontal control.
3. See Landscaping Drawings for planting and irrigation information.
4. Building dimensions are to the outside face of foundation.
5. Proposed structure is approximately 28' +/- high from finished floor height to highest roof fascia.
6. The proposed office and shop building will have ten full-time employees.
7. Concrete curb radius shall be 3'-0" to outside face of curb, unless noted otherwise on plan.

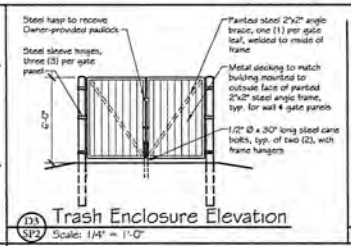
Plan Key Notes

1. Asphalt paving per Geotechnical Report.
2. Approximate edge of gravel paving, verify with Owner.
3. 6" Concrete curb per Civil.
4. 6' Wide concrete wheel stops in locations shown.
5. Edge of asphalt paving.
6. Trash enclosure per Details, this Sheet.
7. Monument sign per Details, this Sheet.
8. Accessible curb ramp per Detail E3/SP2.
9. Planter bed per Landscape Plans.
10. Bicycle Rack.
11. Accessible parking signage per Detail C4/SP2.

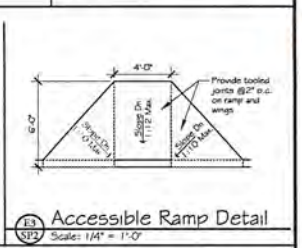


B3 SP2 Bollard Detail
Scale: 1/2" = 1'-0"

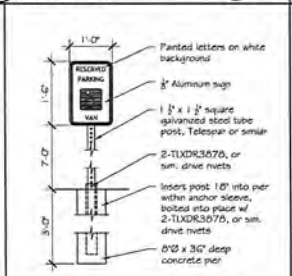
C3 SP2 Trash Enclosure Dtl
Scale: 1/4" = 1'-0"



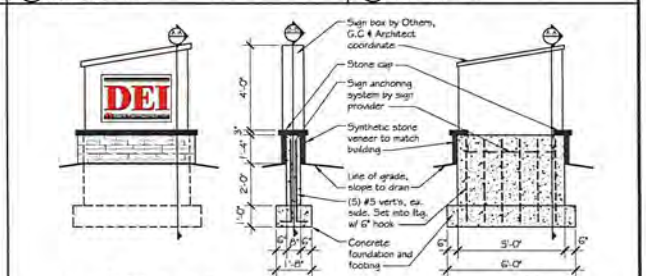
D3 SP2 Trash Enclosure Elevation
Scale: 1/4" = 1'-0"



E3 SP2 Accessible Ramp Detail
Scale: 1/4" = 1'-0"



C4 SP2 Accessible Parking Sign
Scale: 3/4" = 1'-0"



D4 SP2 Monument Sign Details
Scale: 3/8" = 1'-0"

To view a larger copy of this map,
you may visit City Hall or go to
http://co-fortlupton.civicplus.com/577/Daves-Earthworks-Inc

12/1/23

Dave's Earthworks Inc. Shop & Office
Site Plan Review
3355 County Rd 27
Fort Lupton, Colorado 80621

Halcyon Design LLC
PO Box 30
Frederick, CO 80530
303.906.2617

DATE
8.31.16

REVISIONS

SHEET TITLE
Site Plan Map

SHEET NUMBER
SP2

Project No: 1607

CITY OF
Fort Lupton
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Planning & Building

130 S. McKinley Avenue
Fort Lupton, CO 80621
Phone: 303.857.6694
Fax: 303.857.0351
www.fortlupton.org

Sign Posting Affidavit

Dave's Earthworks, Inc. – Site Plan
Project No. SPR2016-001

County Road 27

I, Dave Hunt hereby acknowledge that the aforementioned property was posted in accordance with City Codes. Said public hearing notice was posted on this 13 day of Oct, 2016.

Signature of Owner or Owner's Representative

The foregoing instrument was acknowledged before me by Dave Hunt, this 19 day of October, 2016. Witness my hand and seal.

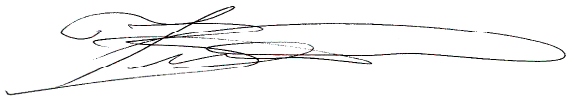
My commission expires 1-31-18.

Notary Public

Amber Phillips
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20144004824
MY COMMISSION EXPIRES JANUARY 31, 2018

PROOF OF PUBLICATION
FORT LUPTON PRESS
COUNTY OF WELD SS.
STATE OF COLORADO

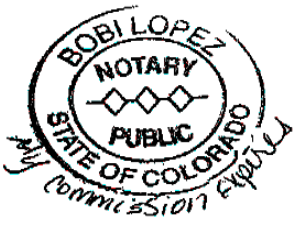
I, Tim Zeman, do solemnly swear that I am the Publisher of the **Fort Lupton Press** is a weekly newspaper printed and published in the County of Weld State of Colorado, and has a general circulation therein; that said newspaper has been published continuously and uninterruptedly in said county of Weld for a period of more than fifty-two consecutive weeks prior to the first publication of the annexed legal notice or advertisement; that said newspaper has been admitted to the United States mails as second-class matter under the provisions of the act of March 3, 1879, or any amendments thereof, and that said newspaper is a weekly newspaper duly qualified for publishing legal notices and advertisements within the meaning of the laws of the State of Colorado. That the annexed legal notice or advertisement was published in the regular and entire issue of every number of said weekly newspaper for the **period of ONE consecutive insertion(s)** and that the first publication of said notice was in the issue of newspaper, dated **12th day of October 2016** the last on the **12th day of October 2016**



Managing Editor, Subscribed and sworn before me, this **12th day of October, 2016**

Bobi Lopez

Notary Public.
Notary ID No. 20024002511



My Commission Expires February 2, 2018

CITY OF FORT LUPTON
NOTICE OF PUBLIC HEARING

Notice is hereby given that the City of Fort Lupton is in receipt of an application for a site plan for a proposed storage yard, maintenance shop and commercial office and special use permit for proposed above-ground fuel tanks, referred to as the Dave's Earthworks, Inc.'s Site Plan and Special Use Permit located west and adjacent to CR 27 and approximately one-half mile north of CR 8, Fort Lupton, Colorado in the I-1 Light Industrial Zone District, pursuant to the City of Fort Lupton Municipal Code Notice Requirements.

The public hearings are to be held before the Planning Commission on November 1, 2016, at 6:00 P.M., and before the City Council on November 7, 2016, at 7:00 P.M. or as soon as possible thereafter.

The public hearings shall be held in the City Hall, 130 South McKinley Avenue, Fort Lupton, Colorado, or at such other time or place in the event this hearing is adjourned. Further information is available through the City Planning and Building Department at (303) 857-6694, Extension 128.

ALL INTERESTED PERSONS MAY ATTEND.

LEGAL DESCRIPTION

LOTS 2 AND 3 OF THE YARBROUGH ACRES MINOR SUBDIVISION, CITY OF FORT LUPTON, COUNTY OF WELD, STATE OF COLORADO.

Published in the Fort Lupton Press
October 12, 2016

ANNUAL NOTICE OF ASBESTOS INSPECTION AND MANAGEMENT PLANS

NOTICE is hereby given that St. Vrain Valley School District RE-1J, in accordance with the United States Environmental Protection Agency's Asbestos Hazard Emergency Response Act, has completed federally mandated asbestos inspections of its facilities and that Asbestos Management Plans are available for public review (including the public, parents of students, teachers, other school personnel, and parent organizations) at each school facility and at the Educational Support Center, 395 South Pratt Parkway, Longmont, CO 80501 without cost or restriction for inspection during normal business hours. Copies can be made of such Plans at the normal copying charges established by the District. This letter shall also serve as notification of any asbestos related efforts, which may be performed by the District at anytime such as periodic surveillance, 3-Year Re-Inspections, Operations, and Abatement.

Contact information for any questions or concerns is as follows:

St. Vrain Valley School District RE-1J
Environmental Compliance Manager
Carey Jensen
Phone: (303)-702-7527
email: jensen_carey@svvsd.org

Published in the Fort Lupton Press October 12, 2016

CITY OF
Fort Lupton
EST 1836
COME PAINT YOUR FUTURE WITH US

To: City Council
From: Alyssa Knutson, Planner
CC: Todd Hodges, Planning Director
Date: November 7, 2016
Subject: Third Continuance for FL Mountain HZ Wells Public Hearing

The applicant, Kerr-McGee Oil and Gas Onshore LP, has requested a third continuance of the public hearing for the FL Mountain HZ Wells oil and gas permit application scheduled for City Council on November 7, 2016 at 7:00 PM. The applicant has requested that the hearing be continued. Staff requests that the continuance be indefinite and that notification requirements be recompleted once a new date is set.

Attached to this memo is an e-mail from Kerr-McGee's authorized representative reflecting its desire to reschedule the public hearing.

If you have any questions, please do not hesitate to contact me at 720.466.6128 or aknutson@fortlupton.org.

Attachment

Alyssa Knutson

From: Colling, Tracy <Tracy.Colling@anadarko.com>
Sent: Wednesday, November 02, 2016 10:57 AM
To: Todd Hodges
Cc: Aldridge, Susan; Mendoza-Cooke, Kimberly; Alyssa Knutson
Subject: RE: Proposed Anadarko condition 10 11 16

Hi Todd,

I left you a voice message as well regarding your email.
We would like to postpone this application until we can come to an agreement on the proposed language for the FL Mountain permit.

Please give me a call when you have a few minutes.

Thank you,
Tracy Colling
720-929-6160

From: Todd Hodges [mailto:thodges@fortlupton.org]
Sent: Wednesday, November 02, 2016 8:39 AM
To: Colling, Tracy
Cc: Aldridge, Susan; Mendoza-Cooke, Kimberly; Alyssa Knutson
Subject: RE: Proposed Anadarko condition 10 11 16

Tracy, and group
We must have our packets in today for Council on Monday. We are moving forward with the language as proposed.

Todd A. Hodges
Planning Director
City of Fort Lupton
303-994-3174

From: Colling, Tracy [mailto:Tracy.Colling@anadarko.com]
Sent: Tuesday, October 25, 2016 10:51 AM
To: Todd Hodges <thodges@fortlupton.org>
Cc: Aldridge, Susan <Susan.Aldridge@anadarko.com>
Subject: RE: Proposed Anadarko condition 10 11 16

Hi Todd,

I apologize for such a tardy response.
We are reviewing this language and hope to get you some feedback soon.

Thank you,

Tracy Colling| Municipal Planning Analyst

Anadarko Petroleum Corporation
Office: 720-929-6160

From: Todd Hodges [mailto:thodges@fortlupton.org]
Sent: Tuesday, October 11, 2016 7:57 AM
To: Aldridge, Susan; Colling, Tracy; Mendoza-Cooke, Kimberly
Cc: Alyssa Knutson; Andy Ausmus; Roy Vestal; Claud Hanes
Subject: Proposed Anadarko condition 10 11 16

Please find attached the draft proposed condition language for the Mountain Sky wells.
I will be out of the office this Thursday thru next Wednesday, returning the 20th.
Please review and call or email.
Have a great day.

Todd Hodges
Planning Director
130 S. McKinley, Fort Lupton, CO 80621
Office: 303.857.6694 x106
Direct: 720.466.6106
Mobile: 303.994.3174

CITY OF
Fort Lupton
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CITY OF FORT LUPTON
CITY COUNCIL

CITY OF Fort Lupton EST 1836
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AM 2016-155

APPROVE INCREASE IN EMPLOYEE LIFE INSURANCE BENEFIT FOR A TOTAL OF $17,953.97 PER YEAR

I. **Agenda Date:** Council Meeting – November 7, 2016

II. **Attachments:** a. Proposal Summary – Increase of Life and AD&D Max Benefit

III. **Summary Statement:**

This proposal is to increase the employee life insurance benefit amount for all employees to $100,000.

IV. **Submitted by:** Laura Howe
Laura Howe, HR Director

V. **Finance Reviewed** Leann Perino
Finance Director

VI. **Approved for Presentation:**
City Administrator

VII. **Attorney Reviewed** Approved Pending Approval

VIII. **Certification of Council Approval:**
City Clerk Date

IX. Detail of Issue/Request:

The life insurance benefit for full-time employees is currently equivalent to one times a person's annual salary, up to $100,000. Many people do not have adequate life insurance to protect their families or even cover funeral costs. Group life insurance is more affordable than life insurance employees can purchase on their own. Generous benefits help to make the City of Fort Lupton an employer of choice.

Life insurance need is typically based on income, as a person's expenses are related to their income. Providing $100,000 is a more egalitarian approach provides a richer benefit for more employees.

The current carrier, Mutual of Omaha, has provided the most competitive price.

X. Legal/Political Considerations:

None.

XI. Alternatives/Options:

1. *Keep the life insurance benefit at one times annual salary up to $100,000.*

2. *Increase the life insurance benefit to $100,000 for all full-time employees, regardless of income level.*

XII. Financial Considerations:

The total cost would be almost doubling the life insurance annual premiums from $8,799.77 to $17,953.97.

These costs changes are based on current enrolment and will change as head counts or participation increases or decreases.

XIII. Staff Recommendation:

Staff recommends increasing the life insurance benefit through the current carrier, Mutual of Omaha.

VolkBell

City of Fort Lupton

Proposal Summary - Increase of Life & AD&D Max Benefit

January 1, 2017 Renewal

Optional Quotes - increase Max benefit

Carrier	Benefit	Proposed Rate	Volume	Monthly	Annually
Mutual of Omaha	1X to $100K	0.190	$3,859,550	$733.31	$8,799.77
Mutual of Omaha	2X to $250K	0.190	$7,874,550	$1,496.16	$17,953.97
Mutual of Omaha	3X to $350K	0.190	$11,779,100	$2,238.03	$26,856.35
Mutual of Omaha	Flat $100K	0.190	$7,625,000	$1,448.75	$17,385.00
Mutual of Omaha	Flat $250K	0.190	$19,062,500	$3,621.88	$43,462.50
Lincoln	2X to $300K	0.195	$7,853,750	$1,531.48	$18,377.78
Lincoln	3X to $400K	0.187	$11,765,150	$2,200.08	$26,401.00
Lincoln	Flat $100K	0.163	$7,625,000	$1,242.88	$14,914.50
Lincoln	Flat $250K	0.173	$19,062,500	$3,297.81	$39,573.75
Guardian	2X to $300K	0.267	$7,853,750	$2,096.95	$25,163.42
Guardian	Flat $250K/$100K for police	0.186	$17,217,500	$3,202.46	$38,429.46
Sun Life	1X to $100K	0.266	$3,890,700	$1,034.93	$12,419.11
Sun Life	2X to $300K	0.234	$7,806,050	$1,826.62	$21,919.39

NOTES: Mutual of Omaha looks best to me; there is not enough savings anywhere else to justify a move. Sun Life's 2X to $300,000 looks less expensive, but the volume is almost the same as MOO's 2X to $250K, a function of the "2X salary." MOO is still the least expensive for the benefit given.

CITY OF FORT LUPTON
CITY COUNCIL

CITY OF Fort Lupton EST 1836

COME PAINT YOUR FUTURE WITH US

AM 2016-157

APPROVING RESOLUTION 2016-XXX TO OPT OUT UNCOMPENSATED ELECTED AND/OR APPOINTED OFFICIALS FROM THE WORKERS' COMPENSATION POLICY AND ADD THEM AND OTHER CITY VOLUNTEERS TO THE VOLUNTEER ACCIDENT MEDICAL PLAN (VAMP) FOR THE 2017 POLICY YEAR FOR THE AMOUNT OF $959.05

I. **Agenda Date:** Council Meeting – November 7, 2017

II. **Attachments:**
a. Resolution No. 2016-XXX
b. Letter from CIRSA dated October 14, 2016

III. **Summary Statement:**

This request is to opt out and exclude all uncompensated elected and/or appointed public officials of the City of Fort Lupton from the workers' compensation policy and add them to the Volunteer Accident Medical Plan (VAMP). This policy change does not affect Council Members. Also, this request is for VAMP coverage for all City volunteers.

IV. **Submitted by:** Laura Howe
Laura Howe, HR Director

V. **Finance Reviewed** Leann Perino
Finance Director

VI. **Approved for Presentation:**
City Administrator

VII. **Attorney Reviewed** Approved Pending Approval

VIII. **Certification of Council Approval:**
City Clerk Date

IX. Detail of Issue/Request:

The City of Fort Lupton's uncompensated officials and volunteers have not been included on the Workers' Compensation (WC) insurance policy for most years since 2001. The City's uncompensated officials are not required to be covered by Workers' Compensation (WC) insurance, if the required application is made with the state.

Generally, those individuals covered by WC are compensated/"paid" employees, paid officials, etc. CIRSA offers the Volunteer Accident Medical Plan (VAMP) policy as an optional coverage for volunteers who are not compensated for their time, while serving on a City board or committee. This coverage also covers other volunteers with the City.

Under the VAMP policy, the City of Fort Lupton would be subjected to a $25 deductible, per occurrence, with policy limitations of Medical Expense Benefits of $15,000, a maximum Accidental Dismemberment & Death (AD&D) payout of $10,000, a $250 Dental Maximum and a $250,000 maximum on Aggregated Limit of Indemnity per Accident with a $25,000 Catastrophic Cash (lump sum) maximum benefit.

Under the State of Colorado Workers' Compensation Statutes, if an Unpaid Board member incurred an injury, the City would be subjected to its $500 per claim deductible, as well as the State's regulations for payment of any and all virtually "unlimited" payouts related to the claim for expenses accrued.

Any possible payouts, per claim, are limited under the VAMP policy verses having higher limitations under the WC policy. Also, under the WC policy, the City runs the risk of having premium increases for WC coverage, as those premiums are based on basic coverage plus the "risk" of the entity as a whole. If there were a WC claim which reached a high level of experience, it will affect the City's "risk" rating and will be reflected in the overall premium to be paid for WC coverage. By having the VAMP policy available for uncompensated officials, the City will minimize its WC risk possibility.

VAMP also provides some cover to the City should one of its volunteers be injured while volunteering for the City, though it does not prohibit a volunteer from pursuing action against the City.

X. Legal/Political Considerations:

Not Applicable.

XI. Alternatives/Options:

There is only one alternative, per State and Federal Law, which is to include the City of Fort Lupton's uncompensated elected and/or appointed officials in the City's Workers' Compensation Insurance Policy. There is no alternative coverage for volunteers.

XII. Financial Considerations:

Based upon 2016 records of uncompensated public officials and volunteers, the City of Fort Lupton expects to have a total 135 volunteers, 64 uncompensated officials and 58 mounted

rangers covered by the Volunteer Accident Medical Plan (VAMP) for a cost of $959.05 for 2017. The 2017 rate from CIRSA is unchanged at $2.75 per volunteer and $7.10 per Colorado Mounted Ranger. Workers Compensation and the Volunteer Accident Medical Plan premiums are included in the 2017 budget in the General fund for all volunteers and uncompensated officials.

XIII. Staff Recommendation:

Approve the AM and Resolution, to opt out uncompensated elected and/or appointed officials from the Workers' Compensation Policy and place them on the Volunteer Accident Medical Plan (VAMP) for the 2017 Policy year. This action will also cover other City volunteers.

RESOLUTION NO. 2016RXXX

A RESOLUTION PROVIDING THAT CERTAIN ELECTED AND/OR APPOINTED OFFICIALS OF THE CITY OF FORT LUPTON SHALL BE DEEMED NOT TO BE "EMPLOYEES" WITHIN THE MEANING OF THE WORKERS' COMPENSATION LAWS.

WHEREAS, C.R.S. Section 8-40-202(1)(a)(I)(B) permits the City of Fort Lupton to opt not to include certain officials under the City of Fort Lupton's workers' compensation coverage; and

WHEREAS, such officials must not receive any compensation for service rendered as such, other than reimbursement of actual expenses; and

WHEREAS, said option may be exercised for any policy year by the City Council by the filing of a statement with the Division of Workers' compensation of the Colorado Department of Labor and Employment not less than 45 days before the start of the policy year for which the option is to be exercised;

NOW, THEREFORE, BE IT RESOLVED *by the City Council of the City of Fort Lupton:*

Section 1. *Effective with the policy year starting on January 1, 2017, the following categories of elected and/or appointed officials who receive no compensation for service rendered as such, other than reimbursement of actual expenses, shall be excluded from the definition of an "employee" for purposes of workers' compensation coverage, and shall not be covered under the City of Fort Lupton's workers' compensation coverage:*

a. *Art in Public Places*
b. *Board of Adjustment*
c. *Cemetery Committee*
d. *Culture Parks Recreation and Museum Committee*
e. *Finance/Utility Committee*
f. *Golf Committee*
g. *Historic Preservation Board*
h. *Library Board*
i. *Planning Commission*
j. *Public Safety Committee*
k. *Senior Citizen Committee*
l. *Special Projects Committee*

Section 2. *The City of Fort Lupton's City Clerk shall transmit a copy of the resolution to each official who is a member of the bodies identified in Section 1 above.*

Section 3. *The City of Fort Lupton shall transmit a copy of this resolution to the Colorado Intergovernmental Risk Sharing Agency (CIRSA) and to the Division of Workers' Compensation of the Colorado Department of Labor and Employment.*

APPROVED AND ADOPTED BY THE FORT LUPTON CITY COUNCIL THIS 7th DAY OF NOVEMBER 2016.

City of Fort Lupton, Colorado

_____
Tommy Holton, Mayor

Attest:

_____
Nanette S. Fornof, MMC
City Clerk

Approved as to form:

_____
Andy Ausmus, City Attorney

CIRSA

PROVIDING RISK MANAGEMENT SOLUTIONS

October 14, 2016

Leann Perino, Finance Director
City of Fort Lupton
130 South McKinley
Fort Lupton, CO 80621

SUBJECT: Volunteer Accident Medical Plan 2017 Program Plan Information and Notice of Acceptance/Rejection Agreement

Dear Leann:

Per your request, enclosed are the applicable documents pertaining to the 2017 Volunteer Accident Medical Plan (VAMP). Coverage is placed through a master program specially designed and negotiated for CIRSA with Axis Insurance Company.

The 2017 VAMP rates are $2.75 per volunteer (including uncompensated elected/appointed officials, when not covered by workers' compensation) and $7.10 per volunteer unsworn rangers and/or patrol (i.e. Colorado Mounted Rangers). Your final 2017 premium is subject to audit. The rates are effective from January 1, 2017, through December 31, 2017.

The Plan Information provides a general summary of the coverages. All coverages are governed by the terms, conditions, exclusions, and limitations stated in the applicable coverage documents. **The enclosed Plan Information summary should not be relied on as a substitute for review of those documents.** If the enclosed information is not adequate for you to make a decision about participating in the coverage for 2017, please do not hesitate to contact your underwriting representative.

YOUR RECORD KEEPING OBLIGATIONS:

Your entity must keep a record of the individuals to be covered by the VAMP policy. **VAMP coverage will apply only to those individuals for whom the records are kept and only for the location, task or duties as described in those records.**

Your entity is required to keep records showing the individual's name, their position or activity, approximate number of hours worked, dates of service, description of duties and their volunteer statue (i.e. volunteer or volunteer unsworn rangers and/or patrol). We cannot guarantee coverage if this information is not maintained.

Attached are sample registration and roster forms. Upon your acceptance of this coverage for 2017, we will forward these forms, with instructions, to you electronically. The forms will be needed when completing the 2017 audit in January, 2018.

THE AGREEMENT:

Attached is an Application/Acceptance/Rejection Agreement for your entity's participation in the 2017 VAMP Program. You may purchase this coverage at any time during the year. **However, CIRSA must receive your acceptance letter at least two (2) working days prior to the effective date of coverage.** Your 2017 invoice will be based on the deposit information you provide.

This coverage is optional. Your entity is not required to purchase this coverage.

For coverage effective January 1, 2017, please return the Application/Acceptance/Rejection Agreement no later than Tuesday, November 22, 2016.

Sincerely,

Catherine Wegman

Catherine Wegman
Associate Underwriter

Enclosures

CITY OF

Fort Lupton

EST 1836

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Upcoming Events

November 11, 2016	City Offices Closed in Observation of Veteran's Day
November 9, 2016	Town Hall Meeting – 130 South McKinley Avenue – 6:30 p.m.
November 23, 2016	Town Hall Meeting – 130 South McKinley Avenue – 6:30 p.m.
November 24-25, 2016	City Offices Closed in Observation of Thanksgiving