

Discovery Report

Lower North Canadian Watershed, HUC 8 — 11100302

*Cleveland, Hughes, Lincoln, McIntosh, Okfuskee, Oklahoma, Okmulgee,
Pottawatomie, and Seminole Counties, Oklahoma*

December 30, 2011



FEMA

Project Area Community List

Community Name	CID
<i>Cleveland County Communities</i>	
Cleveland County Unincorporated Areas	400475
Absentee Shawnee Tribe of Oklahoma	400580
	400603
City of Moore	400044
City of Oklahoma City	405378
<i>Hughes County Communities</i>	
Hughes County Unincorporated Areas	400467
Alabama-Quassarte Tribal Town	400604
Town of Dustin	400371
City of Holdenville	400244
Town of Horntown	Not Available
Kialegee Tribal Town	400610
Town of Lamar	Not Available
Muscogee (Creek) Nation	405384
City of Wetumka	400453
Town of Yeager	Not Available
<i>Lincoln County Communities</i>	
Lincoln County Unincorporated Areas	400457
Kickapoo Tribe of Oklahoma	400563
City of Meeker	400404
City of Prague	400435
Sac & Fox Nation	400576
<i>McIntosh County Communities</i>	
McIntosh County Unincorporated Areas	400166
Cherokee Nation	400605
City of Eufaula	400376
Muscogee (Creek) Nation	405384
Town of Stidham	Not Available
<i>Okfuskee County Communities</i>	
Okfuskee County Unincorporated Areas	400137
Alabama-Quassarte Tribal Town	400604
City of Bearden	Not Available
Town of Boley	400138
Town of Castle	400278
Town of Clearview	Not Available
Muscogee (Creek) Nation	405384
City of Okemah	400429

Community Name	CID
City of Paden	400505
Thlopthlocco Tribal Town	405385
Town of Weleetka	400139
<i>Oklahoma County Communities</i>	
Oklahoma County Unincorporated Areas	400466
Absentee Shawnee Tribe of Oklahoma	400580
	400603
City of Bethany	400254
City of Choctaw	400357
City of Del City	400233
City of Forest Park	400379
City of Harrah	400140
Town of Jones City	400141
Kickapoo Tribe of Oklahoma	400563
City of Midwest City	400405
Town of Nicoma Park	400424
City of Oklahoma City	405378
Town of Smith Village	400549
City of Spencer	400412
Town of Valley Brook	400445
<i>Okmulgee County Communities</i>	
Okmulgee County Unincorporated Areas	400492
City of Henryetta	400144
Muscogee (Creek) Nation	405384
<i>Pottawatomie County Communities</i>	
Pottawatomie County Unincorporated Areas	400496
Absentee Shawnee Tribe of Oklahoma	400580
	400603
Town of Bethel Acres	400346
Citizen Potawatomi Nation	400553
Town of Earlsboro	400524
Town of Johnson	400242
Kickapoo Tribe of Oklahoma	400563
Town of McLoud	400398
City of Oklahoma City	405378
Town of Pink	400523
Sac & Fox Nation	400576
City of Shawnee	400178
City of Tecumseh	400179
<i>Seminole County Communities</i>	
Seminole County Unincorporated Areas	400497
Town of Bowlegs	400468

Community Name	CID
Town of Cromwell	400282
Town of Lima	400301
Muscogee (Creek) Nation	405384
Seminole Nation of Oklahoma	405456
City of Seminole	400192
City of Wewoka	400193

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I. Acronyms and Abbreviations

BFE	Base Flood Elevation
CAV	Community Assistance Visit
CEO	Chief Executive Officer
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFS	Cubic Feet per Second
CID	Community Identification number
CLOMR	Conditional Letter of Map Revision
CNMS	Coordinated Needs Management Strategy
CRS	Community Rating System
DEM	Digital Elevation Model
eLOMA	Electronic Letter of Map Amendment
EPA	Environmental Protection Agency
ESRI	Environmental Systems Research Institute
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FPA	Floodplain Administrator
FY	Fiscal Year
G&S	Guidelines and Standards for Flood Hazard Mapping Partners
GIS	Geographic Information System
HEC-1	Hydrologic Engineering Center – Hydrologic model program
HEC-2	Hydrologic Engineering Center – Hydraulic model program
HMP	Hazard Mitigation Plan
HUC	Hydrologic Unit Code
IDIQ	Indefinite Delivery Indefinite Quantity
LiDAR	Light Detection and Ranging System
LNC	Lower North Canadian
LOMA	Letter of Map Amendment

LOMA-F	Letter of Map Amendment based on Fill
LOMC	Letter of Map Change
LOMR	Letter of Map Revision
MIP	Mapping Information Platform
MLI	Midterm Levee Inventory
MXD	ArcMap map document extension
NAVD	North American Vertical Datum
NCDC	National Climatic Data Center
NFIP	National Flood Insurance Program
NHD	National Hydrologic Dataset
NRCS	Natural Resources Conservation Service
NVUE	New Validated or Updated Engineering
OKC	Oklahoma City
OWRB	Oklahoma Water Resources Board
PDF	Portable Document Format file
PMR	Physical Map Revision
RAMPP	Risk Mapping, Assessment, and Planning Partners
RCRA	Resource Conservation and Recovery Act
RSC	Regional Service Center
Risk MAP	Risk Mapping, Assessment, and Planning Program
RL	Repetitive Loss
SFHA	Special Flood Hazard Area
SHMO	State Hazard Mitigation Officer
SHP	ESRI Shapefile
SQ MI	Square Mile
SRL	Severe Repetitive Loss
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

I. Discovery Overview

The Federal Emergency Management Agency (FEMA) is currently implementing the Risk Mapping, Assessment, and Planning (Risk MAP) Program across the Nation. The purpose of Risk MAP is the continued improvement of flood hazard information for the National Flood Insurance Program (NFIP); the promotion of increased national awareness and understanding of flood risk; and the support of Federal, State, and local mitigation actions necessary to reduce risk.

The vision and intent of the Risk MAP Program, through collaboration with State and local entities, is to deliver quality data that increases public awareness and leads to mitigation actions that reduce risk to life and property. To achieve this vision, FEMA has transformed its traditional flood identification and mapping efforts into an integrated process of more accurately identifying, assessing, communicating, planning, and mitigating flood risks. Risk MAP will address gaps in flood hazard data to form a solid foundation for risk assessment and floodplain management, and will provide State and local entities with information needed to mitigate flood related risks.

The FEMA Region 6 office, in partnership with the State of Oklahoma, began the Discovery process in the Lower North Canadian (LNC) Watershed in February 2011. The goal of the Discovery process is to gather local information and readily available data to determine project viability, and the need for Risk MAP products to assist in the movement of communities towards resilience. FEMA, their contractor, RAMPP (Risk Analysis, Mapping, and Planning Partners), and the State of Oklahoma partnered throughout the Discovery process to facilitate communications, meetings, risk identification, and final reporting and documentation.

Through the Discovery process, FEMA can determine which areas of the 8-digit Hydrologic Unit (HUC8) Discovery watersheds to examine for further flood risk identification and assessment in a collaborative manner, taking into consideration the information collected from local communities. Discovery opens lines of communication and relies on local involvement for productive discussions about flood risk. The process provides a forum for a watershed-wide discussion of how each included community's individual flood risks are related to the flood risks present throughout the watershed. In Risk MAP, projects are analyzed on a watershed basis, so Discovery Meetings target numerous stakeholders from throughout the watershed on local, regional, State, and Federal levels.

In August and September 2011, FEMA and the State held a series of six Discovery Meetings in the LNC watershed area. During these meetings, FEMA and the State reached out to local communities to:

- Gather information about local flood risk and flood hazards;
- Review current and historic mitigation plans to understand local mitigation capabilities, hazard risk assessments, and current or future mitigation activities; and
- Include multi-disciplinary staff from within their community to participate and assist in the development of a watershed vision.

The results of the Discovery process are presented in a Discovery Report, a watershed-scale Discovery Map, and the digital data that was gathered or developed during this process under FEMA IDIQ Contract HSFEHQ-09-D-0369, Task Order HSFE06-10-J-0002. The digital data submitted (on DVD) with this report contain correspondence, exhibits used at the Discovery Meetings, Geographic Information System (GIS) data, mapping documents (PDF, shapefiles, personal geodatabases, and ESRI ArcGIS 9.3.1 MXDs), and other supplemental digital information. Any graphics shown in this report are available as larger format graphics files for printing; and as GIS data that may be printed and used at any map scale.

i. Watershed Selection

The LNC Watershed is located in Central Oklahoma and covers portions of Cleveland, Hughes, Lincoln, McIntosh, Okfuskee, Oklahoma, Okmulgee, Pottawatomie, and Seminole Counties as seen in Figure 1. The watershed is approximately 1,869.8 square miles in size. The population within this watershed is approximately 412,000 people. The City of Oklahoma City, one of the watershed’s highest population centers (population: 506,132), is located next to the Lower North Canadian River. Portions of Oklahoma City’s corporate limits extend outside of the LNC Watershed and intersect Canadian, Cleveland, Oklahoma, and Pottawatomie Counties. Only the portion of Oklahoma City that lies within the watershed is accounted for in the approximate watershed population. There are 44 populated areas with community identification numbers (CIDs) with some portion of their corporate boundaries within the LNC Watershed.

In addition to areas that are currently populated, the watershed includes parks, forests, and military reservations. Among these are Tinker Air Force Base, Lake Eufaula State Park, county and city parks and preserves, Lake Eufaula, Shawnee Reservoir, Sportsman Lake, Wewoka Lake, local reservoirs, detention basins, and local wetlands. Other areas that may be excluded from consideration if they have significant acreage are large cemeteries, U.S. Environmental Protection Agency remediation sites (CERCLA/RCRA), prison areas, and water quality or flowage easement areas. This watershed has multiple Native American lands or reservation restrictions which are subject to change. In general, these areas contribute to the overall square mileage of the watershed, but have no current plans for population growth and development.

Table 1 - Land Use Within the Watershed

Land Use	Approximate Square Miles Within the Watershed
Incorporated Communities	417.8
Unincorporated Counties	1,452.0
Undevelopable Areas within watershed (sum of the below)	78.3

Table 1 - Land Use Within the Watershed (continued)

Land Use	Approximate Square Miles Within the Watershed
Lakes / Reservoirs / Detention ponds	62.2
Parks / Preserves	3.7
Military Areas	6.4
Miscellaneous Non-Developable Areas	6.0

Of the total 1,869.8 square miles within the LNC Watershed, it is estimated that 1,791.5 square miles are available to be developed or have development and population currently in place.

The primary river in the watershed is the Lower North Canadian River. The Lower North Canadian River flows into the Canadian River, which is a major river in the south-central region of the United States. The Canadian River drains parts of New Mexico, Texas, and most of Oklahoma. Other significant streams in this watershed include Cherry Creek, Choctaw Creek, Crooked Oak Creek, Crutch Creek, Lightning Creek, Little Wewoka Creek, Rock Creek, Turkey Creek, and Wewoka Creek. In addition, Lake Eufaula, Shawnee Reservoir, Sportsman Lake, and Wewoka Lake are significant water resources within the watershed. The U.S. Geological Survey (USGS) provides a National Hydrologic Dataset (NHD) that can be used to identify stream miles that reflect drainage areas of 1 square mile from available topographic data. The NHD stream mileage may be used to gain a sense of the total potential stream miles for a watershed. Using the NHD, there are approximately 1,483 miles of streams in the LNC Watershed.

The Coordinated Needs Management Strategy (CNMS) Inventory provides a snapshot look at the status and attributes of currently studied streams existing within FEMA's floodplain study inventory. In general, the stream mileage shown in CNMS reflects streams with drainage areas greater than one square mile and that currently have effective Special Flood Hazard Areas (SFHA) designated. However, some streams with drainage areas less than one square mile have effective SFHA's designated. Therefore, the total mileage for CNMS streams and stream miles not accounted for in CNMS is greater than the NHD total because the CNMS streams include these mapped streams which drain less than one square mile. CNMS does not reflect the total potential of stream miles to be studied within a watershed. Table 2 compares the NHD data to the CNMS data for the LNC Watershed.

Figure 1 - Watershed Locator Map

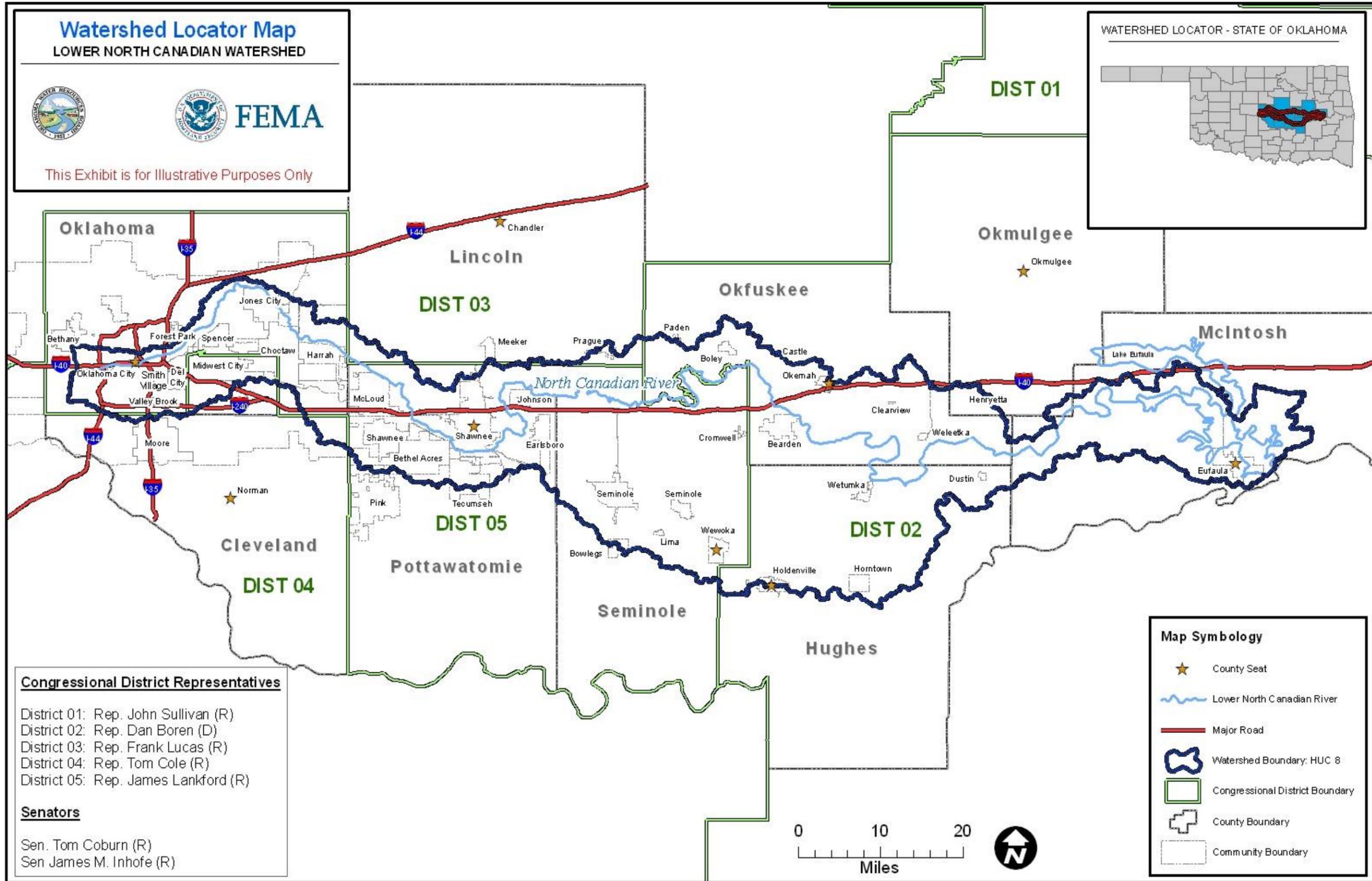


Table 2- Stream Miles Within the Watershed

Source	Stream Miles
NHD Streams (streams with a drainage area of greater than 1 square mile)	1,483
CNMS Streams (streams with effective SFHAs)	1,245
Stream Miles not accounted for in CNMS	593

Note: Total mileage for “CNMS Streams” and “Stream Miles not accounted for in CNMS” is greater than the total of “NHD Streams” because the “CNMS Streams” include mapped streams which drain areas less than one square mile

In addition to listing the miles of studied streams within a watershed, CNMS documents certain physiological, climatological, or engineering methodological factors that may have changed since the date of the effective study. The stream miles shown in CNMS are attributed with an evaluation of a Validation Status and Status Type that allows for an examination of the condition of a given study or group of studies. Studies that are considered Valid in CNMS are the only ones that contribute to the New, Validated or Updated Engineering (NVUE) metric. Figure 2 is a map showing areas of relatively higher urban change within the watershed and can be used to help determine if streams are considered Valid.

The NVUE metric is used as an indicator of the status of studies for FEMA's mapped SFHA inventory. Studies categorized as “Unverified” typically indicate that some factor of change has occurred since the SFHA became effective or that the study may have a deficiency that requires a restudy. CNMS stream mileage categorized as “Requires Assessment” require further input to determine their validity. This is often because they represent paper inventory or non-modernized studies. CNMS aids in identifying areas to be considered for study during the Discovery process by highlighting needs on a map, quantifying them (mileage), and providing further categorization of these needs in order to differentiate between identifying factors.

Using these criteria from CNMS, approximately 11 miles of Zone AE SFHAs were identified as unverified within the LNC Watershed. The unverified grouping includes Tributary A to Wewoka Creek, Squirrel Creek, and Tributary No. 2 to Squirrel Creek. A total of 851 miles of Zone A SFHAs were flagged as requiring further assessment. No Zone AE areas were flagged for further assessment, but may be in the process of being studied with on-going projects. Additionally, 260 miles of Zone AE / AH SFHAs in the watershed were characterized as being Valid under the NVUE metrics. Of the Zone A areas, 123 miles were flagged as valid. The remaining Zone A areas are not model-backed studies. A graphic of these streams is shown in Figure 3, and the CNMS data is also provided in GIS format in the digital data with this report. Table 3 summarizes the Validated NVUE stream mileage from CNMS.

Figure 2 - View of Urban Change Since 1992 within the Watershed

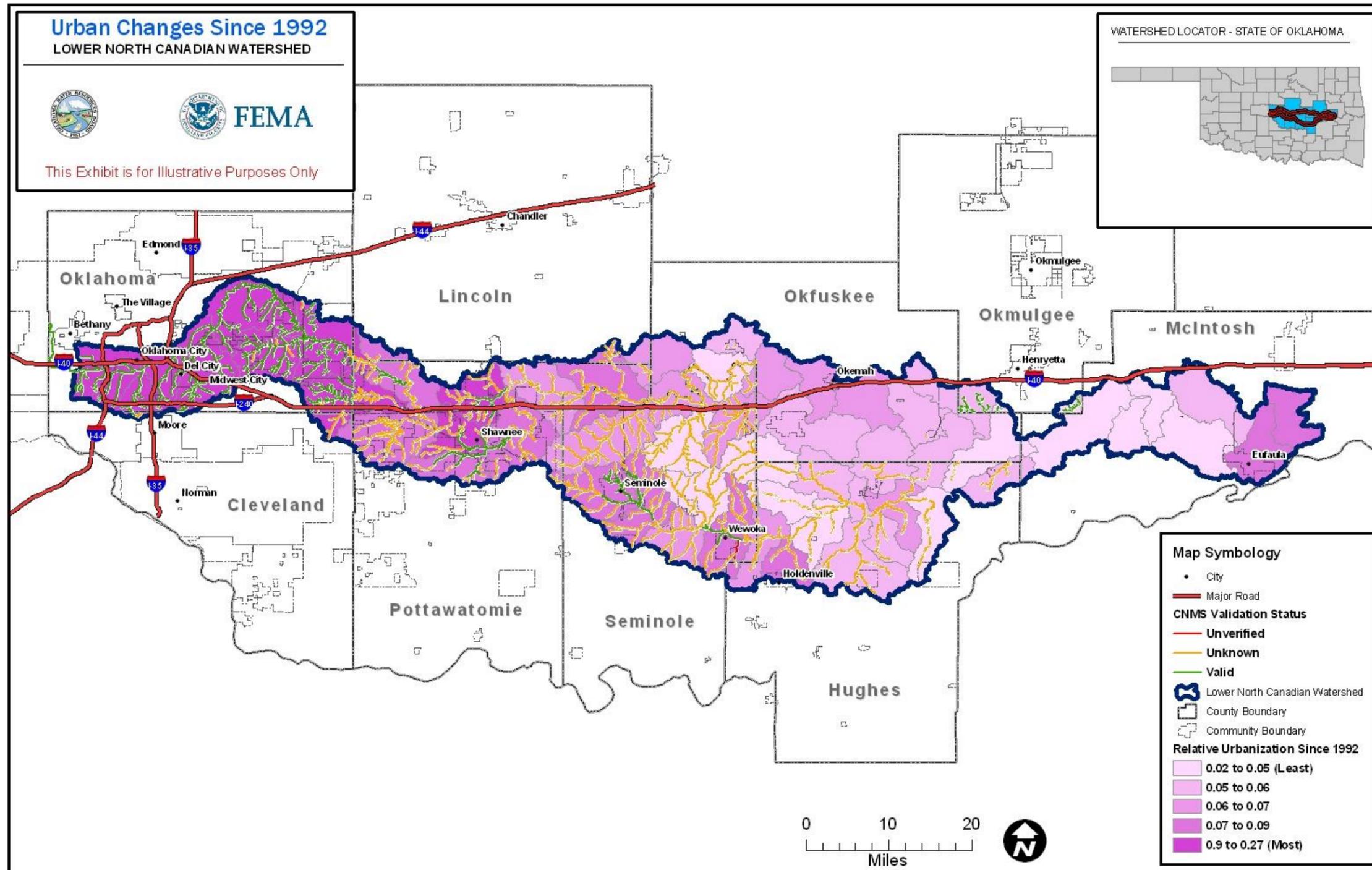


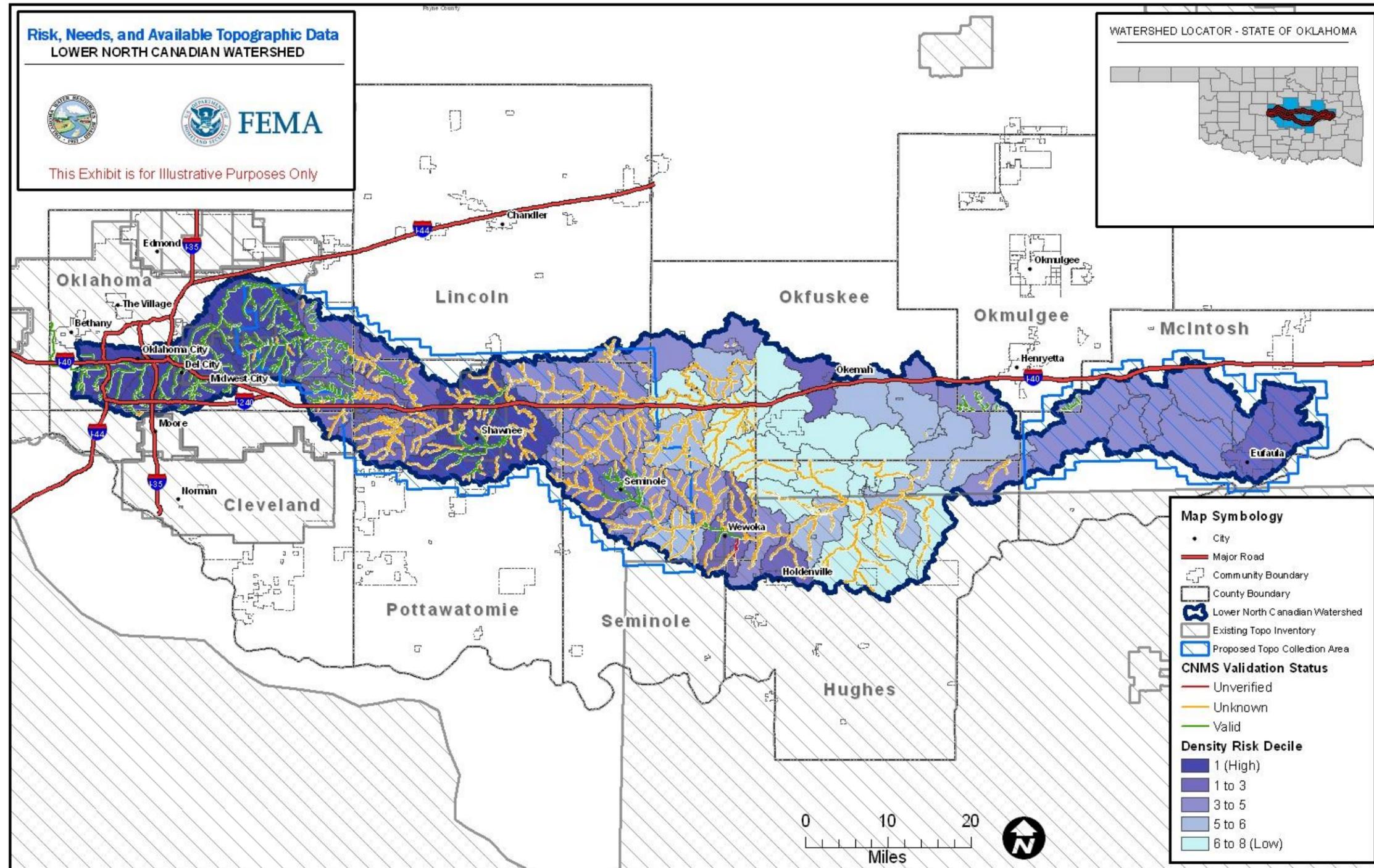
Table 3 - NVUE Approximate Stream Mileage in the Watershed

NVUE Validation	Stream Miles
CNMS Valid Zone AE / AH	260
CNMS Valid Zone A	113
CNMS Unverified Zone AE / AH	11
CNMS Unverified Zone A	N/A
CNMS Zone AE / AH Requiring Further Assessment or in the process of being studied	0
CNMS Zone A Requiring Further Assessment	861
All Stream Miles not accounted for in CNMS as there are no effective SFHAs (sum of the below)	593
Stream Miles not accounted for in CNMS that would fall in land that <i>could be</i> developed	433
Stream Miles not accounted for in CNMS that would fall in land that <i>could not be</i> developed	160

This watershed contains structures that are managed by the U.S. Army Corps of Engineers (USACE) Tulsa District and other hydraulic structures including dams and levees along the Lower North Canadian River, Squirrel Creek, and Lost Creek.

An aggregated parcel summarization data set has been created for counties intersecting the LNC Watershed. Coverage for this data set includes polygons approximately one river mile in length and derived from the extent of existing SFHAs and surrounding areas where Flood Insurance Rate Maps (FIRMs) exist. The data set coverage uses a set width buffer around stream reaches where SFHAs do not currently exist. For unmapped streams, stream center lines derived from NHD Plus (Source: EPA) accumulated flow grids were used to establish a network of streams that drain a square mile or more. To help estimate risk exposure, each of the polygons can be joined to the data set to obtain values such as parcel count, minimum parcel value, maximum parcel value, and average parcel value within the polygon. This data is presented as an aggregate for these areas, rather than at a single parcel resolution. Taking this information into account can aid in the process of identifying unmapped streams adjacent to areas having a high level of risk exposure, or mapped streams with high levels of risk exposure just beyond existing SFHA bounds. This supplemental information is represented as a map showing the areas of relative high, medium, and low parcel density and can be found in the Supplemental Data folder included with this report (LNC_Discovery_Meeting_Map_ParcelsAtRisk_11x17.pdf).

Figure 3 - Risk Factors and Topographic data for the Watershed



The LNC Watershed has a history of flooding, as demonstrated by numerous presidential disaster declarations, with four issued in the past three years. According to the National Climatic Data Center (NCDC) database, there were 32 floods (primarily flash floods) recorded in Oklahoma County between January 1, 1994 and January 4, 2004, with 16 of these floods occurring in Oklahoma City. The 16 Oklahoma City floods resulted in one fatality and \$580,000 in estimated property damage. The most significant property damage reported by the NCDC was \$500,000 from flash flooding on April 30, 2000, when nearly 100 cars were stranded in high water throughout Oklahoma City, and numerous roads were closed for several hours. The roof of a business also collapsed due to heavy rain in southwest Oklahoma City. These damages were the result of slow moving thunderstorms that formed over portions of western and central Oklahoma during the late morning and continued through mid-evening. In addition, these storms were responsible for isolated areas of wind damage, large hail, and lightning damage, all of which are examples of additional hazards that can accompany flooding. On June 23, 1999, thunderstorms that formed across portions of central Oklahoma during the early morning caused widespread street flooding on West Reno in Oklahoma City, where a pick-up truck was mostly submerged. Water had to be removed by electric pumps at Northwest 6th Street and Pennsylvania Avenue, while sections of Southeast 74th near South Hiawasse Road caved in. This event was responsible for an estimated \$50,000 in damage. Table 4 lists recent presidential disaster declarations for multiple hazards within the LNC Watershed.

Table 4 - Disaster Declarations in the Watershed

Date of Declaration	Watershed Counties Declared	For Hazard
7/26/2010	Lincoln and Oklahoma	Severe storms, tornadoes, straight-line winds, and flooding
7/9/2008	Okfuskee	Severe storms and flooding
5/9/2008	Hughes, McIntosh, Okfuskee, and Seminole	Severe storms, tornadoes, and flooding
5/5/2008	Hughes, McIntosh, Okfuskee, and Okmulgee	Severe storms, tornadoes, and flooding
8/31/2007	Seminole	Severe storms, tornadoes, and flooding
8/24/2007	Cleveland, Okfuskee, Oklahoma, Okmulgee, Pottawatomie, and Seminole	Severe storms, tornadoes, and flooding
7/7/2007	Cleveland, Hughes, Lincoln, McIntosh, Okfuskee, Oklahoma, Okmulgee, Pottawatomie, and Seminole	Severe storms, tornadoes, and flooding
6/7/2007	Hughes, Lincoln, McIntosh, Okfuskee, Pottawatomie, and Seminole	Severe storms, tornadoes, and flooding

According to the Cleveland County Hazard Mitigation Plan (HMP) (2006), the flood on May 8, 1993, had an impact of \$500,000 in property damages. The May 26, 1993, flood caused \$50,000 in property damages. The Hughes County HMP (2007) states that flooding from 1950 through 2005 resulted in personal property damages estimated at \$932,000. As noted in the Lincoln County HMP (2006), between 1993 and 2000, flooding resulted in personal property damage valued at \$11,540,000, an average of \$1,442,500 in losses per year. The McIntosh County HMP (2010) reports \$196,000 in property damages from 1950 through 2008. An estimated \$19.5 million in property damages resulting from past flooding events were noted in the Muscogee (Creek) Nation HMP (2008). The Okfuskee County HMP describes personal property damage valued at \$138,000 from flooding occurring between 1993 and 2002. As presented in the Okmulgee County HMP (2007), 43 floods were recorded from 1950 through 2006, including three significant floods with damages as high as \$300,000. According to the City of Shawnee and Pottawatomie County HMP (in review), the City has a long history of flooding, including a devastating flood in 1928 and over \$1.5 million in property damage during the floods of 1990 and 1993. As reported in the Seminole County HMP (2007), floods in 1993, 1995, 1998, and 1999 resulted in personal property damage estimated at \$1,152,000.

FEMA has updated, or is in the process of updating the Flood Insurance Rate Maps (FIRMs) for the LNC Watershed in Cleveland, Lincoln, Oklahoma, Okmulgee, Pottawatomie, and Seminole Counties. The FIRMs for Okfuskee and McIntosh Counties have not been modernized into a unified countywide product and have not been updated since 1987 and 1985, respectively. All counties within the LNC Watershed participate in the NFIP; however, not every community within each county participates. The following communities do not participate in the NFIP: the towns of Horntown, Pierce, Stidham, Bearden, Castle, Clearview, Johnson, Pink, Cromwell, and Lima; the cities of Yeager, and Paden; and the unincorporated areas of McIntosh County, and Okfuskee County.

Table 5 lists the number of NFIP insurance claims for the portions of each community within the LNC Watershed.

Table 5 - NFIP Insurance Claims by County and Community within the Watershed

Total NFIP Insurance Claims Rolled Up To Counties	
County	Claims
Cleveland	4
Hughes	11
Lincoln	3
McIntosh	1
Okfuskee	2
Oklahoma	1,013
Okmulgee	0
Pottawatomie	282
Seminole	35

**Table 5 - NFIP Insurance Claims by County and Community within the Watershed
(continued)**

Total NFIP Insurance Claims by Community for the Watershed	
Community	Claims
Town of Bethel Acre (Pottawatomie County)	7
City of Choctaw (Oklahoma County)	69
City of Dell City (Oklahoma County)	389
City of Harrah (Oklahoma County)	21
City of Holdenville (Hughes County)	3
Town of Johnson (Pottawatomie County)	1
Town of Jones City (Oklahoma County)	52
Town of McLoud (Pottawatomie County)	11
City of Midwest City (Oklahoma County)	276
City of Moore (Cleveland County)	1
City of Nicoma Park (Oklahoma County)	14
City of Oklahoma City (Oklahoma, Cleveland, and Pottawatomie Counties)	107
City of Prague (Lincoln County)	3
City of Seminole (Seminole County)	28
City of Shawnee (Pottawatomie County)	181
City of Spencer (Oklahoma County)	24
City of Tecumseh (Pottawatomie County)	25
Town of Valley Brook (Oklahoma County)	1
Town of Weleetka (Okfuskee County)	2
Wetumka, City of (Hughes County)	1
Wewoka, City of (Seminole County)	2
Unincorporated Areas of Various Counties	133

In addition to NFIP claims, there are several locations of Repetitive Loss or Severe Repetitive Loss (RL/SRL) with the LNC Watershed. A concentration of these locations appear in the “Brock Creek-North Canadian River” and “Lightning Creek-North Canadian River” 12-digit HUC (HUC12) areas within Oklahoma City and in the “Lost Creek-North Canadian River” HUC12 area within the City of Shawnee. Table 6 summarizes these claims by county and community within the watershed. In addition to claims, Letters of Map Amendment, Revision, and Revision based on Fill are also distributed throughout the watershed, but appear to be concentrated in the cities of Oklahoma City, Midwest City, Shawnee, and Seminole around Twin Creek, Brock Creek, Lightening Creek, Crutcho Creek, Rock Creek, and Magnolia Creek.

Table 6- Repetitive or Severe Repetitive Loss with the Watershed

Repetitive Loss/Severe Repetitive Loss Rolled Up To County			
County	Number of Properties	Total Claims	Average Claim Per Property
Cleveland	1	2	2.0
Hughes	0	0	0.0
Lincoln	0	0	0.0
McIntosh	0	0	0.0
Okfuskee	0	0	0.0
Oklahoma	40	103	2.6
Okmulgee	0	0	0.0
Pottawatomie	14	48	3.4
Seminole	0	0	0
Repetitive Loss/Severe Repetitive Loss by Each Community			
Community	Number of Properties	Total Claims	Average Claim Per Property
City of Del City (Oklahoma County)	1	2	2.0
Town of Jones City (Oklahoma County)	4	12	3.0
City of Midwest City (Oklahoma County)	3	10	3.3
City of Nicoma Park (Oklahoma County)	1	4	4.0
City of Oklahoma City (Oklahoma County)	29	70	2.4
City of Shawnee (Pottawatomie County)	11	42	3.8
City of Tecumseh (Pottawatomie County)	3	6	2.0
Unincorporated Areas of Various Counties	3	7	2.3

Recent or pending planned acquisitions of topographic data have been made for the majority of Cleveland, Hughes, Lincoln, McIntosh, Oklahoma, Pottawatomie, and Seminole Counties. Topographic coverage totals are at about sixty-nine percent (69%) for the entire watershed. Areas that are noted to be lacking updated topographic information include most of Okfuskee and Okmulgee Counties; significant portions of Seminole and Hughes Counties; and small gaps in coverage of Lincoln, McIntosh, and Oklahoma Counties. Only the USGS 10-meter Digital Elevation Model (DEM) data is available for these missing areas.

For the Discovery process, watersheds are selected and analyzed at the HUC8 level and evaluated using three major factors (or trifecta factors): population, topographic data availability, and risk decile. Risk decile is calculated from nine parameters, including total population density, historical population growth, predicted population growth, housing units, flood policies, single claims, repetitive losses, repetitive loss properties, and declared disasters.

The scale of Risk Decile ranking is 1 to 10, with 1 being the highest and 10 being the lowest ranking. Table 7 lists the overall rankings of the LNC Watershed when compared nationally to other HUC8 watersheds. This information, along with rankings of smaller HUC12 sub-basins to help identify stream segments or locations where risk evaluation can be targeted, is used as an overview for the LNC Watershed and is shown in Table 7. This represents the HUC12 risk decile, the availability of topographic data, and a combined analysis of the Risk Factors for each stream segment reflecting the information in this overview. This combination of factors was key in selecting this watershed for a Discovery Project.

Table 7 - Watershed Risk Factor Rankings

Lower North Canadian Watershed Selection Rankings
National Risk Factor Rank: 239 National Risk Decile: 2 Average Annualized Loss: \$56.31Million National Average Annualized Loss Rank: 182 National Overall Rank: 72
Region 6 Risk Factor Rank: 37 Region 6 Risk Decile: 1 Average Annualized Loss: \$56.31Million Region 6 Average Annualized Loss Rank: 24 Region 6 Overall Rank: 18

Any background information on population data, historical flooding, or community information in this report was researched in the watershed Engagement Plan, provided by CNMS, or taken from effective Flood Insurance Study (FIS) reports and State and Local HMPs that are on file with FEMA Region 6.

II. Discovery Efforts

i. Engagement Plan

The LNC Engagement Plan was prepared throughout the Pre-Discovery efforts of the Regional Project Team. The Regional Project Team was comprised of the staff shown in Table 8.

Table 8 - Regional Project Team

Name	Organization	Project Role
Ron Wanhanen	FEMA Region 6	Project Monitor - Engineering and Mapping Lead
James “Jim” Orwat	FEMA Region 6	Deputy Project Monitor
Shanene Thomas	FEMA Region 6	Mitigation Planning Support
Roberto Ramirez	FEMA Region 6	Compliance Support
Roberto Ramirez	FEMA Region 6	Insurance Support
Don Davis	FEMA Region 6	Grant Support
Gavin Brady	State of Oklahoma	State NFIP Coordinator
Bill Penka	State of Oklahoma	State Hazard Mitigation Officer
Joseph Remodini	USACE – Tulsa District	USACE Coordination Tulsa District
Vikram Shrivastava	RAMPP	RAMPP Study Manager
Corey Garyotis	RAMPP	Regional Service Center (RSC6) Coordination
Rhonda Hurst	RAMPP	RSC6 and Meeting Coordination

The Engagement Plan is a tool that allows all Regional Project Team members to understand the history of the watershed and highlights recent engagements with the FEMA Region 6 Mitigation Division. In addition to contact information for key stakeholders and organizations within the watershed, the Engagement Plan captures media outlet information; the location and summary of recent articles or news releases; a strategy for keeping Congressional liaisons involved in the Discovery process; and a history of communications. The various team members could use the Engagement Plan to strategize communications to the various groups within the watershed to deliver the Discovery Meeting messages and vision, and to track any hot topics or points of interest in communications.

The Engagement Plan served as the initial repository for summary information about the watershed. This data was incorporated into the previous section as background for the justification and selection process for the LNC Watershed to proceed through the

Discovery process. This plan served as a clearinghouse for information about mitigation planning, active and closed grants, insurance policy information, socio-economic overviews of the communities, and a review of the recent mapping initiatives within the watershed. From this collective review of the watershed, the project team can identify how a project area should be engaged and select from a high, medium, or low-engagement strategy based on the risk, need, and political will of the communities in the watershed. The complete Engagement Plan is included with the supplemental, digital data accompanying this report.

ii. Pre-Discovery Efforts

The Regional Project Team were in contact with all LNC Watershed stakeholders via letters, email, and phone calls prior to the Discovery Meeting. The purpose of this communication was to request local participation and assistance in identifying key people who should be included in the Discovery process, and to acquire any data that would assist in the risk identification and assessment of the LNC Watershed.

In preparation for the Discovery Meeting, the Regional Project Team:

- Gathered information about local flood risk and flood hazards;
- Reviewed mitigation plans to understand local mitigation capabilities, hazard risk assessments, and current or future mitigation activities;
- Encouraged communities along the watershed to develop a vision for the watershed's future; and
- Used all information gathered to determine which areas of the watershed may require further study through a Risk MAP project.

The Regional Project Team then began outreach efforts to the local governments within the LNC Watershed; Congressional and public officials; the USACE Tulsa District; other departments at the State of Oklahoma, Oklahoma Water Resources Board (OWRB) and local Chambers of Commerce to inform them of the Discovery process and invite them to participate and contribute information about this watershed and other water resource concerns. The following were key steps taken before the Discovery Meetings were held:

- Initial Coordination meeting with FEMA and the State of Oklahoma (NFIP and State Hazard Mitigation Office [SHMO]) to set the stage for co-participation and sharing of the meeting. Established potential meeting times and locations.
- RAMPP set logistics for the meeting date/locations/facilities.
- Information letters were mailed to the communities and interested groups, such as Chambers of Commerce.
- Initial calls were made by the RAMPP Study Manager to Chief Executive Officers (CEOs) and Floodplain Administrators (FPAs) to inform them of the meeting and ask for data.
- Invitation letters were mailed.

- The Project Monitor followed up with email that provided meeting information.
- The Project Monitor followed up with phone calls to personally invite key stakeholders and representatives from the communities and to remind them of the meeting details and logistics.
- Invited USACE to participate as an active member of the project team.
- The Project Monitor conducted a Congressional briefing just before the meeting.
- The Project Monitor conducted a media briefing before the meeting.
- Conducted a dry run with FEMA, State officials, USACE, and RAMPP to distribute the meeting materials for review and questions.

Copies of key correspondence are included in the external files included with this report.

iii. Discovery Meeting

Six LNC Watershed Discovery Meetings were held between August 30 and September 1, 2011, at locations throughout the watershed. The first two LNC Watershed Discovery Meetings were held on August 30, 2011, at the Oklahoma City Central Maintenance Facility and at the City of Del City Hall. The third and fourth LNC Watershed Discovery Meetings were held on August 31, 2011, at the Shawnee City Hall and at the Donald W. Reynolds Wellness Center in Seminole. The fifth and sixth LNC Watershed Discovery Meetings were held on September 1, 2011, at the Henryetta City Hall and at the Citizen Potawatomi Nation South Reunion Hall. Two meetings were held each day with a scheduled duration of two and a half hours per meeting. Meetings were held in the mornings and afternoons. Approximately two to 15 people were anticipated to attend each meeting and the logistics for each meeting site were set-up according to this premise.

Each meeting site was prepared for an initial presentation and included a series of stations envisioned to create an interactive setting between Regional Project Staff and Discovery Meeting attendees. After a short presentation by the FEMA project lead, attendees rotated through the four Discovery stations, which focused on Mapping/Engineering information, NFIP/Mitigation, Grants, and Planning. Each station presented a series of large format, watershed maps with an aerial photo of the watershed displayed, along with community boundaries and road names to assist with the location of information. Additionally, each station had several 11-inch by 17-inch laminated watershed maps with topical information related to that station's content. The maps present at each station were:

- Grants Station – map of current floodplain related grants.
- Planning Station – map of current Letters of Map Change, sample Risk MAP products, and a sample depth grid.
- Mitigation Station – map of repetitive / severe repetitive loss areas, the effective FIRM and FIS, and a map of current NFIP claims.

- Mapping Station – Risk/Need/Topographic data composite from CNMS information, population density in the watershed, urban change in the watershed, and estimated dollar exposure of parcels near SFHA areas.

At each station, attendees were asked to contribute information about their concerns in the watershed by indicating the location of their comment on the large watershed map and then providing a short write-up of the concern, which was recorded on the comment form. The stations were intended to be interactive activities, where meeting attendees and staff could work together to listen, discuss, and document any topical items for the watershed. Staff from the Regional Project Team (FEMA, State of Oklahoma, and RAMPP) was available to answer questions and engage in conversation with everyone. During the meeting, attendees with any additional information to contribute to the process were asked to submit their information within two weeks.

Information sheets were collected at each station and the Discovery watershed maps were labeled at locations within the watershed. These information sheets are included in the supplemental, digital data that accompanies this report.

iv. Data Gathering Overview

All six Discovery Meetings were attended by local participants. A full list of attendees is provided in the sign-in sheets in the digital data that accompany this report. These lists show the meetings were well attended. Several non-community entities also attended. Some of those in attendance included:

- Local community elected officials and councilpersons;
- Local floodplain managers, emergency management staff, community planners, and public works staff;
- A representative from Senator James Inhofe’s office;
- Oklahoma Water Resources Board;
- Representatives from the USACE; and
- General Public / local engineering consultants.

The meetings afforded the Regional Management Team personal, interactive communication with attendees at each station. The Regional Management Team interviewed attendees and listened to concerns and discussion of examples of positive mitigation, and areas of continuing concern for the watershed as a whole. As attendees interacted at each station, they not only discussed their own local concerns, but listened to the concerns of others in the watershed. Often this turned into an interactive discussion among the different communities in the watershed.

Feedback from the attendees indicated they felt this was an opportunity to express their issues and concerns for the watershed. They also indicated they preferred the interactive stations rather than a lengthy presentation of information about the watershed. Many attendees were appreciative of the chance to speak with the various Regional Management Team members from both FEMA and the USACE. Community perception was that the Discovery process was an improvement over scoping activities

that FEMA has performed in the past, and attendees felt more engaged in the process of determining needs and project locations.

Community representatives that discussed their HMP actions and pending actions in detail with the Regional Management Team are eligible to count these meetings toward stakeholder engagement activities during their next HMP update.

Information and data about the watershed were gathered both prior to the Discovery Meetings and interactively during the meetings. At the Discovery Meeting stations, attendees were able to complete a data information sheet and place a sticker on the hard copy maps showing the approximate locations of their concern within the watershed. This information was captured in a GIS format later and data from the forms was input for each point location on the watershed maps. Maps and data from each Discovery station were compiled into a single data set. All map exhibits used to display current knowledge of topics in the watershed and engender discussion points are included in the digital data that accompany this report.

For this watershed, additional data was not submitted by communities prior to the Discovery Meeting. Table 9 lists any data that was gathered prior to the meeting, during the meeting, or was sent in afterwards. Items listed in Table 10 that were collected at the Discovery Meeting were also mapped in a GIS shapefile to record the location in the watershed. The item column in Table 10 is tied to the issue or concern resolution listed in the final table of this report (Table 19), where needs and comments are gathered, ranked, and recommended as being assigned to FEMA or the local community for resolution.

Table 9 - Data Collection Summary – Pre-Discovery Meeting

Data Location	Data Custodian	Data Set Description
Watershed-wide	FEMA	Effective FIRM and FIS and back-up are information available on the Mapping Information Platform (MIP)
Watershed-wide	FEMA	Letter of Map Change (LOMC) locations
Watershed-wide	FEMA	Locations of Repetitive Loss/Severe Repetitive Loss (RL/SRL)
Watershed-wide	FEMA	Location of funded grants
Watershed-wide	U.S. Census	Populated area and population characteristics
Watershed-wide	FEMA, USGS, and U.S. Department of Agriculture (USDA)	Location of available or planned areas of updated Light Detection and Ranging (LiDAR) or other topographic data
Watershed-wide	USGS	Watershed HUC boundaries, NHD streams, stream gage information
Watershed-wide	FEMA	Currently accepted HMP
Watershed-wide	FEMA	Participation in the NFIP, Community Rating System (CRS) ratings

Table 9 - Data Collection Summary – Pre-Discovery Meeting (continued)

Data Location	Data Custodian	Data Set Description
Watershed-wide	FEMA	Disaster Declarations
Watershed-wide	FEMA	CNMS information

Table 10 is a summary of the comments that were made at each of the Stations. Scans of all comment forms are included in the digital data that accompany this report. The comments are included in Table 10, as written, from the comment form. However, if the same comment was made at different stations, from the same attendee, it is only listed once. If multiple attendees made the same comment, it is noted that a version of this comment was made several times.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.1	Watershed-wide	Oklahoma Water Resources Board (OWRB)	<ul style="list-style-type: none"> Interested in financial assistance for dam repair for small communities/private owners. In addition, the OWRB is interested in community grants to help develop dam breach inundation maps.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.2	Unnamed Tributary to Peavine Creek	Oklahoma County	<ul style="list-style-type: none"> The Oklahoma County Planner indicated that a resident, Robert McMenemy, has contacted FEMA several times regarding his property at 6227 Stone Hill Dr., Edmond, OK. On April 29, 2010, the Oklahoma County Planner/Floodplain Administrator informed Mr. McMenemy in writing that when he received building permit (BP-2007-92) and constructed his house at 6227 Stone Hill Dr. - Stone Valley Ranch II, in unincorporated Oklahoma County, FIRM Panel 40109C0085G (Effective July 2, 2002) was in effect. According to this FIRM panel, the property was not located in a designated and regulated floodplain. Furthermore, at the time the building permit was issued on April 4, 2007, the property was located in Zone X and was determined to be outside the 500-year flood zone.
10.3	Deer Creek	Oklahoma County	<ul style="list-style-type: none"> A number of SRL structures are located along Deer Creek. In the same area, heavy rains cause numerous road closures, changes in school bus routes, bridge wash outs, and oil well wash outs.
10.4	Oklahoma County	Oklahoma County	<ul style="list-style-type: none"> As part of the ongoing Crutchko Park acquisition project, 35 properties have been acquired and demolished to date. Seventeen more are in process. No Community Assistance Visit (CAV) has occurred recently.
10.5	Oklahoma County	Oklahoma County	<ul style="list-style-type: none"> Oklahoma County is in the process of revising its mitigation plan.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.6	Oklahoma County	Oklahoma County	<ul style="list-style-type: none"> Oklahoma County has implemented three project grants for acquisition/demolition of floodprone structures.
10.7	Canadian River	Oklahoma County	<ul style="list-style-type: none"> The Canadian River at Choctaw Road, located in the Unincorporated Areas of Oklahoma County, has “meandered” significantly and may need to be remapped.
10.8	Crutch Creek Tributary B	Oklahoma County	<ul style="list-style-type: none"> Possible mitigation actions (drainage or debris removal) are planned for Oklahoma County at SW 29th and Sooner Road on Panels 0310 and 0320. Discovery Meeting Datasheet Reference: P7
10.9	Unnamed Stream within 0.2-percent-annual-chance Flooding	City of Oklahoma City	<ul style="list-style-type: none"> There are possible capital improvement projects present in the area near the intersection of N. Pennsylvania Ave. and NW 5th Street.
10.10	Mustang Creek	City of Oklahoma City	<ul style="list-style-type: none"> A top need for the City of Oklahoma City concerns LOMR Case Number 01-06-2001P. The revision area is located on Canadian County, OK Panels 40017C0430H and 40017C0435H, on Morgan Rd. between SW 29th St. and SW 15th St., between Cross Sections A and C of Mustang Creek. This LOMR was not incorporated into the Sept. 2008 map update. FEMA will not re-issue the LOMR because additional hydraulic information is required.
10.11	Twin Creek	City of Oklahoma City	<ul style="list-style-type: none"> There is a concrete box that doesn't appear to be modeled. It falls on Oklahoma County Panel 40109C0285H at SW 15th St. and Pennsylvania Ave., between Cross Sections C and E. The Zone AE has increased compared to the 2002 panel.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.12	Unnamed Tributary to North Canadian River (flooding effects)	City of Oklahoma City	<ul style="list-style-type: none"> The City of Oklahoma City would like the entire reach between Reno Ave. and Meridian Ave. on Oklahoma County Panel 40109C0280H to be restudied. A large increase in Zone A flooding compared to the 2002 panel was seen here.
10.13	North Canadian River	City of Oklahoma City	<ul style="list-style-type: none"> A series of Locks and Dams were constructed between 1999 and 2004. The changes to the river may not be accurately reflected on the FIRMs utilizing 2004 contour information. The City of Oklahoma City recommends a restudy using 2010 topo data at Reno Ave., from Eastern Ave. to Meridian Ave, approximately located between Cross Sections DA and GD. The area is shown on Oklahoma County Panels 40109C0305H, 40109C0285H, 40109C0280H, and 40109C0260H.
10.14	Tributary 12 to North Canadian River	City of Oklahoma City	<ul style="list-style-type: none"> A portion of the creek between Cross Section B and D, and located at SW 29th St. between Meridian Ave. and MacArthur Blvd., has been concrete lined. The current SFHA is now shown largely outside the channel boundaries. Also, the Zone AE SFHA increased compared to the 2002 panels.
10.15	Campbell Creek	City of Oklahoma City	<ul style="list-style-type: none"> At SW 59th St. and County Line Rd., upstream of Cross Section M, the Zone AE SFHA increased compared to the 2002 panels.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.16	East Branch Campbell Creek	City of Oklahoma City	<ul style="list-style-type: none"> At SW 44th St. and Rockwell Ave., between Cross Sections A and C, there was an increase in Zone AE compared to the 2002 panels. This increase does not seem to agree with the BFE contour information. Also, the Zone A increases quite a bit compared to the 2002 panels. A portion of this creek near Cross Section B is a concrete channel, and the FIRM does not show that the SFHA is contained in the channel.
10.17	City of Oklahoma City	City of Oklahoma City	<ul style="list-style-type: none"> The City of Oklahoma City Hazard Mitigation Plan was approved on 11/21/06 and expired on 11/21/11.
10.18	City of Oklahoma City	City of Oklahoma City	<ul style="list-style-type: none"> Oklahoma City would like FEMA to provide GIS SRL information to compare with its mitigation projects.
10.19	City of Bethany	City of Bethany	<ul style="list-style-type: none"> The City of Bethany is fully developed at this time. Most activity will be redevelopment from now on.
10.20	Lower North Canadian	Town of Jones City	<ul style="list-style-type: none"> The current FIRMs do not meet the needs of the Town of Jones City and they would like the FIRMs to be updated from Main Street northward. Projects in Oklahoma City that added locks and dams have reduced the flow in Jones City. There is an AMEC study being performed for this area to study the updated flood hazards. On the north side of town from 4th to NE 1st, North of Main, a restudy is needed for flood insurance purposes (discussed above). Updating topo maps are needed for all properties within the City Limits. Projects in OKC have slowed down water flow through Jones City in recent years (discussed above).

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.21	Cleveland County	Cleveland County	<ul style="list-style-type: none"> There are no flood hazard mapping concerns; however the County asked for information on the CRS.
10.22	Crutcho Creek Tributary E	Tinker Air Force Base	<ul style="list-style-type: none"> The floodplain boundary does not match the terrain on the west side of the 507th ramp. Part of the stream is piped under a ramp near hangers. The USACE developed the effective flood hazards and informed Tinker Air Force Base that this area should be studied in more detail. Better information will result in better planning and evacuation of people and equipment in the event of a flood.
10.23	Soldier Creek	Tinker Air Force Base	<ul style="list-style-type: none"> Fill for new hangers at the northeast corner of SE 59th and Douglas has altered the floodplain boundaries. In the same area, at the headwaters of Soldier Creek, the floodplain is designated Zone A. This is an area of future expansion of the base. Development of BFEs from the headwaters to I-40 is requested.
10.24	Tinker Air Force Base	Tinker Air Force Base	<ul style="list-style-type: none"> Tinker’s floodplain management is governed by Executive Order 11988 (EO11988) and managed by the base.
10.25	Tinker Air Force Base	Tinker Air Force Base	<ul style="list-style-type: none"> GIS data is available for Tinker Air Force Base. Contact is John Krupovage (405) 739-7074.
10.26	Crutcho Creek / Crutcho Creek Tributary B (Panels 0305 and 0310)	Tinker Air Force Base	<ul style="list-style-type: none"> Recent development has taken place downstream of the base and Tinker AFB asked whether the floodplain been updated via LOMRs. There is a current perception that the air force base is responsible for downstream flooding.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.27	Crutch Creek and Unnamed Stream (Panels 0315 and 0320)	Tinker Air Force Base	<ul style="list-style-type: none"> Recent development upstream of the air force base has taken place on these flooding sources. Is Oklahoma City updating the Crutch Creek flood hazard data for this development?
10.28	City of Midwest City	City of Midwest City	<ul style="list-style-type: none"> The City of Midwest City has construction drawings for completed projects that are not reflected on the effective FIRMs. The City of Midwest City also asked for CRS program information.
10.29	Soldier Creek Tributary 6	City of Midwest City	<ul style="list-style-type: none"> Soldier Creek Tributary 6 was not revised in the 2009 FIRM update, and is currently mapped as Zone AE The channel was revised following the 2009 FIRM update, and Midwest City has construction drawings and cross-section information for the revisions that occurred.
10.30	Soldier Creek Tributary to Crutch Creek	City of Midwest City	<ul style="list-style-type: none"> The stream was revised in the 2009 FIRM update and is currently mapped as Zone AE. Projects have occurred since the 2009 FIRM update and Midwest City has construction drawings and cross-section information for these projects.
10.31	Crutch Creek Tributary D	City of Midwest City	<ul style="list-style-type: none"> The stream was revised in the 2009 FIRM update and is currently mapped as Zone AE. The channel has been revised since the 2009 FIRM update and Midwest City has construction drawings and cross-section information for the revisions

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.32	Silver Creek	City of Midwest City	<ul style="list-style-type: none"> • The stream was revised in the 2009 FIRM update and is currently mapped as Zone AE. • The channel was revised following the 2009 FIRM update and Midwest City has construction drawings and cross-section information for the revisions • Discovery Meeting Datasheet Reference: M11
10.33	Unnamed Stream (Tributary to Choctaw Creek)	City of Midwest City	<ul style="list-style-type: none"> • The stream was no revised in the 2009 FIRM update and currently mapped as Zone A. • Midwest City has construction drawings and cross-section information for this stream. • Discovery Meeting Datasheet Reference: M10
10.34	Crutcho Creek	Del City	<ul style="list-style-type: none"> • Flow upstream of NE 10th Street does not take into account an embankment that presents storage and is shown as floodway and floodplain. The impact is areas west of Sooner Road may be wider than shown.
10.35	Crutcho Creek	Del City	<ul style="list-style-type: none"> • There is a disconnect in the stream profile for Crutcho Creek at SE 29th Street. Also a flap gate at this crossing is jammed in the partially open position and does not appear to be maintained. This may result in flooding on Tinker Golf Course and the SE 29th Street Bridge may be undermined.
10.36	Overland Flow along Lariat Lane	Del City	<ul style="list-style-type: none"> • Cherry Creek at Lariat Lane: Runoff from a cemetery flows down Lariat Lane and into Cherry Creek. Significant flow occurs on the street. The City is executing a contract for a mitigation project (\$2M), which will come in as a LOMR.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.37	Cherry Creek and Crutch Creek	Del City	<ul style="list-style-type: none"> Cherry Creek and Crutch Creek cross near a water tower. The City is unsure if the crossover is shown on Panels 40109C0305H and 40109C0310H or in the model and if it would have any impact on flow.
10.38	Silver Creek	City of Spencer	<ul style="list-style-type: none"> The last mapping was as Zone AEs and now LOMRs are occurring. The City is not currently in the CRS. The City cannot perform projects on private property located at 3503 Fox Ave., Spencer, OK 73084, near Post Road and NE 23th Rd. The City would like to check on an RL property. Flooding occurs along the stream from Liberty and 23rd Street to the confluence with Silver Creek.
10.39	Unnamed Stream	City of Holdenville	<ul style="list-style-type: none"> Areas along this creek that are shown outside of the floodplain are flooding. The City requests more accurate data for determining BFEs. The City requests that both of its flooding be restudied as the effective data is from 1970s. Discovery Meeting Datasheet Reference: M13
10.40	City of Holdenville	City of Holdenville	<ul style="list-style-type: none"> When development occurs, the City must request BFEs from the USACE or an engineering firm. The City requested FEMA Publication 45 to develop BFEs in Zone As.
10.41	City of Holdenville	City of Holdenville	<ul style="list-style-type: none"> The City's HMP expires 8/13. The City is currently revamping the sewer system as mitigation project.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.42	City of Holdenville	City of Holdenville	<ul style="list-style-type: none"> The City of Holdenville has been trying to get a mitigation project passed through the EPA/USACE for about 5 years. The mitigation plan is for a new water supply lake.
10.43	City of Holdenville	City of Holdenville	<ul style="list-style-type: none"> The City of Holdenville has requested FEMA Publication 45 to help develop BFEs in Zone As.
10.44	City of Shawnee	City of Shawnee	<ul style="list-style-type: none"> The floodplain areas (along the Zone A SFHAs) seem to be too large. Nearly every property that applies for LOMAs is accepted.
10.45	Tributary No. 3 to Rock Creek	City of Shawnee	<ul style="list-style-type: none"> There is an area where the water runs underground though an RCB, but the new maps still shows a floodplain
10.46	Shawnee Twin Lakes and Wes Watkins Reservoir	City of Shawnee	<ul style="list-style-type: none"> This lake areas need to be studied to make sure the mapped elevations are correct.
10.47	City of Shawnee	City of Shawnee	<ul style="list-style-type: none"> The City of Shawnee would like to discuss SRL structures located within the city.
10.48	City of Seminole	City of Seminole	<ul style="list-style-type: none"> The City’s HMP expires on 10/14/12. The City will join the County mitigation plan.
10.49	City of Seminole	City of Seminole	<ul style="list-style-type: none"> The City’s comprehensive plan was completed October 2011. There is not a lot of growth.
10.50	City of Seminole	City of Seminole	<ul style="list-style-type: none"> The City requested that FEMA submit RL information so the City can indicate what has been mitigated. The RLs shown on the maps are incorrect.
10.51	Unnamed Tributary to Wewoka Creek	City of Seminole	<ul style="list-style-type: none"> Harbor Road floods, but there is no SFHA. The SFHA stops short.
10.52	City of Seminole	City of Seminole	<ul style="list-style-type: none"> Insurance companies are not respecting the FEMA revalidation letter yet.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.53	Magnolia Creek	City of Seminole	<ul style="list-style-type: none"> • A CLOMR was obtained for a project involving baseball fields near the Donald W. Reynolds Wellness Center. The follow-up LOMR was denied by FEMA and FEMA asked for an extension of the analysis further upstream.
10.54	Magnolia Creek	City of Seminole	<ul style="list-style-type: none"> • A softball quad was built in the floodplain based on an approved CLOMR, but following construction, FEMA did not approve the required additional study to the north • Discovery Meeting Datasheet Reference: M17
10.55	City of Seminole	City of Seminole	<ul style="list-style-type: none"> • New businesses in the 2200 block of Mitt Phillips have LOMAs for frontage, but still show within the floodway/floodplains
10.56	City of Seminole	City of Seminole	<ul style="list-style-type: none"> • There was a loss of life flood in August 2008.
10.57	Tributary 2 of Magnolia Creek	City of Seminole	<ul style="list-style-type: none"> • The Northwood Addition was not studied and is considered Zone A. • Discovery Meeting Datasheet Reference: M18
10.58	Wewoka Creek	City of Seminole	<ul style="list-style-type: none"> • Drainage from Harber Ct. occurs, moving under Broadway at Wewoka Creek • Discovery Meeting Datasheet Reference: M-21
10.59	Magnolia Creek into Wewoka Creek	City of Seminole	<ul style="list-style-type: none"> • There is a drainage problem from Magnolia Creek into Wewoka Creek (south edge of Seminole) – drainage is too slow and water backs up onto Seminole along Magnolia.
10.60	Magnolia Creek	City of Seminole	<ul style="list-style-type: none"> • The City requested a study of Magnolia Creek from Strother Ave. north to Hwy 9.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.61	Milt Phillips Road	City of Seminole	<ul style="list-style-type: none"> The City stated that a drainage structure under Mitt Phillips needs to be studied.
10.62	City of Seminole	City of Seminole	<ul style="list-style-type: none"> The City needs a master drainage and stormwater plan.
10.63	Wewoka Creek	City of Seminole	<ul style="list-style-type: none"> The City stated there is a need to assess the drainage at Broadway and Jackson, as it drains to Wewoka Creek.
10.64	Sandy Creek	Wewoka	<ul style="list-style-type: none"> A residential area exists at Ninth and Eufaula to 1st and floods when it rains. Discovery Meeting Datasheet Reference: M15
10.65	Wewoka Creek	Wewoka	<ul style="list-style-type: none"> Wewoka Creek at Highway 56 floods when it rains. Discovery Meeting Datasheet Reference: M15
10.66	Wewoka and Sandy Creeks	Wewoka	<ul style="list-style-type: none"> During rains, flooding is experienced near the Veterinarian office and Water Plant on Park Street. Discovery Meeting Datasheet Reference: M15
10.67	Wewoka	Wewoka	<ul style="list-style-type: none"> The City of Wewoka would like to update their flood HMP, but they are not able to due to lack of funding and eligibility for hazard mitigation grants. The City of Wewoka has requested the effective FIRM and FIS report, as these were not provided when the FIRM and FIS were issued effective.
10.68	Wewoka	Wewoka	<ul style="list-style-type: none"> The bridge over a small creek on EW 125 floods, shutting down the road and restricting access to several houses. The SFHA does not represent the current problem. Discovery Meeting Datasheet Reference: C15

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.69	Wewoka	Wewoka	<ul style="list-style-type: none"> • Park Street and Mekusukey Street flood on an annual basis, affecting several homes and businesses and flooding State Highway 56. • Discovery Meeting Datasheet Reference: M19, M20
10.70	Wewoka	Wewoka	<ul style="list-style-type: none"> • Seventh and Eufaula Streets flood during heavy rains, causing flooding to houses. • Discovery Meeting Datasheet Reference: M19, M20
10.71	Wewoka	Wewoka	<ul style="list-style-type: none"> • Fifth Street and Brown Street flood, affecting approximately 10 homes, including senior citizen apartments. • Discovery Meeting Datasheet Reference: M19, M20
10.72	Wewoka	Wewoka	<ul style="list-style-type: none"> • EW 124 and NS 366 – The creek floods easily and completely shuts down the road, restricting access to over 10 homes. • Discovery Meeting Datasheet Reference: M19, M20
10.73	Seminole County	Seminole County	<ul style="list-style-type: none"> • The Seminole County SFHA does not match the imagery or thalweg. • The new FIRM was a digital conversion and there was a horizontal shift. • Some county bridges are being replaced without floodplain permitting. • No CAV for the county has been scheduled. • The County can provide bridge as-built plans and engineering data. • Ordinances are 60.3(d), i.e., address floodways. • Building lake-WACE – C13, it may be a 10-year project

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.74	Big Wewoka Creek Site 29 Reservoir & Konawa Lake	Seminole County	<ul style="list-style-type: none"> • There are NRCS dams in the County. Engineering data will be shared. <p>The County provided the following dam information:</p> <ul style="list-style-type: none"> • Big Wewoka Creek Site 29 Dam TR-20 model. • Konawa Lake was constructed by Oklahoma Gas and Electric. Currently it shows as an Zone A, but OG&E should have information on the spillway and flood pool.
10.75	Various	Seminole County	<ul style="list-style-type: none"> • Because of Zone A SFHAs and the difficulty in developing time of concentrations, floodplain management is problematic without BFEs. • Seminole County understands the limited resources for flood studies. It has provided stream reaches where the need for BFEs is critical.
10.76	Seminole Nation of Oklahoma	Seminole Nation of Oklahoma	<ul style="list-style-type: none"> • The Seminole Nation of Oklahoma HMP will be submitted soon.
10.77	Seminole Nation of Oklahoma	Seminole Nation of Oklahoma	<ul style="list-style-type: none"> • The Seminole Nation of Oklahoma would like digital copies of FEMAs maps. • The Seminole Nation would like information on joining the NFIP.
10.78	Seminole Nation of Oklahoma	Seminole Nation of Oklahoma	<ul style="list-style-type: none"> • Potential hazard mitigation actions within the Seminole Nation of Oklahoma include safe rooms, weather radios, storm sirens, and a drainage restoration project.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.79	Seminole Nation of Oklahoma	Seminole Nation of Oklahoma	<ul style="list-style-type: none"> • The Seminole Nation of Oklahoma requested digital maps for the Mekusaulceg Mission – Seminole, located 2 miles west of 99 on Highway 59. • Discovery Meeting Datasheet Reference: M22
10.80	Tributary A	Seminole Nation of Oklahoma	<ul style="list-style-type: none"> • The Seminole Nation of Oklahoma requested digital maps for the Tribal Complex – Wewoka, Intersection of Highway 56 and 270 at the Northeast corner. • Discovery Meeting Datasheet Reference: M14
10.81	Sandy and Wewoka Creek	Seminole Nation of Oklahoma	<ul style="list-style-type: none"> • The Seminole Nation of Oklahoma requested digital maps for the Seminole Nation Housing Authority and Housing Addition • Discovery Meeting Datasheet Reference: M19
10.82	Snake Creek	Seminole Nation of Oklahoma	<ul style="list-style-type: none"> • The Seminole Nation of Oklahoma requested digital maps for Snake Creek Church • Discovery Meeting Datasheet Reference: M24
10.83	Unnamed Tributary to Turkey Creek	Seminole Nation of Oklahoma	<ul style="list-style-type: none"> • The Seminole Nation of Oklahoma requested digital maps for EW 118 and the Highway 3 Housing Addition. • Discovery Meeting Datasheet Reference: M25
10.84	Tributary 2 to Magnolia Creek	Seminole Nation of Oklahoma	<ul style="list-style-type: none"> • The Seminole Nation of Oklahoma requested digital maps for a completed Housing Addition. • Discovery Meeting Datasheet Reference: M18

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.85	Seminole Nation of Oklahoma	Seminole Nation of Oklahoma	<ul style="list-style-type: none"> • The Seminole Nation of Oklahoma stated that previously undeveloped land may be developed soon. • Discovery Meeting Datasheet Reference: M23
10.86	City of Henryetta	City of Henryetta	<ul style="list-style-type: none"> • The City has observed areas in the western and northern parts of town that have been flooding. A study for drainage in these areas may be needed.
10.87	Dutch Creek	City of Henryetta	<ul style="list-style-type: none"> • The City’s floodplain mapping is okay except at the western end of town. • On the left side of Panel 400144 0003C (12/3/91), the floodplain on the left side needs to be extended to the corporate limit to reflect the flooding that occurs there.
10.88	Unnamed Stream	City of Henryetta	<ul style="list-style-type: none"> • Near the unnamed Zone A on Panel 400144C0001C (12/3/91), flooding occurs south of the middle Zone X label. • Discovery Meeting Datasheet Reference: M26
10.89	Muscogee (Creek) Nation	Muscogee (Creek) Nation	<ul style="list-style-type: none"> • Muscogee (Creek) Nation would appreciate technical assistance with their mitigation plan.
10.90	City of Eufaula	Muscogee (Creek) Nation	<ul style="list-style-type: none"> • Flooding occurs in the City of Eufaula outside the USACE flood pool for Lake Eufaula in the Eufaula Cove area.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.91	Okmulgee County	Okmulgee County	<ul style="list-style-type: none"> • The County’s HMP expires on 7/2/12. • Generator projects have been completed. • Safe room projects have been initiated. • The County did not receive a set of the effective FIRMs after the last update. • Some property owners have built berms around their homes. • The City of Okmulgee is obtaining LiDAR (flown by Pictometry). • Okmulgee County has requested a set of effective FIRMs and FISs, as these were not provided when the FIRMs and FISs were issued effective.
10.92	Okmulgee County	Okmulgee County	<ul style="list-style-type: none"> • While major areas of flooding concern have been mapped, all SFHAs are Zone As with no BFEs. • BFEs would greatly assist with floodplain management. The County asked whether models exist for the Zone As. • In addition, SFHAs need to be extended outside the cities where development is growing.
10.93	Sac & Fox Nation	Sac & Fox Nation	<ul style="list-style-type: none"> • The Sac & Fox Nation requested that the Payne, Lincoln, and Pottawatomie FIRM databases be sent to Daniel Wind. • The Sac & Fox Nation requested information on joining the NFIP. • Daniel Wind would like to attend the 273 course in January 2012.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.94	Absentee Shawnee Tribe of Oklahoma	Absentee Shawnee Tribe of Oklahoma	<ul style="list-style-type: none"> The Absentee Shawnee Tribe of Oklahoma do not think that all tribal lands are mapped and available online with FEMA. The Absentee Shawnee Tribe of Oklahoma requested that the FIRM databases (Cleveland, Oklahoma, and Pottawatomie Counties) be provided to Linda Day.
10.95	Tributary 2 to Squirrel Creek	Absentee Shawnee Tribe of Oklahoma	<ul style="list-style-type: none"> The Absentee Shawnee Tribe of Oklahoma stated that a shopping center floods near reference point M-36.
10.96	Squirrel Creek	Absentee Shawnee Tribe of Oklahoma	<ul style="list-style-type: none"> The Absentee Shawnee Tribe of Oklahoma stated that an access road to a residential area near reference point M-37 washes out.
10.97	Unnamed Ditch near Squirrel Creek Potawatomi Nation	Citizen Potawatomi Nation	<ul style="list-style-type: none"> The Citizen Potawatomi Nation stated that grant for an agricultural ditch project that will be completed in 2012 was rejected. A LOMR will be submitted for this project. Plans for the project can be provided. Discovery Meeting Datasheet Reference: M-30
10.98	Unnamed Stream (west of the intersection of Brangus Road and Hardesty Road.) Potawatomi Nation	Citizen Potawatomi Nation	<ul style="list-style-type: none"> A proposed industrial park location and the SFHA are not accurate in this area. A study is requested. Discovery Meeting Datasheet Reference: M-31
10.99	Squirrel Creek	Citizen Potawatomi Nation	<ul style="list-style-type: none"> The channel has been dredged out and the flood hazards along the channel need to be restudied. Discovery Meeting Datasheet Reference: M-32
10.100	Lower North Canadian River	Citizen Potawatomi Nation	<ul style="list-style-type: none"> Flooding occurs from the Lower North Canadian River. Discovery Meeting Datasheet Reference: M-33

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.101	Lower North Canadian River Pottawatomie Nation	Citizen Potawatomi Nation	<ul style="list-style-type: none"> • Dale City may need new SFHAs. • Discovery Meeting Datasheet Reference: M-34
10.102	Lower North Canadian River and Deer Creek Pottawatomie Nation	Citizen Potawatomi Nation	<ul style="list-style-type: none"> • The Citizen Potawatomi Nation requested a study for a potential area of growth. • Discovery Meeting Datasheet Reference: M-35
10.103	Lake Eufaula	FEMA	<ul style="list-style-type: none"> • Lake Eufaula is mapped as a Zone A on the effective. BFEs are needed for floodplain management along the lake shore. • USACE has informed FEMA / RAMPP that the BFE for the lake is 600 feet NAVD. • Detailed topographic information is available for this area.
10.104	Brock Creek	FEMA / Oklahoma City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Entire length • Length (miles): 3.51 • Effective Panel(s): 40109C0295H & 40109C0285H • Community Comments: The Zone AE has increased since the 2002 panels. The increase does not seem warranted when comparing the BFE to the contour information. This creek has been recently concrete lined and the SFHA is shown to be greatly outside of channel boundaries.
10.105	Choctaw Creek	FEMA / Choctaw (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Cross Sections E-Q • Length (miles): 2.36 • Effective Panel(s): 40109C0335H • Community Comments: Restudy.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.106	Crutcho Creek	FEMA / Del City & Midwest City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Cross sections M - AJ. Restudied for 2009 FIS. • Length (miles): 4.28 • Effective Panel(s): 40109C0310H • Community Comments: <ol style="list-style-type: none"> 1. S. Sooner Rd. to SE 15th St. - Significant work done on Crutcho Creek and Trib B. LOMR pending. Bridge at Vickie Drive was replaced. 2. SE 15th St. to I-40 - Impact of work in segment 1 is unknown based on restriction at SE 15th St. 3. I-40 to Reno Ave. - Includes inter-watershed "crossover" between Crutcho Creek and Cherry Creek. Reason to believe the model is inaccurate based on the Gurnsey study done for MWC. The 12/18/09 FIS inaccurately reports that the crossover was filled in by the City. 4. Reno Ave. to N. Sooner Rd. - Crutcho Creek has moved its channel significantly in the area between N. Vickie Dr. and N. Sooner Rd. There are two LOMR-Fs that were not incorporated in the FIRM. Erosion and scour have undermined a borrow pit and caused it to become in-channel storage. Building pads within the Hidden Creek addition are now being threatened by erosion. 5. N. Sooner Rd. to NE 10th St. - There appears to be an undocumented levee along the left bank of Crutcho Creek (near "Q"). Also, land at the intersection of Crutcho Creek and Trib D appears to have been filled in such a way as to significantly reduce mapped storage.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.107	Crutcho Creek	FEMA / City of Oklahoma City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Cross Sections AQ-AX • Length (miles): 2.13 • Effective Panel(s): 40109C0320H • Community Comments: Undocumented structures have been added.
10.108	Crutcho Creek Tributary D	FEMA / City of Midwest City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Restudied for 2009 FIS. • Length (miles): 1.24 • Effective Panel(s): 40109C0310H • Community Comments: Channelization not reflected.
10.109	Crutcho Creek Tributary G	FEMA / City of Oklahoma City (FY09 Scoping)	<ul style="list-style-type: none"> • Length (miles): 0.58 • Effective Panel(s): 40109C0320H • Community Comments: Zone A increase from 2002 panels to current panels
10.110	Lightning Creek	FEMA / City of Oklahoma City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: From confluence with the North Canadian River to Cross Section A • Length (miles): 0.73 • Effective Panel(s): 40109C0285H • Community Comments: Increase in Zone AE from 2002 panels. Increase does not seem warranted when comparing BFE to contour information. This portion of the creek has been recently concrete lined and SFHA is shown to be greatly outside of channel boundaries.
10.111	Lightning Creek Tributary 1	FEMA / City of Oklahoma City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Entire length • Length (miles): 1.76 • Effective Panel(s): 40109C0295H • Community Comments: Increase in Zone AE from 2002 panels. Increase does not seem warranted when comparing BFE to contour information. This creek has been recently concrete lined and the SFHA is shown to be greatly outside of channel boundaries.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.112	North Canadian River	FEMA / City of Oklahoma City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Eastern Ave. to Overholser Dam. Approximately Cross Section DA to Cross Section HO • Length (miles): 14.86 • Effective Panel(s): 40109C0305H & 40109C0285H & 40109C0280H & 40109C0260H • Community: OKC • Community Comments: Series of Locks and Dams constructed between 1999 and 2004. Changes to river may not be accurately reflected with 2004 contour information.
10.113	North Canadian River	FEMA / Oklahoma County (FY09 Scoping)	<ul style="list-style-type: none"> • Length (miles): 3.42 • Effective Panel(s): 40109C0240H • Community Comments: Stream line change shown on 2008 aerials.
10.114	North Canadian River Tributary 12	FEMA / City of Oklahoma City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Cross Sections C-D • Length (miles): 0.92 • Effective Panel(s): 40109C0280H & 40109C0290H • Community Comments: This creek has been concrete lined and SFHA is shown to be greatly outside of the channel boundaries.
10.115	North Canadian River Tributary 13	FEMA / City of Oklahoma City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Upstream of Cross Section D • Length (miles): 1.92 • Effective Panel(s): 40109C0280H & 40109C0290H • Community Comments: Creek has been straightened and floodway and floodplain do not follow contour lines

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.116	Twin Creek	FEMA / City of Oklahoma City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Entire length • Length (miles): 4.96 • Effective Panel(s): 40109C0285H, 40109C0280H, & 40109C0290H • Community Comments: Increase in Zone AE from 2002 panels. Increase does not seem warranted when comparing BFE to contour information. Entire channel upstream of Cross Section E is in a concrete lined channel. The SFHA is shown to be greatly outside of channel boundaries. Upstream of Cross Section L, RCB with concrete channel on top never properly modeled (only channel was modeled). As-built plans can be provided for this project, if needed.
10.117	Unnamed Stream	FEMA / City of Oklahoma City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Flooding effects from North Canadian River • Length (miles): 1.7 • Effective Panel(s): 40109C0280H • Community Comments: Study in detail and add BFEs.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.118	Unnamed Tributary to Cherry Creek	FEMA / City of Del City (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Unnamed tributary confluences with Cherry Creek near Cross Section N • Length (miles): 1.74 • Effective Panel(s): 40109C0305H • Community Comments: Along Lariat Lane, upstream of Cherry Creek Cross Section N, there is a small area of mapped AE that terminates at SE 23rd St. Observation of local conditions shows this area to have both a localized drainage issue and a riverine flood risk. Lariat Lane, from SE 27th St. until it discharges into Cherry Creek between SE 22nd St. and Mallard Dr., exhibits the characteristics of a riverine flood source. Where Lariat Lane begins to take water from a storm outlet at SE 27th St., it is draining a large area extending nearly to SE 44th St. A detailed study of this area, stretching all the way back to the cemetery property south of SE 29th St., would be helpful in order to document the true extent of the risk and to ensure that appropriate regulatory and insurance requirements were applied.
10.119	Unnamed Tributary to Choctaw Creek	FEMA / Choctaw (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Unnamed trib confluences with Choctaw Creek near Cross Section L • Length (miles): 1.27 • Effective Panel(s): 40109C0335H • Community Comments: Proposed development in this area.

Table 10 - Data Collection Summary – During Discovery Meeting and Post-Meeting (continued)

Issues and Concerns Collected During the Discovery Meeting			
Item	Flooding Source / Location	Information Provided By	Discovery Meeting Comment Summary
10.120	Unnamed Tributary to Choctaw Creek	FEMA / Choctaw (FY09 Scoping)	<ul style="list-style-type: none"> • Reach: Unnamed trib confluences with Choctaw Creek near Cross Section U • Length (miles): 0.36 • Effective Panel(s): 40109C0330H • Community Comments: Proposed development in this area. 2008 aerials show detention on this flooding source.
10.121	North Canadian River	FEMA (FY10 Discovery)	<ul style="list-style-type: none"> • The Post Discovery Hydraulic and Floodplain Analysis found a floodplain mismatch for the North Canadian River at the county boundary between Okmulgee and McIntosh Counties.
10.122	Jacobs Creek	FEMA (FY10 Discovery)	<ul style="list-style-type: none"> • The Post Discovery Hydraulic and Floodplain Analysis found a floodplain mismatch for Jacobs Creek at the county boundary between Seminole and Hughes Counties.
10.123	Long George Creek	FEMA (FY10 Discovery)	<ul style="list-style-type: none"> • The Post Discovery Hydraulic and Floodplain Analysis found a floodplain mismatch for Long George Creek at the county boundary between Seminole and Hughes Counties.
10.124	North Canadian River	FEMA (FY10 Discovery)	<ul style="list-style-type: none"> • The Post Discovery Hydraulic and Floodplain Analysis found a floodplain mismatch for the North Canadian River at the intersection of Oklahoma, Lincoln and Pottawatomie Counties.

All supporting information, data, and files are included with the digital data that accompany this report. The following is a listing of the files and folders and which data may be found under each sub-folder.

11100302\Discovery

- Transmittal letter

\1-Project_Discovery_Initiation

- Community Contact List

- Project Team Information
- **\GIS**
 - Political Areas shapefile
 - Transportation shapefile
 - HUC boundary shapefile

\2-Discovery_Meeting

- Meeting Agenda
- Meeting Summary
- Meeting Presentation
- Attendance Record
- **\Correspondence**
 - Invitation letters, Notification letters, Thank-you letters

\3-Post_Discovery

- Discovery Maps (final)
 - Discovery Map Flood Risk
 - Discovery Map Flood Hazard
- Discovery Report (final)
- Geospatial Data Summary
- Draft FIRM Panel Index (DCS_S_PRP_FIRMPAN)
- Mapping Activity Statement (MAS)
- Meeting Attendant Summary
- National Metrics
- Potential Projects (DCS_S_DISCOVERY_MAP)
- Statement of Work (SOW)

\4-Supplemental_Data

- Engagement Plan
- Discovery Meeting Exhibits
- Discovery Meeting Data Collection Maps
- Discovery Meeting Information Collection Sheets
- Outreach Newsletters
- Metadata file
- **\GIS** (The following folders contain data files and GIS Files to create Exhibits or Discovery Maps (MXD, SHP or, PGDB/ fGDB) – ESRI ArcGIS 9.3.1)
 - **\CNMS Maps**
 - **\Overview Maps**
 - **\Topic Maps**
- **\Photos**
 - Meeting photos

III. Watershed Findings

Following the Discovery Meetings, additional engineering overview analysis is performed to help focus and more clearly identify key areas discussed during the Discovery process. The post-Discovery review is targeted to areas within the watershed that have been identified as having some type of mitigation action going forward. The Discovery process may eliminate the need to further explore particular counties or community areas within the watershed, so a full analysis of all engineering concerns within the watershed is not performed after the initial Discovery process. The details provided in this post-Discovery report add to the documents that call for further mitigation actions or studies in particularly streams, reaches, or communities within the watershed.

A comparison of the CNMS data with the flood hazard data found that the CNMS inventory for this watershed does not capture all the flood hazards. Furthermore, there are specific stream reaches which are considered “VALID” in CNMS but which are area of concern for the communities.

i. Engineering Review of Community Comments

As a first step, any engineering related comments provided by the communities during the Discovery meetings were initially validated. Comments were reviewed both in terms of hydrologic or hydraulic issues within the watershed and as general floodplain or BFE-related comments. Any supporting appeal or protest information, correspondence from communities, or anecdotal information was researched to determine whether any impacts to hydrologic analysis were substantiated.

Discovery Meetings in Oklahoma City and Del City brought forth a large number of modeling issues with the effective FIRMs, primarily on the effect of infrastructure projects not reflected on the FIRMs. This included the lock and dam system in Oklahoma City and a number of projects in Midwest City. An issue with the floodway modeling and mapping was raised by Del City. In addition, the flood hazards for a number of flooding sources in Oklahoma County were redelineated in the last FIRM update. These redelineated flood hazards do not reflect the recently acquired LiDAR topographic data. The representatives from Tinker Air Force Base also identified areas where future development is planned.

At the Discovery Meeting in Shawnee, the City of Shawnee expressed the need for a restudy of Zone A floodplains within the city. This restudy is needed, as almost all LOMAs have been approved within these Zone A areas. The City thinks that the outdated Zone A SFHAs are outdated and too wide. The City of Holdenville identified residential areas where SFHAs are needed.

During the Discovery Meeting in Seminole, concerns were raised about the SFHA mapping along Magnolia Creek in the City of Seminole. Similarly, the City of Wewoka identified areas where the SFHAs need to be updated. Seminole County indicated that the SFHAs were shifted in the last FIRM update and did not match imagery or topography. Seminole County and the Seminole Nation of Oklahoma agreed to provide information on specific stream reaches where restudies are needed.

At the Discovery Meeting in Henryetta, the Muscogee (Creek) Nation provided information on flooding in the City of Eufaula where there are currently no SFHAs mapped. Okmulgee County expressed a need for BFEs along the SFHAs to assist in floodplain management. The City of Henryetta identified residential areas where SFHAs are needed.

The final Discovery Meeting in this watershed was held in Shawnee with the Tribal Nations. It was attended by representatives from the Citizen Potawatomi Nation, Absentee-Shawnee Tribe of Oklahoma, and Sac & Fox Nations. At this meeting, Citizen Potawatomi identified a number of locations of planned future development where SFHAs are needed.

ii. Post-Discovery Hydrology

Two limited reviews of hydrologic information were performed for post-Discovery analysis within the LNC Watershed. It was not within the scope of this project to request all back-up modeling for the communities in the watershed. These reviews centered on:

- Review of Peak Discharges in the watershed; and
- Limited Gage analysis for the watershed.

For the watershed as a whole, the 1-percent annual chance peak discharges were reviewed for all streams across community boundaries. These reviews looked for discharge anomalies, or places where LOMRs demonstrate that the effective discharges may be suspect. Explanations were added if the discharge anomalies or effective discharges may be reasonable due to local flood control structures, detention areas, flow break outs, sinks, or other natural or manmade factors that may significantly alter hydrologic flows. Finally, a watershed-wide gage analysis was conducted to compare the information on any available gages within the watershed with appropriate historical information relative to the effective FIS, or discharges for streams with gages. This analysis could potentially flag any anomalies that would indicate that the hydrology may be outdated, too high, or too low for sub-basin areas within the watershed.

A. Review of Peak Discharges

Peak discharges were reviewed based on available FIS reports, hydraulic models, flow gages, and available LOMRs within the watershed where SHFA areas crossed corporate limits (e.g., county, city, and town). A comparison of discharges was made for the same streams across county boundaries, as shown in Table 11. In general, the discharges at most community and corporate limit boundaries in the LNC Watershed matched well. No hydrologic data is available for streams with a Zone A designation.

The analysis noted the following:

1. Discharge discrepancies on the North Canadian River at the county boundary between Oklahoma and Pottawatomie Counties;
2. Discharge discrepancies on Choctaw Creek at the corporate boundary between the City of Choctaw and the City of Nicoma Park; and
3. Discharge discrepancies on Crutcho Creek at the corporate boundary between the City of Midwest City and the City of Del City.

The discharge discrepancies for the North Canadian River, Choctaw Creek, and Crutcho Creek do not appear to be a result of local flood control structures, detention

areas, flow break outs, sinks, or other natural or manmade factors that may have significantly alter hydrologic flows. The mismatches seen in the hydrology may impacted the hydraulic analysis and may also result in floodplain and BFE mismatches that are present in the effective products at the county boundary within the LNC Watershed.

Table 11 - Discharge Comparison at Community Limits

Stream Name	County	Effective 1% annual chance discharge (cfs)	Effective discharges Source	Notes
North Canadian River	Oklahoma County	53,500 cfs	FISs	Discharge is decreasing downstream
	Pottawatomie County	53,025 cfs		
Choctaw Creek	Oklahoma County (City of Choctaw)	7,948 cfs	FIS	Discharge seems to decrease going downstream from City of Choctaw to City of Nicoma Park
	Oklahoma County (City of Nicoma Park)	4,565 cfs		
Crutcho Creek	Oklahoma County (City of Midwest)	17,470 cfs	FIS	Discharge is reduced by approximately 3,900 cfs within 300 ft of entering City of Del City.
	Oklahoma County (City of Del City)	13,590 cfs		

The discharge comparison analysis also found a discharge mismatch on the North Canadian River within Pottawatomie County (see Table 12).

Table 12 - Discharge Comparison within Communities

Stream Name	County	Effective 1% annual chance discharge (cfs)	Effective discharges Source	Notes
North Canadian River	Pottawatomie County	<p>North Canadian River (Upper Reach) 53,025 cfs at drainage area 13,541 square miles</p> <p>North Canadian River (Lower Reach) 42,500 cfs at drainage area = 1,230 square miles</p>	FISs	<p>Discharge is decreasing downstream</p> <p>Drainage area (1,230 square miles) for the downstream location appears to be incorrect in the FIS</p>

Table 13 lists any LOMRs for the LNC Watershed that have an impact on hydrology. Each LOMR was reviewed.

Table 13 - LOMRs that Revise Hydrology within the Watershed

Stream Name	Case number	Basis of request	Notes
Tributary H of North Canadian River (Lower Reach)	01-06-1796P	Hydrologic & Hydraulic Analysis with new topographic information	LOMR that revised a Zone A based on new topographic information, hydrologic and hydraulic analyses. No BFEs were developed.
Tributary 1 of Tributary 2 of Rock Creek	06-06-B821P	Hydrologic & Hydraulic Analysis with new topographic information	LOMR that established BFEs on a flooding source based on new topographic data, channelization and culvert(s) along with hydrologic and hydraulic analyses.

B. Frequency Analysis

Frequency analyses were performed for all the gages within the LNC Watershed having records more than 10 years. Frequency analyses were performed using PeakFQ computer software. The comparison between discharges from FIS and from gage analysis was made and listed in Table 14. The discharges from the gage analyses are significantly different than the effective FIS discharges. The number of peaks in record at gages ranges from 10 to 73. At this time, a gage frequency analysis is not recommended because of the relative lower number of record peaks.

Table 14 - Comparison of 1-Percent-Annual-Chance Peak flows of Gage Frequency Analysis and Effective Discharges

Stream Name	Drainage Area from USGS Gage (square mile)	Effective discharges Source	Effective 1% annual chance discharge (cfs)	95% Confidence limits Lower (cfs) (Gage)	1% Annual Chance Discharge from PeakQ (Gage)	95% Confidence limits Upper (cfs) (Gage)	Number of peaks in record
North Canadian River Britton Rd, Oklahoma City (07241520)	13,413	FIS	51,000	36,390	54,130	100,800	22
North Canadian River near Harrah (07241550)	13,501	FIS	53,500	26,230	36,140	56,960	34
North Canadian River at Shawnee, OK (07241800)	13,730	FIS	42,500	17,630	31,440	101,000	10
North Canadian River near Wetumka, OK (07242000)	14,290	N/A	Zone A	39,250	48,020	61,980	73
Sand Creek near Cromwell (07241880)	9.48	N/A	Zone A	3,315	4,348	6,636	22
Stidham Creek Trib near Dustin, OK (07242180)	2.56	N/A	N/A	668.3	883.8	1,461	13
Alabama Creek near Weleetka, OK (07242160)	16.5	N/A	N/A	5,267	8,123	16,220	18

iii. Post-Discovery CNMS Analysis

With LNC comprising portions of Cleveland, Hughes, Lincoln, McIntosh, Okfuskee, Oklahoma, Okmulgee, Pottawatomie, and Seminole Counties, five counties (Cleveland, Lincoln, Oklahoma, Pottawatomie, and Seminole) were part of the detailed

CNMS Phase 3 efforts. Okmulgee County was part of the Region 6 CNMS pilot effort. Table 15 shows the detailed study streams in the LNC Watershed that have failed one or more validation elements during the CNMS stream reach level validation process. The CNMS validation elements attempt to identify changes to the Physical Environment, Climate, and Engineering Methodologies since the date of the Effective Analysis (different from the Effective issuance date). Per the CNMS validation process, the study is considered as having a need, or is assigned an „Unverified’ status, if one of seven critical elements fails, or if four or more of the 10 secondary elements fail during stream reach level validation. Table 16 provides a description of the validation elements that failed as identified in the CNMS database.

Table 15 - CNMS Analysis

Stream Name	County	Validation Status	Failed CNMS Elements
Lightning Creek	Cleveland	Valid	S4, S6, S10
Shan Creek	Lincoln	Valid	None
Shan Creek Tributary	Lincoln	Valid	None
B Creek	Oklahoma	Valid	S10
Branch Creek	Oklahoma	Valid	None
Brock Creek	Oklahoma	Valid	S2, S6, S10
Cherry Creek	Oklahoma	Valid	S6
Choctaw Creek	Oklahoma	Valid	S3, S4, S6
Choctaw Creek	Oklahoma	Valid	S3, S6
Choctaw Creek Tributary	Oklahoma	Valid	S3, S6
Choctaw Creek Tributary 2 East Branch	Oklahoma	Valid	S3, S10
Choctaw Creek Tributary 3	Oklahoma	Valid	S3, S10
Choctaw Creek Tributary 4	Oklahoma	Valid	S3, S10
Choctaw Creek Tributary 4 West Branch	Oklahoma	Valid	S3, S6, S10
Choctaw Creek Tributary 5	Oklahoma	Valid	S3, S10
Choctaw Creek Tributary 5	Oklahoma	Valid	S3, S10
Choctaw Creek Tributary 5	Oklahoma	Valid	S3, S6, S10
Choctaw Creek Tributary 6	Oklahoma	Valid	S3, S6, S10

Table 15 - CNMS Analysis (continued)

Stream Name	County	Validation Status	Failed CNMS Elements
Choctaw Creek Tributary 6	Oklahoma	Valid	S3, S6, S10
Choctaw Creek Tributary 6 West Branch	Oklahoma	Valid	S3, S10
Choctaw Creek Tributary 7	Oklahoma	Valid	S3, S6, S10
Crooked Oak Creek	Oklahoma	Valid	S6
Crooked Oak Creek Tributary A	Oklahoma	Valid	S6, S10
Crutcho Creek	Oklahoma	Valid	S4, S6, S10
Crutcho Creek	Oklahoma	Valid	S6
Crutcho Creek Tributary C	Oklahoma	Valid	S6, S10
Crutcho Creek Tributary C1	Oklahoma	Valid	S6, S10
Crutcho Creek Tributary F	Oklahoma	Valid	S6, S10
Crutcho Creek Tributary G	Oklahoma	Valid	S6, S10
Lightning Creek	Oklahoma	Valid	S6, S10
Lightning Creek Tributary 1	Oklahoma	Valid	S6, S10
Lightning Creek Tributary 3	Oklahoma	Valid	S6, S10
Lightning Creek Tributary 6	Oklahoma	Valid	S6, S10
North Canadian River	Oklahoma	Valid	S2, S6, S10
North Canadian River Tributary 1	Oklahoma	Valid	None
North Canadian River Tributary 10	Oklahoma	Valid	S6, S10
North Canadian River Tributary 12	Oklahoma	Valid	S6, S10
North Canadian River Tributary 13	Oklahoma	Valid	S6, S10
North Canadian River Tributary 2 of Tributary 1	Oklahoma	Valid	None
North Canadian River Tributary 3	Oklahoma	Valid	S3
North Canadian River Tributary 3 of Tributary 1	Oklahoma	Valid	S10

Table 15 - CNMS Analysis (continued)

Stream Name	County	Validation Status	Failed CNMS Elements
North Canadian River Tributary 4	Oklahoma	Valid	S10
North Canadian River Tributary 5	Oklahoma	Valid	S10
North Canadian River Tributary 6	Oklahoma	Valid	S10
North Canadian River Tributary 8	Oklahoma	Valid	S4, S6, S10
North Canadian River Tributary 8	Oklahoma	Valid	S6, S10
North Canadian River Tributary 8X	Oklahoma	Valid	S10
North Canadian River Tributary 9	Oklahoma	Valid	S6, S10
North Canadian River Tributary 9	Oklahoma	Valid	S6, S10
Soldier Creek Tributary 4	Oklahoma	Valid	S6
Soldier Creek Tributary 6	Oklahoma	Valid	S6
Tributary A of North Canadian River Tributary 1	Oklahoma	Valid	S10
Twin Creek	Oklahoma	Valid	S6, S10
Unnamed Tributary to North Canadian River Tributary 13	Oklahoma	Valid	S6, S10
North Canadian River (Lower Reach)	Pottawatomie	Valid	S5, S6
North Canadian River (Upper Reach)	Pottawatomie	Valid	None
Rock Creek	Pottawatomie	Valid	S4, S6, S10
Rosedale Park Tributary	Pottawatomie	Valid	S6, S10
Squirrel Creek	Pottawatomie	Unverified	C4, S6
Tributary No. 1 to North Canadian River	Pottawatomie	Valid	S6, S10
Tributary No. 1 to Rock Creek	Pottawatomie	Valid	S6, S10
Tributary No. 1 to Squirrel Creek	Pottawatomie	Valid	S2, S4, S10
Tributary No. 2 to North	Pottawatomie	Valid	S6, S10

Table 15 - CNMS Analysis (continued)

Stream Name	County	Validation Status	Failed CNMS Elements
Canadian River			
Tributary No. 2 to Rock Creek	Pottawatomie	Valid	S6, S10
Tributary No. 2 to Squirrel Creek	Pottawatomie	Unverified	C5, S10
Tributary No. 3 to North Canadian River	Pottawatomie	Valid	S4, S6, S10
Tributary No. 3 to Rock Creek	Pottawatomie	Valid	S6, S10
Tributary No. 3 to Squirrel Creek	Pottawatomie	Valid	S10
Wynnewood Creek	Pottawatomie	Valid	None
Carter Creek	Seminole	Valid	S4, S10
Coon Creek	Seminole	Valid	S4, S10
Magnolia Creek	Seminole	Valid	S1, S4, S10
Sandy Creek	Seminole	Valid	S4, S10
Tributary 1 of Carter Creek	Seminole	Valid	S4, S10
Tributary 1 of Magnolia Creek	Seminole	Valid	S1, S10
Tributary 1 of Tributary 3 of Magnolia Creek	Seminole	Valid	S1, S4, S10
Tributary 2 of Magnolia Creek	Seminole	Valid	S1, S4, S10
Tributary 3 of Carter Creek	Seminole	Valid	S4, S10
Tributary 3 of Magnolia Creek	Seminole	Valid	S1, S10
Tributary A	Seminole	Unverified	C7, S4, S10
Wewoka Creek	Seminole	Valid	S10

Table 16 - Descriptions of CNMS Categories for Failed Elements in LNC Watershed

Element Name	Issue being identified by the Element	Element Description
C4	<i>Major flood control structure added or removed?</i>	Failure of this element indicates the addition or removal of a major flood control structure (i.e., certified levee or seawall, reservoir with more than 50 acre-ft storage per square mile).
C5	<i>Current channel reconfiguration outside effective SFHA?</i>	Failure of this element indicates the streamline is seen on imagery as outside the SFHA and cannot be explained by a minor mapping error, which could be corrected through base fitting.
C7	<i>Significant channel fill or scour?</i>	Failure of this element indicates a significant channel fill or scour has been identified.
S1	<i>Use of rural regression equations in urbanized areas?</i>	This element attempts to flag studies in currently urban areas where rural regression equations were used for the Effective study hydrology.
S2	<i>Repetitive losses outside the SFHA?</i>	This element fails when repetitive losses have been noted outside of the SFHA. Repetitive losses determined to be from an unmapped source, or due to local drainage issues are not considered.
S3	<i>Increase in impervious area in sub-basin of more than 50 percent?</i>	Failure of this element identifies a significant increase in impervious area (due to urban development since the study date) based on best available land use / land cover data sources.
S4	<i>More than one and less than five new or removed hydraulic structures (bridge/culvert) impacting BFEs?</i>	This element identifies addition or removal of more than 1, but less than 5 hydraulic structures along the studied streams since the date of the Effective Study.
S5	<i>Channel improvements / Shoreline changes?</i>	Failure of this element indicates the FIRM, Imagery, or other data input sources show channel improvements since the study date.
S6	<i>Better topographic or bathymetric data available?</i>	Failure of this element indicates better topographic or bathymetric data has been made available since the effective study date.
S10	<i>New regression equations available?</i>	Failure of this element indicates updates to regression equations since the date of study for studies that used a regression analysis for hydrology.

A. Summary of CNMS Concerns

For the LNC Watershed, no major changes in land use or land cover were identified. Effective model methods are considered appropriate based on G&S. There have been

no major changes in gage record. And, updated and effective peak discharges were not found to differ based on confidence limits criteria in FEMA G&S.

In general, for the LNC Watershed, the stream locations on aerial imagery were found to be within the mapped FIRM SFHAs. Only minor channel reconfigurations outside the effective SFHA were identified. One instance of significant channel fill/scour was identified along Tributary A. One instance of channel improvements was identified along North Canadian River. And, the position of the levee along Squirrel Creek is not accurately represented on the map. Repetitive or severe repetitive losses occurred outside the SFHAs along Brock Creek, North Canadian River, and Tributary 1 to Squirrel Creek. There were four instances where rural regression equations were identified as being used in areas now considered to be urban.

Along fifteen stream reaches, an increase in impervious areas was identified. Sixteen stream reaches were identified as having between one and four structures (bridges/culverts) removed, which may impact BFEs. Better topographic data is available or being acquired for approximately 69% of the watershed. Updated regression equations from 1997 are available for the State of Oklahoma. Therefore, studies using regression analysis for hydrology were indented as potential needs for restudy due to the availability of new or updated regression equations since the study date.

Cleveland County:

- Lightning Creek in Cleveland County failed elements S4, S6, and S10. Mismatches between the number of structures shown on the profile and imagery were identified. Better topographic data, dated April 1, 2011, was identified as available and updated regression equations from 1997 have rendered the hydrologic analysis outdated.

Oklahoma County:

- Repetitive loses have been noted outside of the SFHA for Brock Creek near cross sections C and D, and along the end of the North Canadian River, causing them to fail element S2.
- A significant increase in impervious area (resulting from urban development that occurred since the study date) based on best available land use and land cover data sources was identified for Choctaw Creek, Choctaw Creek Tributary, Choctaw Creek Tributary 2 East Branch, Choctaw Creek Tributary 3, Choctaw Creek Tributary 4, Choctaw Creek Tributary 4 West Branch, Choctaw Creek Tributary 5, Choctaw Creek Tributary 5, Choctaw Creek Tributary 6, Choctaw Creek Tributary 6, Choctaw Creek Tributary 6 West Branch, Choctaw Creek Tributary 7, and North Canadian River Tributary 3. Therefore, these flood sources failed element S3.
- Crutch Creek and North Canadian River Tributary 8 were identified as having mismatches between the number of structures shown on the profile and imagery, causing them to fail element S4.
- Better topographic data from the Oklahoma City Topo Acquisition Project was identified as available for Brock Creek, Cherry Creek, Choctaw Creek,

Choctaw Creek Tributary, Choctaw Creek Tributary 4 West Branch, Choctaw Creek Tributary 5, Choctaw Creek Tributary 6, Choctaw Creek Tributary 7, Crooked Oak Creek, Crooked Oak Creek Tributary A, Crutcho Creek, Crutcho Creek Tributary C, Crutcho Creek Tributary C1, Crutcho Creek Tributary F, Crutcho Creek Tributary G, Lightning Creek, Lightning Creek Tributary 1, Lightning Creek Tributary 3, Lightning Creek Tributary 6, the North Canadian River, North Canadian River Tributary 10, North Canadian River Tributary 12, North Canadian River Tributary 13, North Canadian River Tributary 8, North Canadian River Tributary 9, Soldier Creek Tributary 4, Soldier Creek Tributary 6, Twin Creek, and Unnamed Tributary to North Canadian River Tributary 13. Therefore, these flood sources failed element S6.

- Regression equations updated in 1997 have rendered the hydrologic analysis outdated for B Creek, Brock Creek, Choctaw Creek Tributary 2 East Branch, Choctaw Creek Tributary 3, Choctaw Creek Tributary 4, Choctaw Creek Tributary 4 West Branch, Choctaw Creek Tributary 5, Choctaw Creek Tributary 6, Choctaw Creek Tributary 6 West Branch, Choctaw Creek Tributary 7, Crooked Oak Creek Tributary A, Crutcho Creek, Crutcho Creek Tributary C, Crutcho Creek Tributary C1, Crutcho Creek Tributary F, Crutcho Creek Tributary G, Lightning Creek, Lightning Creek Tributary 1, Lightning Creek Tributary 3, Lightning Creek Tributary 6, the North Canadian River, North Canadian River Tributary 10, North Canadian River Tributary 12, North Canadian River Tributary 13, North Canadian River Tributary 3 of Tributary 1, North Canadian River Tributary 4, North Canadian River Tributary 5, North Canadian River Tributary 6, North Canadian River Tributary 8, North Canadian River Tributary 8X, North Canadian River Tributary 9, Tributary A of North Canadian River Tributary 1, Twin Creek, and Unnamed Tributary to North Canadian River Tributary 13. Therefore, these flood sources failed element S10.

Pottawatomie County:

- A review of aerial imagery shows the levee along Squirrel Creek is incorrectly represented on the FIRMs and in the MLI database. Imagery shows that the levee crosses streamline at XS „J,’ which is not accurate. The FIS acknowledges that the levees are not accredited, and mapping reflects levee locations incorrectly. This incorrect placement of the levee is causing Squirrel Creek to fail element C4.
- Two repetitive loss locations have been noted outside of the SFHA for Tributary No. 1 to Squirrel Creek, causing it to fail element S2.
- Two foot contours and spot elevations for the City of Shawnee, dated January 1, 1996, were identified as better topographic data available for the North Canadian River (Lower Reach), Rock Creek, Rosedale Park Tributary, Squirrel Creek, North Canadian River Tributary No. 1, Tributary No. 1 to Rock Creek, Tributary No. 2 to North Canadian River, Tributary 2 to Rock Creek, Tributary No. 3 to North Canadian River, and Tributary No. 3 to Rock Creek, failing element S6.

- Regression equations updated in 1997 have rendered the hydrologic analysis outdated for Rock Creek, Rosedale Park Tributary, Tributary No. 1 to North Canadian River, Tributary No. 1 to Rock Creek, Tributary No. 1 to Squirrel Creek, Tributary No. 2 to North Canadian River, Tributary No. 2 to Rock Creek, Tributary No. 2 to Squirrel Creek, Tributary No. 3 to North Canadian River, Tributary No. 3 to Rock Creek, and Tributary No. 3 to Squirrel Creek, thus failing element S10.

Seminole County:

- Tributary A in Seminole County failed element C7 because a bridge was identified as having a scour rating of 2, as verified by Leslie Lewis of the Oklahoma Department of Transportation.
- The hydrography for Magnolia Creek, Tributary 1 of Magnolia Creek, Tributary 1 of Tributary 3 of Magnolia Creek, Tributary 2 of Magnolia Creek, and Tributary 3 of Magnolia Creek was based on regression equations. According to the Urban Land cover Summary, land use around Magnolia Creek and its tributaries has changed from rural to urban since it was studied in 1981. Therefore, the rural regression equations used for hydrologic analysis are not valid, thus failing element S1.
- Mismatches between the number of structures shown on the profile and imagery were identified for Carter Creek, Coon Creek, Magnolia Creek, Sandy Creek, Tributary 1 of Carter Creek, Tributary 1 of Tributary 3 of Magnolia Creek, Tributary 2 of Magnolia Creek, Tributary 3 of Carter Creek, and Tributary A, failing element S4.
- Regression equations updated in 1997 have rendered the hydrologic analysis outdated for Carter Creek, Coon Creek, Magnolia Creek, Sandy Creek, Tributary 1 of Carter Creek, Tributary 1 of Magnolia Creek, Tributary 1 of Tributary 3 of Magnolia Creek, Tributary 2 of Magnolia Creek, Tributary 3 of Carter Creek, Tributary 3 of Magnolia Creek, Tributary A, and Wewoka Creek, failing element S10.

Zone A streams in the LNC Watershed:

- All Zone A streams in Cleveland, Hughes, Lincoln, McIntosh, Okfuskee, Pottawatomie, and Seminole Counties and select Zone A streams in Oklahoma County are not model backed.
- All Zone A streams in Okmulgee County and most Zone A streams in Oklahoma County are model backed.
- Hughes, McIntosh, and Okfuskee Counties have non-digital Zone A streams.
- Cleveland, Lincoln, Pottawatomie, and Seminole Counties and parts of Oklahoma County have digital conversions of flood zones from previous paper maps.

iv. Post-Discovery Hydraulics and Floodplain Analysis

Hydraulic and floodplain analyses were reviewed based on the FIS report, hydraulic models, and FIRMs. Because of the limited scope of work for this project, a request was not made to the FEMA library to collect all hydraulic models available for this watershed. Instead, a limited search was performed for available models as stored on FEMA’s MIP. No hydraulic modeling data was available for Zone A streams within the watershed for Cleveland, Hughes, Lincoln, McIntosh, Okfuskee, Pottawatomie, and Seminole Counties, and select Zone A streams in Oklahoma County. The CNMS data did show that all Zone A streams for this watershed in Okmulgee County and most Zone A streams in Oklahoma County are model-backed. Based on this limited hydraulic analysis and engineering judgment, several disconnects were identified in a few streams, with the majority located at county boundaries. No floodway disconnects were identified in this research. Table 17 identifies any recent LOMCs in the watershed that have impacted hydraulics and may have created disconnects up and downstream.

Table 17 - LOMRs that Revise Hydraulics within the Watershed

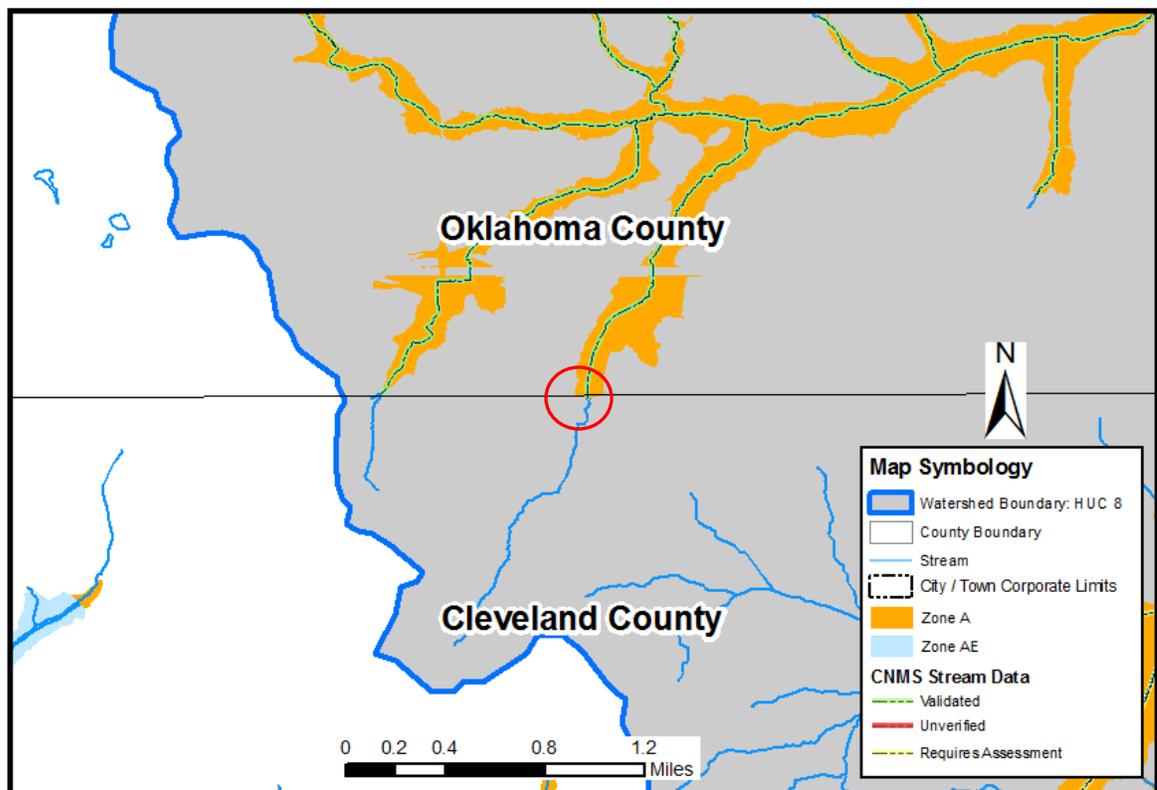
Stream Name	Case number	Basis of request	Notes
Tributary H of North Canadian River (Lower Reach)	01-06-1796P	Hydrologic & Hydraulic Analysis with new topographic information	LOMR that revised a Zone A based on new topographic information, hydrologic and hydraulic analyses. No BFEs were developed.
Tributary 1 of Tributary 2 of Rock Creek	06-06-B821P	Hydrologic & Hydraulic Analysis with new topographic information	LOMR that established BFEs on a flooding source based on new topographic data, channelization and culvert(s) along with hydrologic and hydraulic analyses.
Crutcho Creek	09-06-1014P	Hydraulic Analysis	New Topographic Data, Channelization and Fill
Brock Creek	09-06-2800P	Hydraulic Analysis	Floodway, New Topographic Data, Channelization and Culvert
Tributary E; Tributary F, Tributary G and Tributary H	98-06-1345P	Hydraulic Analysis	Channel modification project
Tributary 3 to Rock Creek	00-06-1468P	Hydraulic Analysis	New Topographic Data, Channelization and Fill
Squirrel Creek	06-06-B458P	Hydraulic Analysis	Squirrel Creek

Unnamed Tributary to North Deer Creek at the County Boundary between Oklahoma County and Cleveland County:

The unnamed tributary to North Deer Creek flows from Cleveland County into Oklahoma County as shown in Figure 4. The flood hazards for this flooding source are unmapped in Cleveland County, but are mapped as Zone A in Oklahoma County.

This tributary is not included in the CNMS inventory. Along with medium-high risk, the population along this stream indicates a potential for a flood study to extend the flood hazards south into Cleveland County. The study reach would be approximately 1.0 mile.

Figure 4 - Unnamed Tributary to North Deer Creek at the County Boundary between Oklahoma and Cleveland Counties

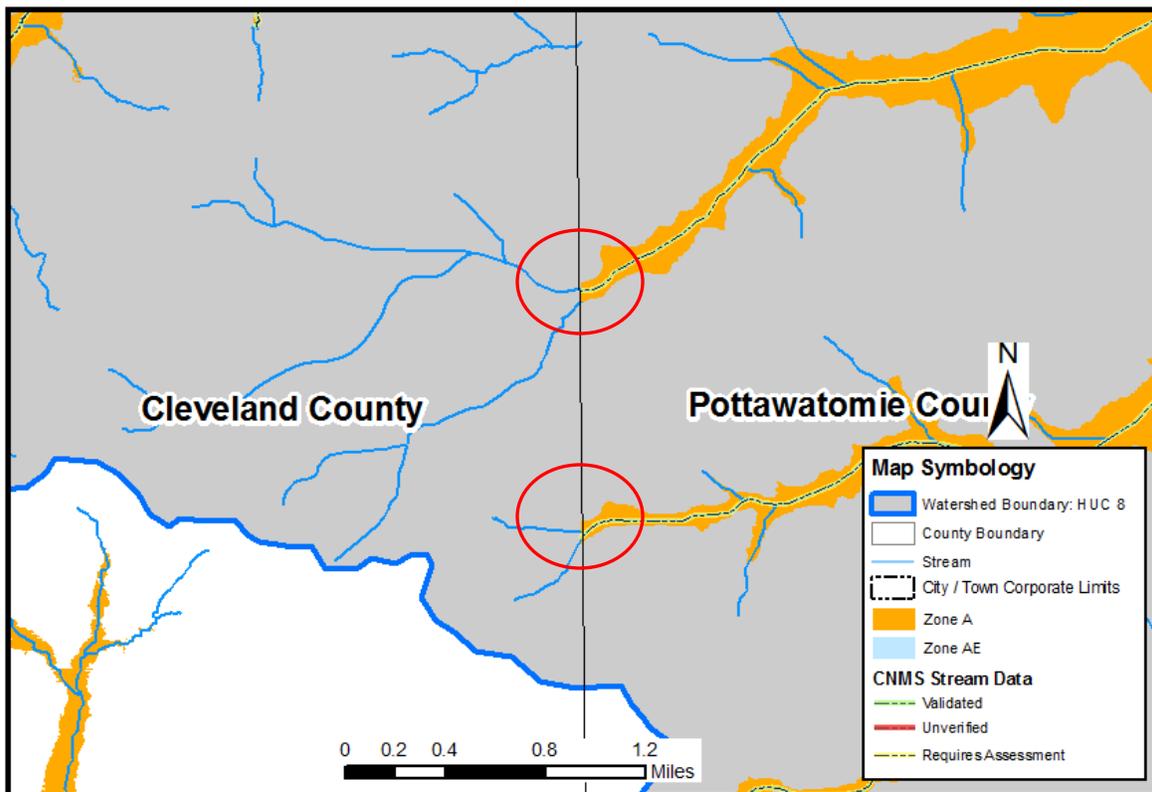


Unnamed Tributaries to South Deer Creek and Shawnee Reservoir at the county boundary between Cleveland County and Pottawatomie County

The unnamed tributaries to South Deer Creek and Shawnee Reservoir flow from Cleveland County into Pottawatomie County as shown in Figure 5. The flood hazards for these flooding sources are unmapped in Cleveland County, but are mapped as Zone A in Oklahoma County.

These tributaries are not included in the CNMS inventory. Along with medium risk, the population along these streams indicates a potential need for a flood study to extend the flood hazards south into Cleveland County. The study reaches would be approximately 3.5 miles.

Figure 5 - Unnamed Tributaries to South Deer Creek and Shawnee Reservoir at the County Boundary between Cleveland and Pottawatomie Counties

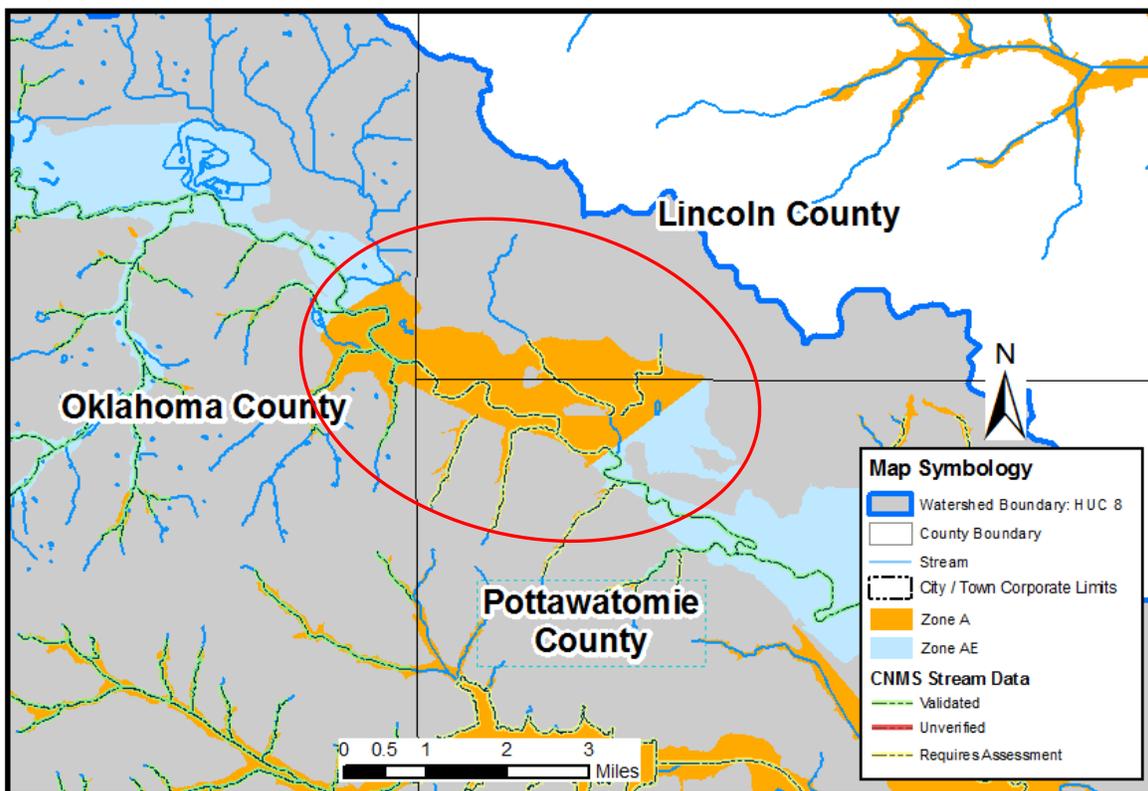


North Canadian River at the intersection of Oklahoma, Lincoln and Pottawatomie Counties

The North Canadian River flows from Oklahoma County into Lincoln County and then into Pottawatomie County, as shown in the Figure 6. At the intersection of these counties, the North Canadian River is mapped as Zone A. Further upstream of the Oklahoma/Lincoln County boundary and further downstream of Lincoln/Pottawatomie County boundary, the North Canadian River is studied by detailed methods.

According to the CNMS Phase 3 analysis, the portion of the North Canadian River studied by detailed methods in Pottawatomie County is considered a valid stream. The HEC-1 hydrological modeling and HEC-2 hydraulic modeling are dated May 1986. The portion studied by detailed methods in Oklahoma County is also considered a valid stream. However, the availability of new topographic data, new regression equations, the existence of repetitive losses, and the presence of Letter of Map Revision (LOMR) (FEMA Case Number 08-06-2954P) indicate a potential need for restudy.

Figure 6 - North Canadian River at the Intersection of Oklahoma, Lincoln and Pottawatomie Counties

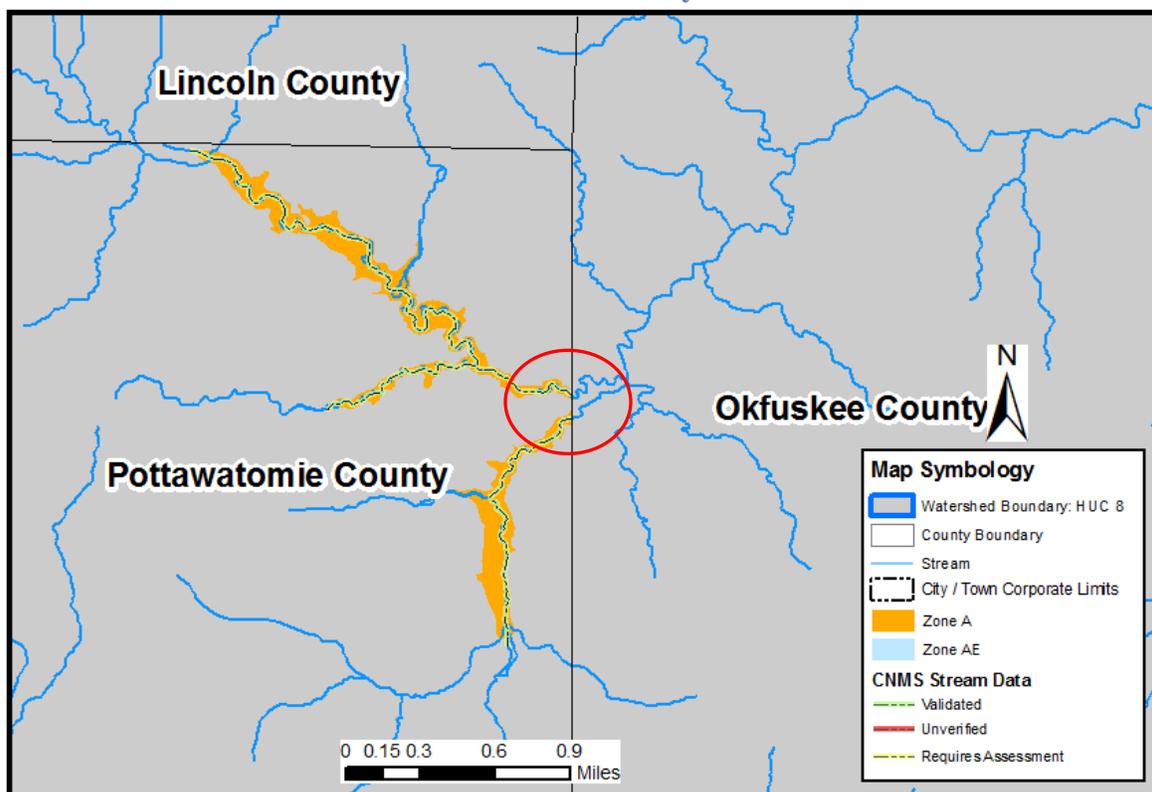


Rock Creek at the County Boundary between Pottawatomie County and Okfuskee County

Rock Creek flows from Pottawatomie County into Okfuskee County as shown in Figure 7. The flood hazards for this flooding source are mapped as Zone A in Pottawatomie County, but are unmapped in Okfuskee County.

Rock Creek is not included in the CNMS inventory. This area is one of medium risk and low population. That the floodplains are disconnected is not sufficient justification for a flood study for this reach.

Figure 7 - Rock Creek at the County Boundary between Pottawatomie County and Okfuskee County

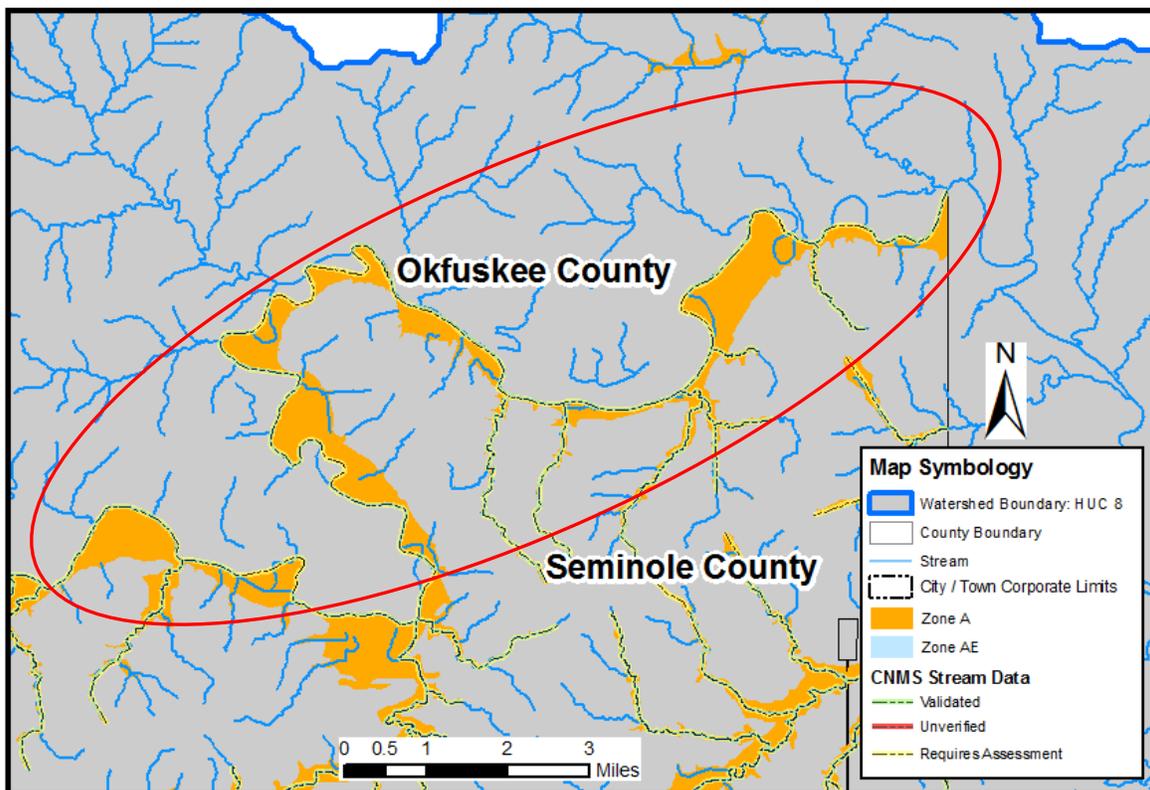


North Canadian River at the County Boundary between Seminole County and Okfuskee County

The North Canadian River flows along the border between Seminole and Okfuskee Counties. The flood hazards for this flooding source are mapped as Zone A in Seminole County, but are unmapped in Okfuskee County.

This reach of the North Canadian River is not included in the CNMS inventory. This area is one of medium risk and low population. That the floodplains are disconnected is not sufficient justification for a flood study for this reach.

Figure 8 - North Canadian River at the County Boundary between Seminole and Okfuskee Counties

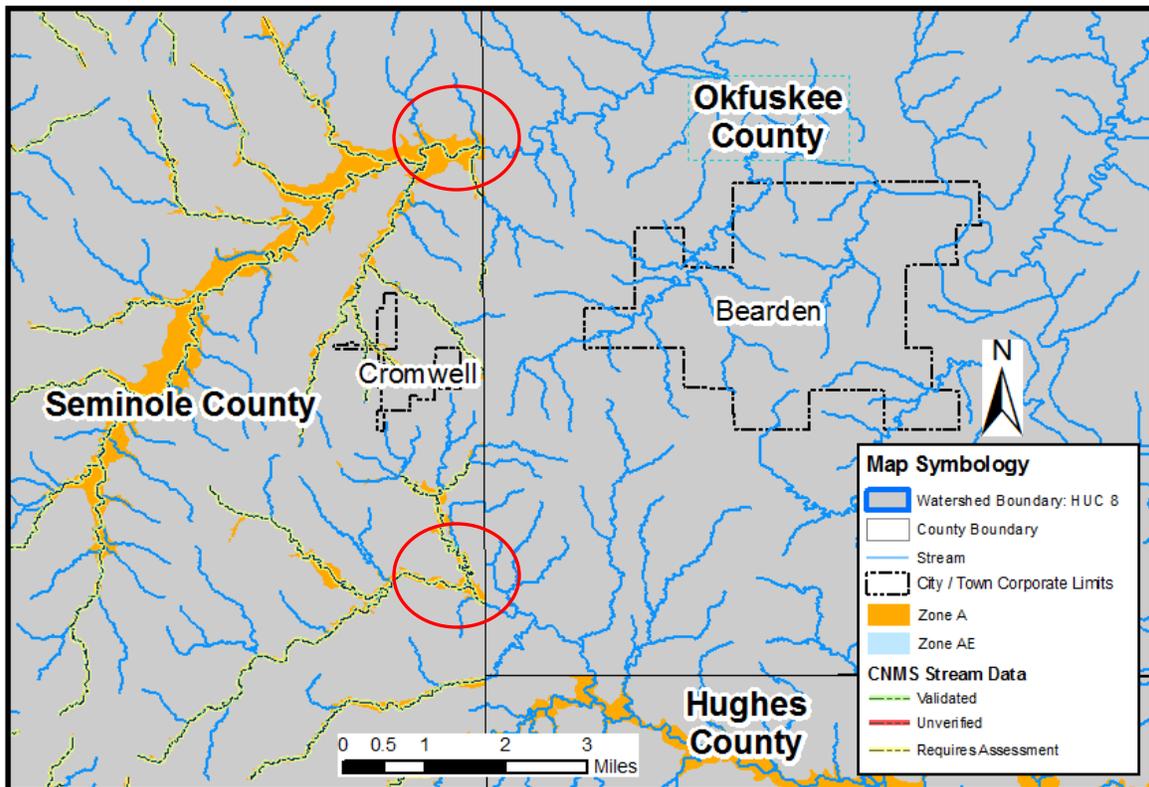


Sand Creek and Little Wewoka Creek at the County Boundary between Seminole County and Okfuskee County

Sand Creek and Little Wewoka Creek flow from Seminole County into Okfuskee County, as shown in Figure 9. The flood hazards for these flooding sources are mapped as Zone A in Seminole County, but are unmapped in Okfuskee County.

Sand Creek and Little Wewoka Creek are not included in the CNMS inventory. This area is one of both low risk and low population. The disconnected floodplains by themselves are not sufficient justification for a flood study in this reach.

Figure 9 - Sand Creek and Little Wewoka Creek at the County Boundary between Seminole and Okfuskee Counties

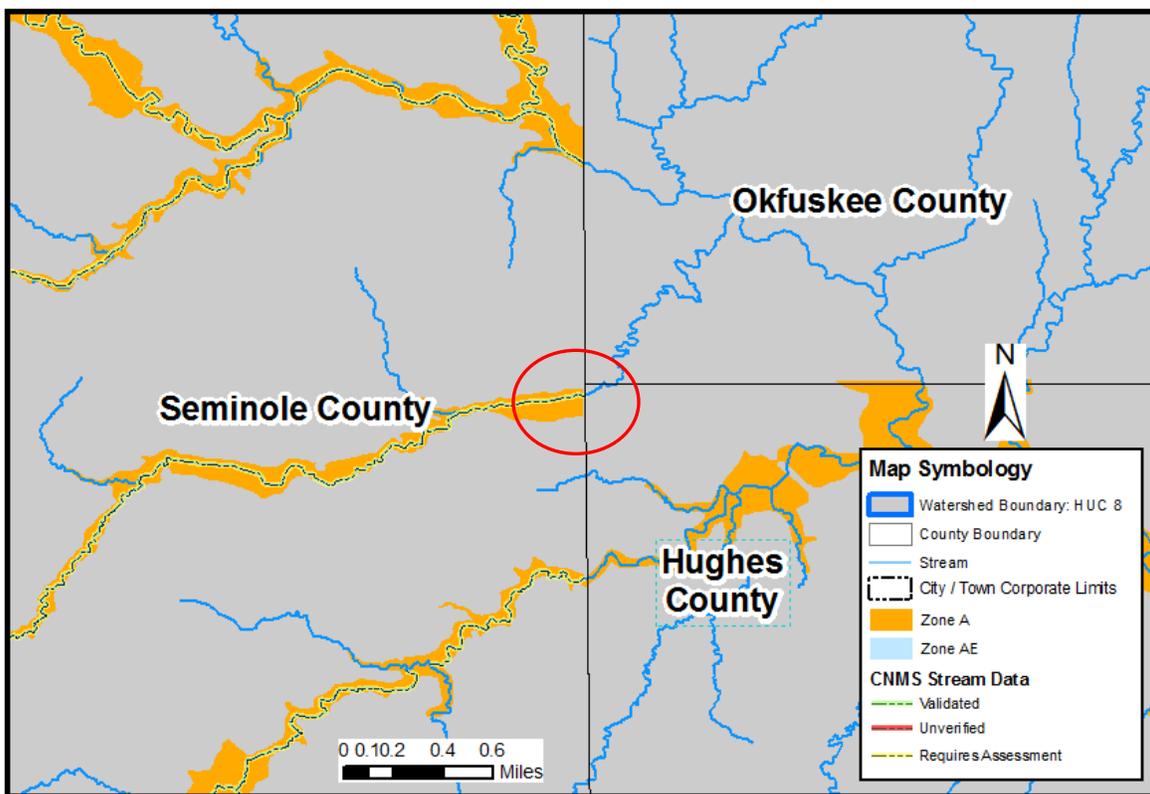


Unnamed Stream at the intersection of Seminole, Hughes and Okfuskee Counties

An unnamed tributary to Little Wewoka Creek flows from Seminole County into Hughes County and then into Okfuskee County, as shown in Figure 10. The flood hazards for this flooding source are mapped as Zone A in Seminole County, but are unmapped in Hughes County and Okfuskee Counties.

This unnamed tributary to Little Wewoka Creek is not included in the CNMS inventory. This area is one of both low risk and low population. The disconnected floodplains by themselves are not sufficient justification for a flood study in this reach.

Figure 10 - Unnamed Stream at the Intersection of Seminole, Hughes and Okfuskee Counties

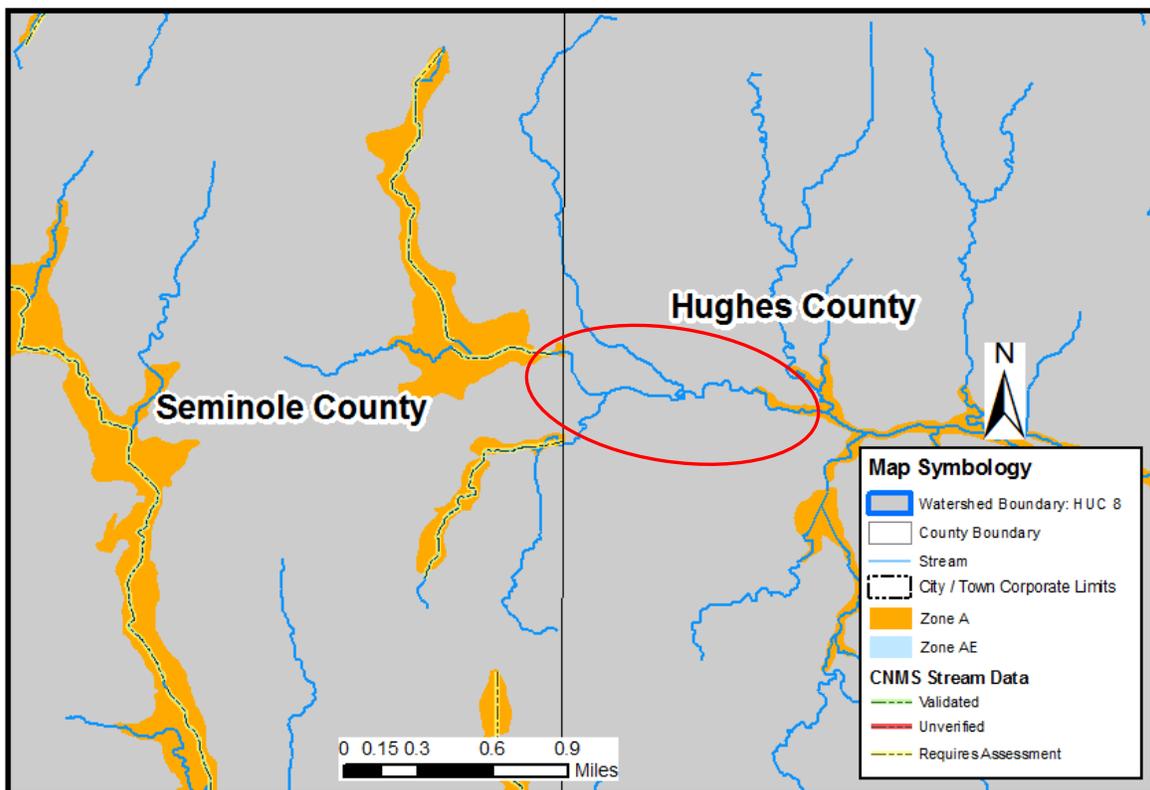


Long George Creek at the County Boundary between Seminole and Hughes Counties

Long George Creek flows from Seminole County into Hughes County. The flood hazard for this flooding source is mapped as Zone A in Seminole County, but is unmapped in Hughes County for approximately 4,000 feet (see Figure 11).

Long George Creek is not included in the CNMS inventory. Although this is low risk area with low population, the study to extend the flood hazards east into Hughes County would complete the mapping of the floodplain between existing studies. The study reach is approximately 0.8 mile.

Figure 11 - Long George Creek at the County Boundary between Seminole and Hughes Counties

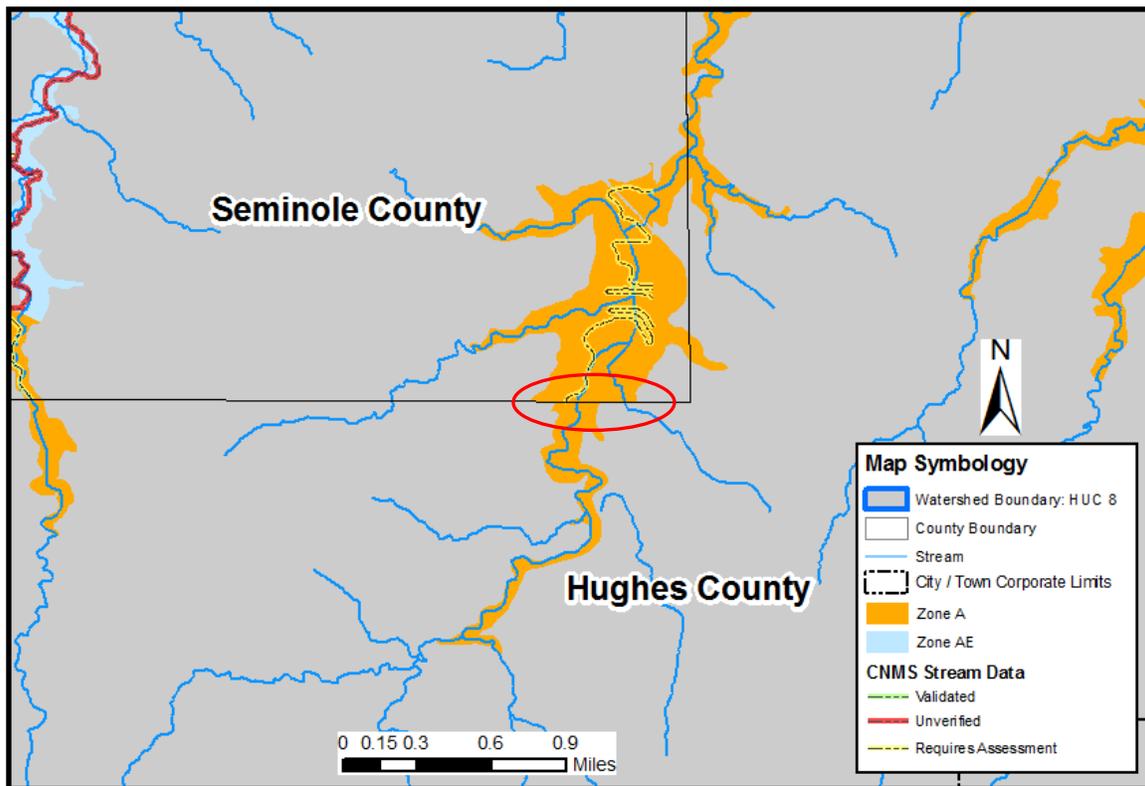


Jacobs Creek at the County Boundary between Seminole and Hughes Counties

Jacobs Creek flows from Hughes County into Seminole County as shown in Figure 12. On either side of the county boundary, this flooding source is mapped as Zone A. The discrepancy occurs in the floodplain width across the county boundaries. The floodplain width in Hughes County is much narrower at the county boundary than the floodplain width in Seminole County.

Jacobs Creek is not included in the CNMS inventory. The disconnect in floodplains is significant because the area is of medium risk and the Special Flood Hazard Areas (SFHAs) in Hughes County are outdated. While the population in the immediate area is low, a restudy of Jacobs Creek should be considered.

Figure 12 - Jacobs Creek at the County Boundary between Seminole and Hughes Counties

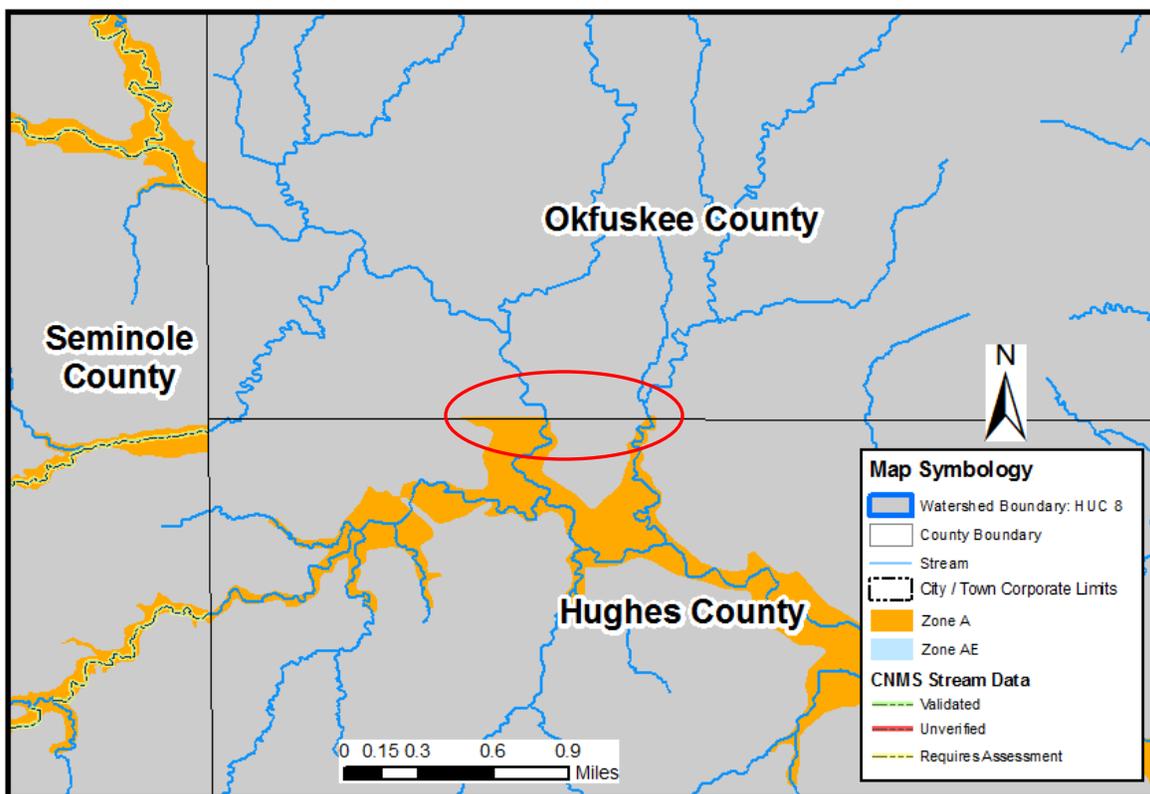


Little Wewoka Creek and Unnamed Tributary to Little Wewoka Creek at the County Boundary between Okfuskee County and Hughes County

Little Wewoka Creek and its Unnamed Tributary flow from Okfuskee County into Hughes County as shown in Figure 13. The flood hazards for these streams are mapped as Zone A in Hughes County, but are unmapped in Okfuskee County.

Little Wewoka Creek and its Unnamed Tributary are not included in the CNMS inventory. This area is one of low risk and low population. That the floodplains are disconnected is not sufficient justification for a flood study for this reach.

Figure 13 - Little Wewoka Creek and Unnamed Tributary to Little Wewoka Creek at the County Boundary between Okfuskee County and Hughes County

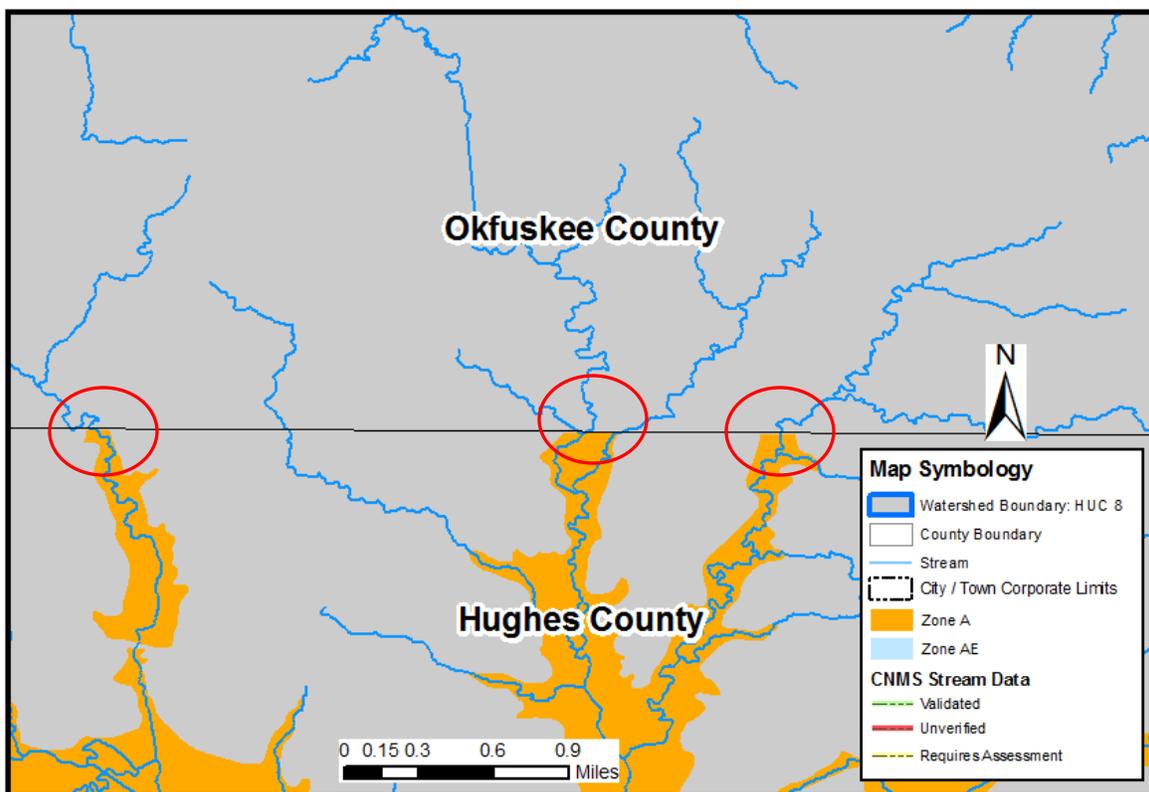


Unnamed Tributaries to Little Wewoka Creek at the County Boundary between Hughes County and Okfuskee County

The unnamed tributaries to Little Wewoka Creek flow from Okfuskee County into Hughes County as shown in Figure 14. The flood hazards for these streams are mapped as Zone A in Hughes County, but are unmapped in Okfuskee County.

These unnamed tributaries are not included in the CNMS inventory. This area is one of low risk and low population. That the floodplains are disconnected is not sufficient justification for a flood study for this reach.

Figure 14 - Unnamed Tributaries to Little Wewoka Creek at the County Boundary between Hughes County and Okfuskee County

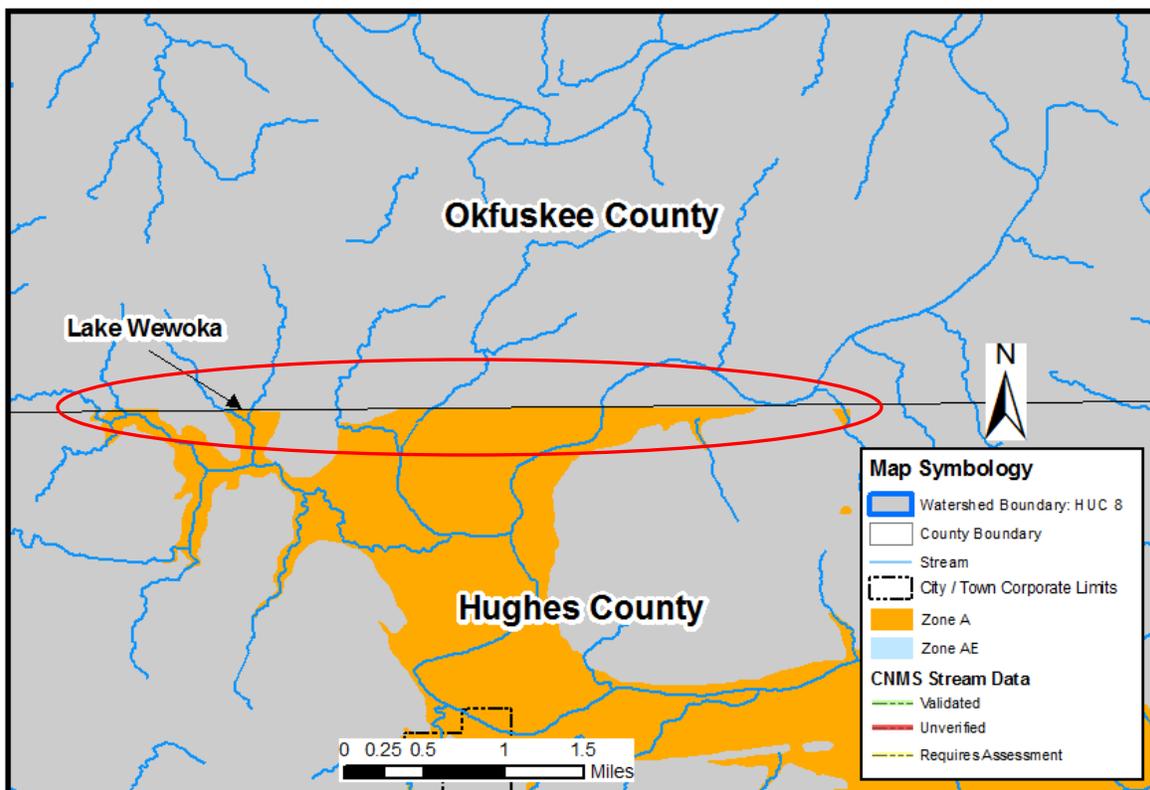


North Canadian River and Lake Wetumka at the County Boundary between Hughes County and Okfuskee County

The North Canadian River flows from Okfuskee County into Hughes County as shown in Figure 15. Lake Wetumka is located across the county boundaries to the west of the North Canadian River. The flood hazards for these flooding sources are mapped as Zone A in Hughes County, but are unmapped in Okfuskee County.

These flooding sources are not included in the CNMS inventory. This area is one of low risk and low population. That the floodplains are disconnected is not sufficient justification for a flood study for this reach.

Figure 15 - North Canadian River and Lake Wetumka at the County Boundary between Hughes County and Okfuskee County

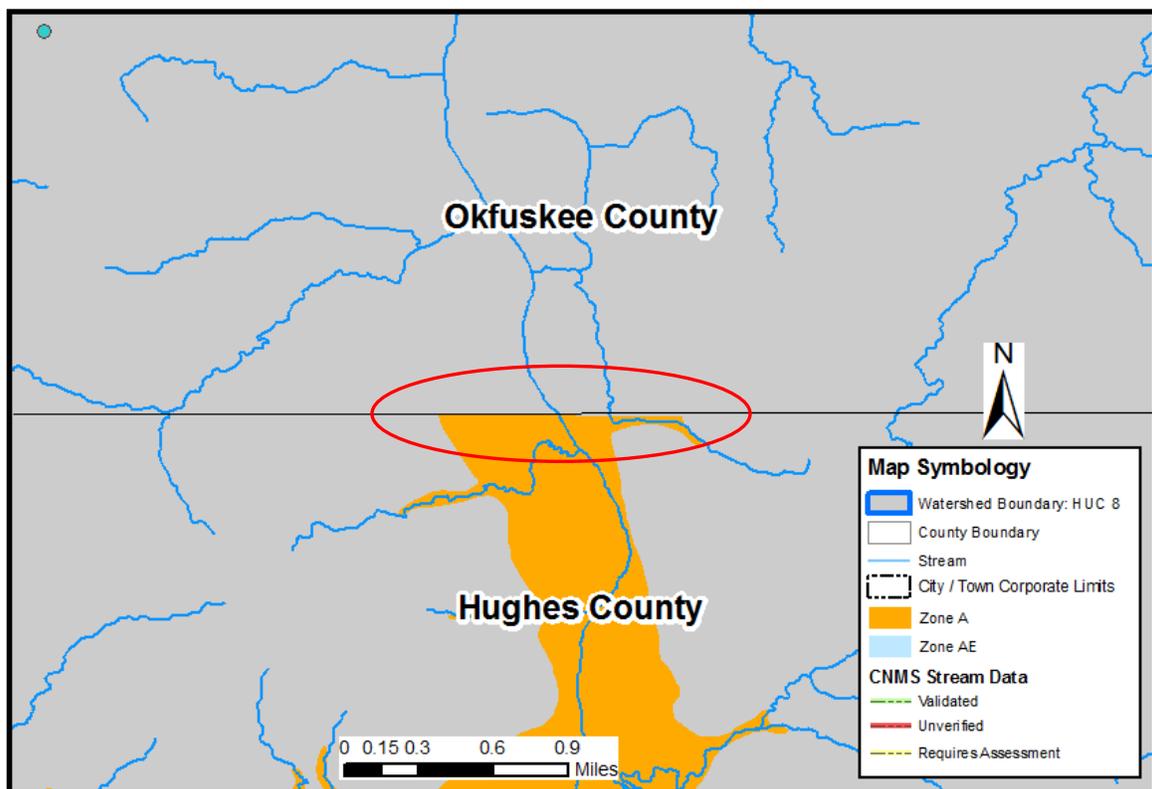


North Canadian River at the County Boundary between Hughes County and Okfuskee County

The North Canadian River flows from Okfuskee County into Hughes County as shown in Figure 16. The flood hazard for this river is mapped as Zone A in Hughes County, but is unmapped in Okfuskee County.

This reach of the North Canadian River is not included in the CNMS inventory. This area is one of medium risk and low population. That the floodplains are disconnected is not sufficient justification for a flood study for this reach.

Figure 16 - North Canadian River at the County Boundary between Hughes County and Okfuskee County

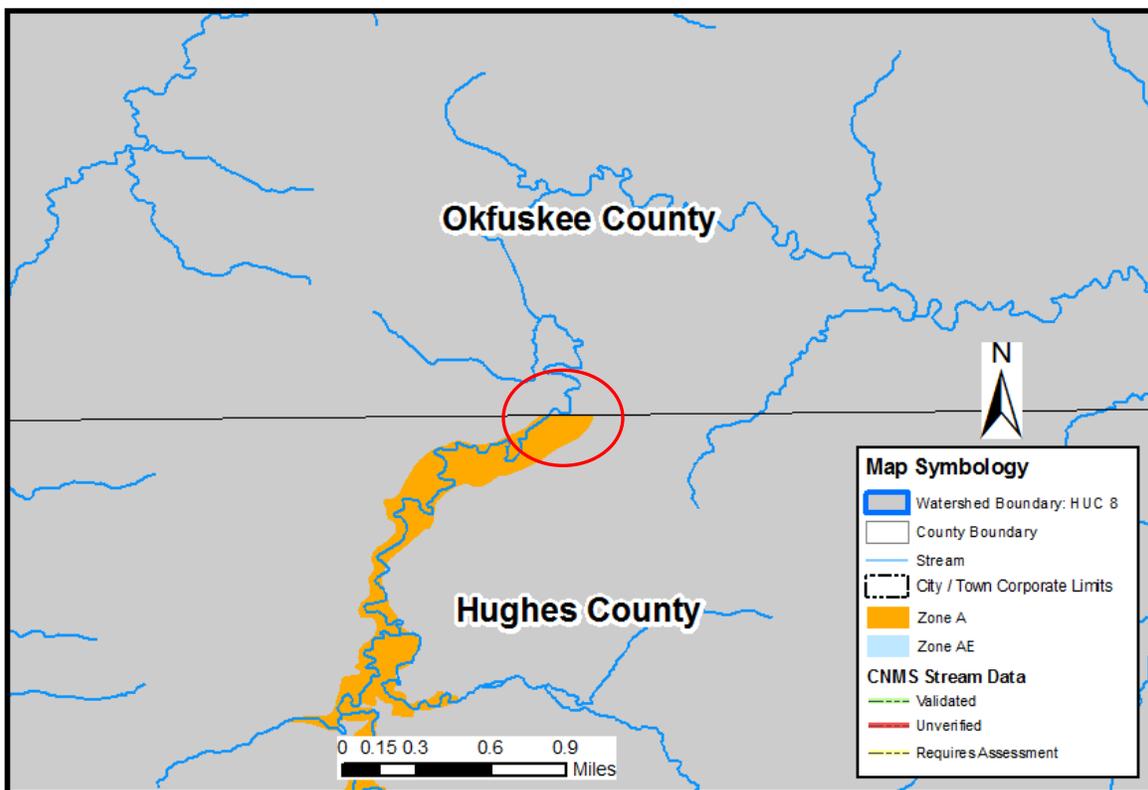


Stidham Creek at the County Boundary between Hughes County and Okfuskee County

Stidham Creek flows from Hughes County into Okfuskee County as shown in Figure 17. The flood hazard for this flooding source is mapped as Zone A in Hughes County, but is unmapped in Okfuskee County.

Stidham Creek is not included in the CNMS inventory. This area is one of medium risk and low population. That the floodplains are disconnected is not sufficient justification for a flood study for this reach.

Figure 17 - Stidham Creek at the County Boundary between Hughes County and Okfuskee County

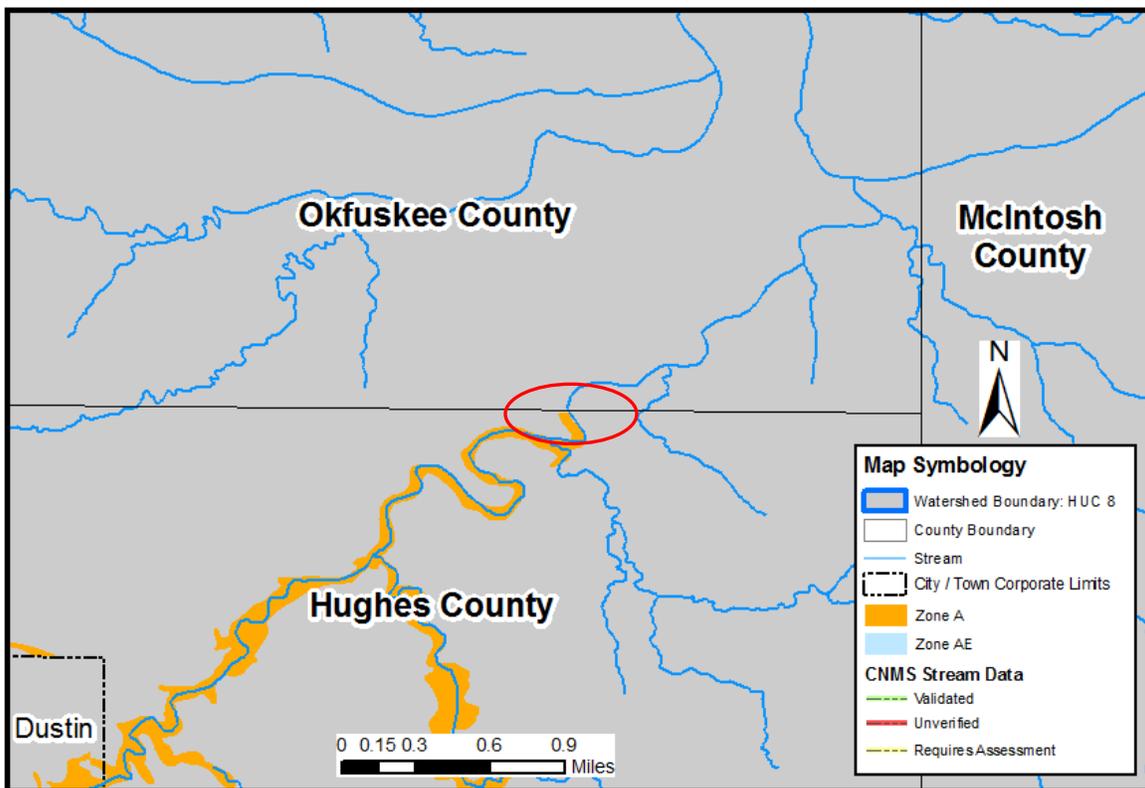


Fish Creek at the County Boundary between Hughes County and Okfuskee County

Fish Creek flows from Hughes County into Okfuskee County as shown in Figure 18. The flood hazard for this flooding source is mapped as Zone A in Hughes County, but is unmapped in Okfuskee County.

Fish Creek is not included in the CNMS inventory. This area is one of medium risk and low population. That the floodplains are disconnected is not sufficient justification for a flood study for this reach.

Figure 18 - Fish Creek at the County Boundary between Hughes County and Okfuskee County

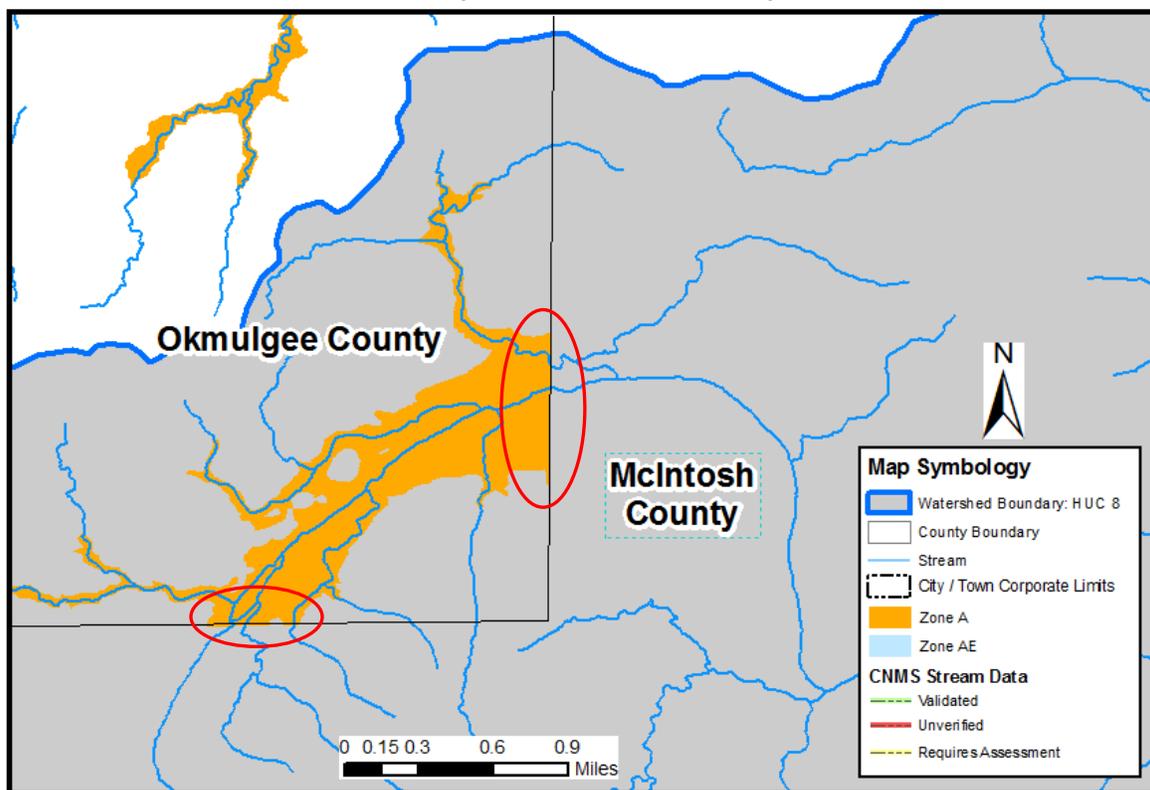


North Canadian River at the County Boundary between Okmulgee County and McIntosh County

The North Canadian River flows from Okmulgee County into McIntosh County as shown in Figure 19. The flood hazard for this flooding source is mapped as Zone A in Okmulgee County, but is unmapped in McIntosh County.

This reach of the North Canadian River is not included in the CNMS inventory. This area is one of medium risk and low population. That the floodplains are disconnected is not sufficient justification for a flood study for this reach.

Figure 19 - North Canadian River at the County Boundary between Okmulgee County and McIntosh County



IV. Watershed Options

In conjunction with the assessment of risk, need, and the availability of topographic data as well as the input of stakeholders within in this watershed, it is recommended that future projects be initiated within the LNC watershed. Table 18 lists some potential needs in the watershed and actions that could be taken under each of the four areas discussed during the Discovery meetings, including:

- Risk Identification and Communication includes traditional flood studies and data updates.
- NFIP community actions include insurance-related mitigation or information.
- Mitigation Planning and Mitigation Actions include items related to planning updates.
- Community Benefits and Grant opportunities relate to outreach and disaster activities as well as non-flooding hazards like safe room information.

Table 18 - Potential Watershed Needs and Actions

Risk Identification and Communication
<ul style="list-style-type: none">• The FISs for the North Canadian River, Crutch Creek, and other flooding sources in Oklahoma County have been identified by the communities as needing updates due to updated topographic information, infrastructure improvement projects not incorporated into the effective FIS and FIRMs, and apparent inaccuracies in effective information.• Modernize Hughes County and perform FISs on all flooding sources with drainage areas greater than 1 square mile.• Modernize McIntosh County and perform FISs on all flooding sources with drainage areas greater than 1 square mile.• The SFHAs in Seminole County do not agree with current imagery and topography because of a horizontal shift in last FIRM update.• Perform FISs on flooding sources where the effective FIRM needs to be updated to assist in floodplain management. Seminole County has provided information on such flooding sources.• Almost all LOMA applications for properties in Zone A within the City of Shawnee are approved. The SFHAs appear to be too wide and are outdated.• Perform FISs on Zone A areas within the City of Shawnee in Pottawatomie County.• Perform FISs on stream reaches where future growth is planned in Citizen Potawatomi Nation areas.• Within the watershed, only parts of Okfuskee, Okmulgee, Hughes, and Seminole Counties do not have updated terrain data.

Table 18 - Potential Watershed Needs and Actions (continued)

NFIP Community Actions
<ul style="list-style-type: none"> ● Train communities on the electronic Letter of Map Amendment (eLOMA) process to facilitate LOMC submissions. ● Deliver presentations on the benefits of joining the NFIP to non-participating communities. ● Deliver presentations on the CRS program to interested communities. ● Work with lenders and insurance agents in the City of Seminole to take revalidation letters into account when working with property owners.
Mitigation Planning and Mitigation Actions
<ul style="list-style-type: none"> ● Provide mitigation planning assistance for the City of Wewoka and Muscogee (Creek) Nation. ● Assist Oklahoma City in updating its Mitigation Plan, which expired on 11/27/2011. ● Review mitigation plan actions in Oklahoma County near SW 29th Street and Sooner Road.
Community Benefits and Grant Opportunities
<ul style="list-style-type: none"> ● Additional communities in NFIP. ● Community outreach improved. ● Increased facilitation for HMP Grants applications. ● Expedite the Grant approval process. ● Local drainage and flooding issue addressed. ● Updated and current flood hazard information for communities. ● Increased credibility of NFIP information ● Identification of local drainage issues and possible solutions. ● Grants to provide small communities / private owners funds for dam repair and breach inundation mapping.

In addition to the list of needs captured in Table 10 during the Discovery meeting and in any follow-up correspondence, Table 19 provides some specific evaluation of streams or areas that could benefit from additional study. Any FEMA based metrics are noted that would be met if the need or issue was addressed and if any current FEMA map actions would impact the activity. Any comment or concern raised by a stakeholder during the Discovery process that could be related to one of the Needs or Actions for the watershed is also noted. There are some Needs/Projects listed that were not noted by any particular community but were general improvements that could be made in the LNC Watershed to meet general FEMA’s regional goals or performance metrics.

Needs are identified as being on the critical path as high, medium or low priority or as something that a state or local community could be tasked with completing as follows:

- **High** – Local community would immediately benefit from the action, and FEMA’s metrics would also be met.
- **Medium** – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met.
- **Low** – Local community activities can continue without this revision, and FEMA’s metrics are not impacted.
- **Community Action** – Activity would be more appropriate as a community-led action rather than a FEMA led FEMA-lead action.

Table 19 - Metrics and Rankings of Needs

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
A	Outreach / Coordination for Grant Opportunities	<ul style="list-style-type: none"> OWRB to provide information on grants for small communities / private owners for dam repair and breach inundation mapping. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	Community Action	10.1
B	Outreach / Coordination to join NFIP program	<ul style="list-style-type: none"> Sac & Fox Nation, along with the Seminole Nation of Oklahoma, expressed interest in joining the NFIP. Ordinance updates. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Additional communities in NFIP Community outreach improved 	Community Action	10.77, 10.93
C	Update Expired HMP	<ul style="list-style-type: none"> The Oklahoma City HMP expired on 11/27/11. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Facilitate the application for HMP Grants Expedite the Grant approval process 	Community Action	10.17
D	HMP Updates	<ul style="list-style-type: none"> Communities should update their HMP any time flood risks change. Communities should develop mitigation strategies in an on-going fashion. Update with mitigation successes to show work completed. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Impacts all communities Facilitate the application for HMP Grants Expedite the Grant approval process 	Community Action	No specific comment
E	Need for City of Seminole Master Drainage Plan	<ul style="list-style-type: none"> City of Seminole needs a Master Drainage Plan. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Identification of local drainage issues and possible solutions. Grant application for assistance in mitigation. 	Community Action	10.62
F	Outreach / Coordination by the Seminole Nation of Oklahoma	<ul style="list-style-type: none"> Possible mitigation actions (safe rooms, weather radios, storm sirens, and a drainage restoration project) exist. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No NVUE impacted Local drainage and flooding issues addressed. 	Community Action	10.78

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
G	Outreach / Coordination by Oklahoma County for mitigation actions	<ul style="list-style-type: none"> • Possible mitigation actions (drainage and / or debris removal) exist at SW 29th Street and Sooner Road on Panels 0310 and 0320. • Possible mitigation actions: <ul style="list-style-type: none"> ○ A number of SRL structures are located along Deer Creek. ○ In the same area, there are numerous road closures, changes in school bus routes, bridges washed out, and oil wells washed out during heavy rains. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • No NVUE impacted • Local drainage and flooding issues addressed. 	Community Action	10.8, 10.3
H	Outreach / Coordination by Oklahoma City for mitigation actions / capital improvement projects	<ul style="list-style-type: none"> • Possible capital improvement projects exist along an unnamed stream with a Shaded Zone X flood hazard near the intersection of N. Pennsylvania Ave. and NW 5th Street. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • No NVUE impacted • Local drainage and flooding issue addressed. 	Community Action	10.9

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
I	LOMR on Mustang Creek	<ul style="list-style-type: none"> • LOMRs 01-06-2001P, 03-06-696P, and 09-06-1884P (later was withdrawn) relate to updating the flood hazards along Mustang Creek in Canadian County on Panels 40017C0430H and 40017C0435H on Morgan Road between SW 29th Street and SW 15th Street. • Oklahoma City raised concerns that these LOMRs did not update the flood hazards between Cross Sections A and C. • LOMR 09-06-1884P was submitted by Oklahoma City and an additional data letter (316-AD) was sent requesting an annotated FIRM that shows the delineations approved in the 03-06-696P LOMR and how they tie into the boundary delineations shown on the effective FIRM. The LOMR processing was suspended following a discussion with Oklahoma City. • Oklahoma City is requested to pursue this update to the FIRMs to reflect the current conditions. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • No NVUE impacted • Updated and current flood hazard information for community. 	Community Action	10.10

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
J	LOMR on the Lower North Canadian in the Town of Jones City	<ul style="list-style-type: none"> Projects with locks and dams on the Lower North Canadian in Oklahoma City have apparently reduced the flow along the Lower North Canadian River in the Town of Jones City. Flood hazards in the north part of the Town of Jones City along the Lower North Canadian River need to be updated. The Town of Jones City has contracted with AMEC to perform a study of the above-described change in flood hazards. The results of this AMEC study may be submitted as a LOMR to FEMA to update the FIRMs. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No NVUE impacted Updated and current flood hazard information for community. 	Community Action	10.20
K	LOMR on overland flow near Lariat Lane and Cherry Creek in Del City	<ul style="list-style-type: none"> Runoff from a cemetery to the south flows northward on Lariat Lane and into Cherry Creek. Significant flow occurs on the street. City is executing a contract for a mitigation project (\$2M). Del City will be submitting a LOMR to update flood hazards once the project is complete. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> NVUE for overland flow path where SFHA will be established by LOMR. 	Community Action	10.36, 10.118

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
L	Coordination between Del City, Oklahoma City, Oklahoma County, and Tinker Air Force Base on updating floodplain information upstream and downstream of the base	<ul style="list-style-type: none"> Recent development has taken place downstream of the base. Has the floodplain been updated via LOMRs? There is a perception that the air force base is causing flooding downstream. Recent development upstream of the air force base on Crutcho Creek and its tributaries has taken place. Have the flood hazard data been updated for such development? 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved. 	Community Action	10.26, 10.27
M	<p>Operation and Maintenance of a flap gate on Crutcho Creek under SW 29th Street in Del City.</p> <ul style="list-style-type: none"> It appears that the flap gate is jammed in a partially open position and does not appear to be maintained. 	<ul style="list-style-type: none"> A flap gate at this crossing is jammed in the partially open position and does not appear to be maintained. LOW PRIORITY. May result in flooding on Tinker Golf Course and the SE 29th Street Bridge may be undermined. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No NVUE impacted. Effective flood hazard modeling and mapping does not take the partially open flap gate into consideration. 	Community Action.	10.35

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
N	<p>Outreach in the City of Wewoka:</p> <ul style="list-style-type: none"> Wewoka Creek at 56th Highway floods when it rains. During rains, flooding is experienced near the veterinarian office and Water Plant on Park Street. Park Street and Mekusukey Street flood on an annual basis, affecting several homes and businesses and flooding State Highway 56. EW 124 and NS 366 – Creek floods easily, completely shutting down road, restricting access to over 10 homes. 	<ul style="list-style-type: none"> These are areas where SFHAs are mapped on the effective FIRM. Community outreach to area residents, property owners, and businesses on flood insurance would assist in mitigating against flood losses. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved. 	Community Action	10.65, 10.66, 10.69, 10.72
O	<p>Coordination between Okmulgee County, the City of Okmulgee, and FEMA on future flood hazard mapping projects.</p> <ul style="list-style-type: none"> City of Okmulgee is obtaining LiDAR (flown by Pictometry). The SFHA needs to be extended outside the cities where development is growing. 	<ul style="list-style-type: none"> Okmulgee County and City of Okmulgee can determine the extents of the new City of Okmulgee LiDAR, and along with land use planning for future development, can determine stream reaches where additional SFHAs are needed. Coordinate with FEMA on sequencing flood studies for these stream reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Delineation of flood hazards in areas of future development Aid property owners and developers in planning future developments outside the 1-percent-annual-chance (100-year) floodplain. 	Community Action	10.91, 10.92

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
P	<p>Obtain hydrologic and hydraulic models from FEMA Library / MIP used to delineate the flood hazards within Okmulgee County.</p> <ul style="list-style-type: none"> While major areas of flooding concern have been mapped, all SFHAs are Zone As with no BFEs. BFEs would greatly assist with floodplain management. Do models exist for the Zone As? 	<ul style="list-style-type: none"> The Zone As in Okmulgee County are model-backed. These models can be obtained from the FEMA Library / MIP. Use of these models will allow local floodplain managers to determine the BFEs along the various flooding sources. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved. Aid property owners and developers in planning developments outside the 1-percent-annual-chance (100-year) floodplain. 	Community Action	10.92
Q	<p>Outreach in Absentee-Shawnee Tribe lands near Squirrel Creek at Gordon Cooper Road.</p> <ul style="list-style-type: none"> Access road to residential area near reference point M-37 washes out 	<ul style="list-style-type: none"> This area is in the floodway of Squirrel Creek and within the mapped SFHAs for Pottawatomie County. Community outreach on flood insurance to residents, property owners, and businesses in this area would assist in mitigating against flood losses and mitigation actions to eliminate the washout of the access road. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved. 	Community Action	10.96
R	<p>Outreach to businesses in the City of Seminole</p> <ul style="list-style-type: none"> New businesses in the 2200 block of Mitt Phillips have LOMAs for frontage, but still show as floodway/floodplains 	<ul style="list-style-type: none"> Need to outreach to residents, property owners, and businesses to explain that LOMAs remove the structure from the SFHA, but the change is too small to update the FIRMs. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved. 	Community Action	10.55

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
S	LOMR for an agricultural ditch project in Citizen Potawatomi Nation	<ul style="list-style-type: none"> • Citizen Potawatomi Nation is completing an agricultural ditch project near Squirrel Creek. • Citizen Potawatomi Nation will be submitting a LOMR to update flood hazards once the project is complete. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • NVUE for overland flow path where SFHA will be established by LOMR. 	Community Action	10.97
T	Insurance companies are not respecting the revalidation letter	<ul style="list-style-type: none"> • Insurance companies are not respecting the revalidation letter for the City of Seminole. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Improve community outreach • Assist property owners in City of Seminole • Increase credibility of NFIP information 	High	10.52
U	Provide RL/SRL information to communities to facilitate mitigation planning	<ul style="list-style-type: none"> • Oklahoma City and the City of Seminole have requested from FEMA the RL/SRL information so that they may update their mitigation plans. • The communities will also provide FEMA with their mitigation successes. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Facilitates the application for HMP grants. 	High	10.18, 10.50
V	Oklahoma County CAV to discuss the Crutcho Park acquisition project.	<ul style="list-style-type: none"> • As part of the ongoing Crutcho Park acquisition project, 35 properties have been acquired and demolished to date. 17 more are in process. • At the Discovery Meeting, Oklahoma County noted that a CAV has not been conducted where they could discuss this. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None 	High	10.4
W	eLOMA Workshop	<ul style="list-style-type: none"> • Hold a series of eLOMA workshops for local organizations. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • More LOMAs submitted using the digital form than on paper. • Community outreach improved. 	Medium	No specific comment.

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
X	HAZUS Outreach / Coordination	<ul style="list-style-type: none"> Provide information from the Average Annualized Loss Study. Introduction to HAZUS. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Communities become more familiar with the HAZUS program and are prepared to use Risk MAP products when they are issued. HAZUS can be used for HMP updates. 	Medium	No specific comment.
Y	HMP Assistance	<ul style="list-style-type: none"> City of Wewoka would like to update their HMP, but lack the funding to do so. They would appreciate assistance from FEMA. Muscogee (Creek) Nation would appreciate FEMA assistance with their HMP. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Facilitate the application for HMP Grants Expedite the Grant approval process 	High	10.67, 10.89
Z	Outreach / Coordination to join CRS program	<ul style="list-style-type: none"> Cleveland County expressed an interest in joining the CRS program. City of Spencer does not participate in the CRS program. City of Midwest City asked for CRS program information. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved 	High	10.21, 10.28, 10.38
AA	Soldier Creek Tributary 6 Detailed hydraulics Study and revision to floodplain mapping. <ul style="list-style-type: none"> Channel was revised following the 2009 FIRM update. Midwest City has construction drawings and cross-section information for the revisions 	<ul style="list-style-type: none"> 2.7 square miles of detailed hydrologic analysis using rainfall runoff methodology. 1.7 miles of detailed hydraulic study using updated cross-section data provided by the City of Midwest City. 1.7 miles of floodplain mapping. One panel (40109C0330H) affected. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No NVUE impacted (study already valid in CNMS) FIRMs updated to reflect existing conditions. 	Medium	10.29

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AB	<p>Soldier Creek Tributary to Crutcho Creek Detailed Hydraulics Study and revision to floodplain mapping.</p> <ul style="list-style-type: none"> Channel was revised following the 2009 FIRM update. Midwest City has construction drawings and cross-section information for the revisions Fill for new hangers at northeast corner of SE 59th and Douglas has altered the floodplain boundaries. In the same area, at the headwaters of Soldier Creek, the floodplain data is Zone A. This is an area of future expansion of the base. Development of BFEs from the headwaters to I-40 is requested. 	<ul style="list-style-type: none"> 3.9 square miles of detailed hydrologic analysis using rainfall runoff modeling. 8.7 miles of detailed hydraulic study using updated cross-section data provided by City of Midwest City. 8.7 miles of floodplain mapping. Three panels (40109C0310H, 40109C0330H, and 40109C0340H) affected. Updated topographic information exists for study reach. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No NVUE for 5.1 miles (study already valid in CNMS) 3.6 miles of new NVUE FIRMs updated to reflect existing conditions. 	High	10.23, 10.30
AC	<p>Crutcho Creek Tributary D Detailed Hydraulics Study and revision to floodplain mapping.</p> <ul style="list-style-type: none"> Channel was revised following the 2009 FIRM update. Midwest City has construction drawings and cross-section information for the revisions 	<ul style="list-style-type: none"> 1.1 miles of detailed hydraulic study using updated cross-section data provided by the City of Midwest City. 1.1 miles of floodplain mapping. One panel (40109C0310H) affected. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No NVUE impacted (study already valid in CNMS) FIRMs updated to reflect existing conditions. 	Medium	10.31

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AD	<p>Silver Creek Detailed hydraulics study and revision to floodplain mapping.</p> <ul style="list-style-type: none"> Channel was revised following the 2009 FIRM update. Midwest City has construction drawings and cross-section information for the revisions 	<ul style="list-style-type: none"> 3.7 miles of Detailed hydraulic Study using updated cross-section data provided by the City of Midwest City. 3.7 miles of floodplain mapping. Three panels (40109C0195H, 40109C0215H 40109C0330H) affected. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No NVUE impacted (study already valid in CNMS) FIRMs updated to reflect existing conditions. 	Medium	10.32
AE	<p>Unnamed Stream (Tributary to Choctaw Creek) Detailed hydrology and hydraulics Study and revision to floodplain mapping.</p> <ul style="list-style-type: none"> Channel was revised following the 2009 FIRM update. Midwest City has construction drawings and cross-section information for the revisions 	<ul style="list-style-type: none"> 0.8 square mile of detailed hydrologic analysis using rainfall runoff methodology. 1.3 miles of detailed hydraulic study using updated cross-section data provided by the City of Midwest City. 1.3 miles of floodplain mapping. One panel (40109C0330H) affected. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No NVUE impacted (study already valid in CNMS as model-backed Zone A) FIRMs updated to reflect existing conditions. 	Medium	10.33, 10.120

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AF	<p>Crutcho Creek Tributary E (XS H to upstream limit of study) Detailed hydraulics Study and revision to floodplain mapping.</p> <ul style="list-style-type: none"> The floodplain boundary appears not to match the terrain on the west side of the 507th ramp. Part of the stream is piped under a ramp near hangers. USACE developed the effective flood hazards and informed Tinker Air Force Base that this area could be studied in more detail. The benefit of better information will be better planning and evacuation of people and equipment in the event of a flood. 	<ul style="list-style-type: none"> 0.7 mile of detailed hydraulic study using updated cross-section data provided by City of Midwest City. 0.7 mile of floodplain mapping. One panel (40109C0320H) affected. Updated topographic information available. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No NVUE impacted. FIRMs updated to reflect existing conditions. 	Medium	10.22

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AG	<p>Crutch Creek (Union Pacific Railroad crossing downstream of XS M to XS AX) and Cherry Creek (entire reach) detailed hydraulics Study and revision to floodplain mapping .</p> <ul style="list-style-type: none"> Flow upstream of NE 10th Street appears to not take into account an embankment that presents storage that is shown used for the floodway and floodplain. The impact is that SFHA areas west of Sooner Road may be wider than shown. Floodway is mapped in an area model as being ineffective. High priority for the community. The bridge at Vickie Drive was replaced in this reach. Community Comment: I-40 to Reno Ave – includes "crossover" between Crutch Creek and Cherry Creek. Reason to believe model is inaccurate based on Gurnsey study done for MWC. The 12/18/09 FIS inaccurately reports that the crossover was filled in by the City. Community Comment: Undocumented structures have been added. 	<ul style="list-style-type: none"> 7.9 miles of detailed hydraulic study (unsteady HEC- RAS) for Crutch Creek. This assumes that the Crutch Creek revision can tie in with effective information at XS AX. 7.9 miles of detailed hydraulic study (unsteady HEC- RAS) for Cherry Creek. 14.5 miles of floodplain mapping. Four panels (40109C0305H, 40109C0310H, 40109C0315H, 40109C0320H) affected. Updated topographic information available. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No NVUE impacted FIRMs updated to reflect existing conditions. 	High	10.34, 10.37, 10.106

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AH	<p>Silver Creek Tributary 2 Detailed hydrology and hydraulics Study and revision to floodplain mapping.</p> <ul style="list-style-type: none"> • Flooding in the City of Spencer along the stream from Liberty and 23rd Street to confluence with Silver Creek. 	<ul style="list-style-type: none"> • 1.7 square miles of detailed hydrologic analysis using rainfall runoff methodology. • 1.8 miles of detailed hydraulic study using updated cross-section data provided by the City of Midwest City. • 1.8 miles of floodplain mapping. • Two panels (40109C0215H , 40109C0330H) affected. • Updated topographic information available. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 1.8 miles of new NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. 	High	10.38
AI	<p>Modernization of FIRM and FIS for Hughes County to a countywide format with updated SFHAs.</p>	<ul style="list-style-type: none"> • 670 miles of approximate (model-backed) hydrologic and hydraulic study. • Hydrologic analysis for above will be based on USGS regression equations and gage analysis (where gages exist). • 35 printed panels. • 670 miles of floodplain mapping. • Updated topo (2010 NRCS USDA LiDAR) is available for 705 square miles • USGS DEMs are the best available source for remaining 108 square miles. Additional coordination with communities (Hughes County, Wetumka, and Dustin) will be needed for mapping these areas with USGS DEMs. Despite using USGS DEMs, the updated maps will assist in floodplain management in these areas. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 670 miles of new NVUE • Metrics for newly modernized county. • Community outreach improved. • FIRMs updated to reflect existing conditions. 	High	10.39, 10.122, 10.123, No specific comment

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AJ	<p>Modernization of FIRM and FIS for McIntosh County to a countywide format with updated SFHAs and study on new topographic data.</p> <ul style="list-style-type: none"> • Significant development along the shores of Lake Eufaula. • USACE has provided the BFE for this lake, as the elevation is controlled by a dam. • Flood hazards either do not exist or date to 1985 (Checotah). 	<ul style="list-style-type: none"> • 562 miles of approximate (model-backed) hydrologic and hydraulic study. • Hydrologic analysis for above will be based on USGS regression equations and gage analysis (where gages exist). • Delineation of the SFHA around Lake Eufaula (59 miles). • 562 miles of floodplain mapping • 21 printed panels. • Updated topo (FY11 Elevation) is available for approximately 340 square miles. • USGS DEMs are the best available source for remaining 368 square miles. Despite lack of updated topo, SFHAs are needed in these areas for floodplain management. The SFHAs for the area with USGS DEMs are included in the study miles listed above. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 562 stream miles of new NVUE • Metrics for newly modernized county. • Community outreach improved. • FIRMs updated to reflect existing conditions. 	High	<p>10.90, 10.103, 10.121, No specific comment</p>

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AK	<p>Updating the FIRM and FIS for Pottawatomie County for SFHAs in and near Shawnee.</p> <ul style="list-style-type: none"> The floodplain areas (along the Zone As) seem to be too large, causing all LOMA requests to be approved. There is an area where the water runs underground though an RCB, but the new maps still show a floodplain. Shawnee has expressed concerns over the SFHAs mapped along their lakes. Shawnee is becoming a bedroom community for Oklahoma City. 	<ul style="list-style-type: none"> 32 square miles detailed hydrologic analysis using rainfall runoff methodology. 40 miles of limited detail hydraulic study. Coordination with the City of Shawnee on the BFE of their water supply lakes. Delineation of the SFHA around Shawnee Twin Lakes and Wes Watkins Reservoir. 40 miles of floodplain mapping. Four printed panels. Updated topographic data exists or is being collected for all study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 40 miles of revised NVUE Community outreach improved. FIRMs updated to reflect existing conditions. 	High	10.44, 10.45, 10.46

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AL	<p>Updating the FIRM and FIS for Seminole County.</p> <ul style="list-style-type: none"> • Seminole County SFHAs do not match imagery or thalweg. • New FIRMs were a digital conversion and there was a horizontal shift. • Due to flood hazards being Zone A and the difficulty in developing time of concentrations, floodplain management is problematic without BFEs. • Seminole County understands the limited resources for flood studies. It has provided stream reaches where the need for BFEs is critical. • Bridge on EW 125 over a small creek floods shutting down road and restricting access to several houses. The SFHA does not represent the current problems. 	<ul style="list-style-type: none"> • While Seminole County has requested BFEs for study reaches where updated topo is not available, a detailed study is not recommended. For requested study reaches where updated topographic data is not available, approximate Zone A floodplains will be developed. These floodplains will be model-based, they should match the imagery and BFEs in the models. The following is proposed: • Detailed Study <ul style="list-style-type: none"> ○ 176 square miles hydrologic analyses using USGS regression equations. ○ 56 miles detailed hydraulic analysis. • Approximate Study <ul style="list-style-type: none"> ○ 29 miles of automated (model-backed) hydrologic and hydraulic analyses. • 81 miles of floodplain mapping. • 18 printed panels affected. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 81 miles of new NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. 	High	10.68, 10.73, 10.75
AM	<p>Updating the FIRM and FIS for Unnamed Tributary to Wewoka Creek in the City of Wewoka.</p> <ul style="list-style-type: none"> • 5th Street and Brown Street floods, affecting approximately 10 homes including senior citizen apartments. 	<ul style="list-style-type: none"> • 0.9 square mile detailed hydrologic analysis using rainfall runoff methodology. • 0.9 mile of new detail hydraulic study. • 0.9 mile of floodplain mapping. • One panel (40133C0290E) affected. • Updated topo exists for this study reach. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 0.9 mile of new NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. 	High	10.71

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AN	<p>Updating the FIRM and FIS for Unnamed Tributary to Sandy Creek in City of Wewoka.</p> <ul style="list-style-type: none"> 9th and Eufaula to 1st and Eufaula is a residential area which floods when it rains. 7th and Eufaula floods during heavy rains, flooding houses. 	<ul style="list-style-type: none"> 0.5 square mile detailed hydrologic analysis using rainfall runoff methodology. 0.8 mile of new detail hydraulic study. 0.8 mile of floodplain mapping. Two panels (40133C0270E, 40133C0290E) affected. Updated topo does not exist for this study reach. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 0.8 mile of new NVUE Community outreach improved. FIRMs updated to reflect existing conditions. 	Low	10.64, 10.70
AO	<p>City of Holdenville has requested FEMA Publication 45 to develop BFEs in Zone As.</p>	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved. Aid Holdenville in providing BFE information to residents, property owners, developers, and businesses to better manage floodplains. 	High	10.40
AP	<p>Provide a set of effective FIRMs and FIS reports to the following communities as these were not provided when the FIRMs and FIS reports went effective.</p> <ul style="list-style-type: none"> City of Wewoka Okmulgee County 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved. Aid communities in providing BFE information to residents, property owners, developers, and businesses to better manage floodplains. 	High	10.67, 10.91

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AQ	Sac & Fox Nation requested FEMA provide the FIRM databases for Payne, Lincoln, and Pottawatomie Counties.	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved. Aid Sac & Fox Nation in providing BFE information to residents, property owners, developers, and businesses to better manage floodplains. 	High	10.93
AR	Absentee Shawnee Tribe of Oklahoma requested FEMA provide the FIRM databases for Cleveland, Oklahoma, and Pottawatomie Counties.	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved. Aid Absentee Shawnee Tribe of Oklahoma in providing BFE information to residents, property owners, developers, and businesses to better manage floodplains. 	High	10.94
AS	Coordination with Okfuskee County to determine areas where updated topographic information is required for future flood studies.	<ul style="list-style-type: none"> Updated topographic information is not available for Okfuskee County. Effective 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Community outreach improved. Aid property owners and developers in planning developments outside the 1-percent-annual-chance (100-year) floodplain. Allow sequencing of future flood studies and FIRM/FIS updates. 	High	No specific comment

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AT	<p>Updating the FIRM and FIS for Oklmugee County in the City of Henryetta.</p> <ul style="list-style-type: none"> • Flooding occurs along an Unnamed Tributary to Dutch Creek near the intersection of Warren and Woodlands Roads. 	<ul style="list-style-type: none"> • 0.75 square mile of hydrologic analysis using USGS regression equations that take urbanization into account. • 1.2 miles of new detail hydraulic study. • 1.2 miles of floodplain mapping. • Two panels affected. • Updated topo does not exist for this study reach. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 1.2 miles of new NVUE • Community outreach improved. • Aid property owners and developers in planning developments outside the 1-percent-annual-chance (100-year) floodplain. 	Low	10.87, 10.88
AU	<p>Updating the FIRM and FIS for Seminole County in the City of Seminole.</p> <ul style="list-style-type: none"> • Community indicated SFHA issues along Magnolia Creek. Updates to downstream will also affect upstream SFHAs. • Effective model for Magnolia Creek and its tributaries dates to 1981. • Request for detailed study along Unnamed Tributary to Wewoka Creek. 	<ul style="list-style-type: none"> • 4.5 miles of detail hydraulic study along Magnolia Creek. • 4.5 miles of floodplain mapping • Three panels (40133C0140E, 40133C0145E, 40133C0235E) affected. • Updated topo (FY11) exist for these study reaches. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 4.5 miles of revised NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. 	High	10.52, 10.53, 10.54, 10.59, 10.60, 10.61
AV	<p>Updating the FIRM and FIS for Unnamed Tributary to Wewoka Creek in the City of Seminole.</p> <ul style="list-style-type: none"> • Residential area with flooding problems where no SFHAs have been established. 	<ul style="list-style-type: none"> • 0.6 square mile of detailed hydrologic analysis using rainfall runoff methodology. • 0.7 mile of detail hydraulic study along unnamed tributary to Wewoka Creek. • 0.7 mile of floodplain mapping • One panel (40133C0235E) affected. • Updated topo (FY11) exists for reach. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 0.7 mile of new NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. 	High	10.51, 10.58

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AX	<p>Updating the FIRM and FIS for Unnamed Tributaries to Tributary 2 to Magnolia Creek in the City of Seminole.</p> <ul style="list-style-type: none"> Residential area with Zone A flood hazards 	<ul style="list-style-type: none"> 0.7 square mile of detailed hydrologic analysis using rainfall runoff methodology. 1.1 miles of detailed hydraulic study along Unnamed Tributary to Magnolia Creek Tributary 2. 1.1 miles of floodplain mapping Two panels (40133C0230E, 40133C0235E) affected. Updated topo (FY11) exists for these study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 1.1 miles of new NVUE Community outreach improved. FIRMs updated to reflect existing conditions. 	High	10.57

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AY	<p>Updating the FIRM and FIS for North Canadian River and Unnamed Tributary to North Canadian River near City of Shawnee.</p> <ul style="list-style-type: none"> • Citizen Potawatomi Nation has requested SFHAs near the site of a proposed industrial park. Existing SFHAs appear to be incorrect. 	<ul style="list-style-type: none"> • Citizen Potawatomi Nation is establishing an industrial park west of the intersection of Brangus Road and Hardesty Road. • North Canadian River <ul style="list-style-type: none"> ○ Hydrologic Analysis: Flood Frequency Analysis ○ Assumption made that flood frequency analysis will be sufficient for this study. Effective methodology is HEC-1 from 1978 with drainage area 8,831 sq.mi. ○ Detailed hydraulic analysis of 10 miles • Unnamed Tributary to North Canadian River <ul style="list-style-type: none"> ○ Hydrologic Analysis for 2.8 square miles using detailed hydrologic analysis rainfall runoff methodology. ○ Hydraulic Analysis for 1.7 miles • 1.7 1.7 miles of floodplain mapping • Five panels (40125C0205H, 40125C0210H, 40125C0215H, 40125C0220H, 40125C0250H) affected. • Updated topo exists for this study reach. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 1.7 miles of new NVUE • 10.07 miles of revised NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. 	High	10.98

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
AZ	Citizen Potawatomi Nation has requested a restudy of Squirrel Creek, as dredging has been performed in the channel. In addition, this stream is “unverified” in CNMS. A restudy is needed.	<ul style="list-style-type: none"> • Squirrel Creek • 6.8 miles of new detail hydraulic study. • 6.8 miles of floodplain mapping • Four panels (40125C0195H, 40125C0210H, 40125C0215H), 40125C0220H) affected. • Updated topo exists for this study reach. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 6.8 miles of new NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. 	High	10.99
BA	Citizen Potawatomi Nation has requested a flood study to establish BFEs for the area where future growth is expected east of I-40 and Valley View Road. The area is bounded by Deer Creek to the south, the Lower North Canadian River to the North, Econtuchka Road to the East, and Pottawatomie/Seminole County Boundary to the West.	<ul style="list-style-type: none"> • Deer Creek • 11.2 square miles of hydrologic analysis using USGS regression equations. • 4.3 miles of new detail hydraulic study. • 4.3 miles of floodplain mapping • One panel (40125C0220H) affected. • Updated topo exists for this study reach. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 4.3 miles of new NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. 	High	10.102

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BB	<p>Updating the SFHA for the entire length of Twin Creek in Oklahoma City.</p> <ul style="list-style-type: none"> There is a concrete box which doesn't appear to be modeled. It falls on Oklahoma County Panel 40109C0285H, and at SW 15th St. and Pennsylvania Ave, and between Cross Sections C and E. The Zone AE increased from 2002 panels due to the redelineation. This does not appear correct based on new topographic data. Community Comments: Increase in Zone AE from 2002 panels. Increase does not seem warranted when comparing BFE to contour information. Entire channel upstream of Cross Section E is in a concrete lined channel. SFHA shown to be greatly outside of channel boundaries. Upstream of Cross Section L, RCB with concrete channel on top never properly modeled (only channel was modeled). As-builts can be provided for this project, if needed. 	<ul style="list-style-type: none"> 4.97 miles of detailed hydraulic study. 4.97 miles of floodplain mapping Three panels (40109C0280H, 40109C0285H, 40109C0290H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 4.97 miles of revised NVUE Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.11, 10.116

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BC	<p>Updating the SFHA for the reach of Unnamed Tributary of North Canadian River from Reno Ave. to Macarthur Blvd in Oklahoma County.</p> <ul style="list-style-type: none"> The City of Oklahoma City would like the entire reach between Reno and Meridian Aves. on Oklahoma County Panel 40109C0280H to be restudied. A large increase in Zone A flooding was seen here from the 2002 FIRM panels due to the redelineation. This does not appear correct based on new topographic data. Community Comments: Please study and delineate flood hazards using detailed methods. 	<ul style="list-style-type: none"> 4.6 square miles of detailed hydrologic analysis using rainfall runoff methodology. 1.7 miles of detailed hydraulic study. 1.7 miles of floodplain mapping One panel (40109C0280H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 1.7 miles of new NVUE Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.12, 10.117

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BD	<p>Updating the SFHA for the reach of North Canadian River from XS DA to XS HO in Oklahoma County.</p> <ul style="list-style-type: none"> A series of Locks and Dams were constructed between 1999 and 2004. The changes to the river may not be accurately reflected on the FIRMs with the 2004 contour information. The City of Oklahoma City recommends a restudy using 2010 topo at Reno Ave. from Eastern Ave. to Meridian Ave, approximately between Cross Sections DA and GD, and on Oklahoma County Panels 40109C0305H, 40109C0285H, 40109C0280H, and 40109C0260H. Community Comments: Series of Locks and Dams constructed between 1999 and 2004. Changes to river may not be accurately reflected with 2004 contour information. 	<ul style="list-style-type: none"> 14.86 miles of detailed hydraulic study. 14.86 miles of floodplain mapping Four panels (40109C0305H, 40109C0285H, 40109C0280H, 40109C0260H) affected. Updated topo exists for this study reach. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 14.86 miles of revised NVUE Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.13, 10.112

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BE	<p>Updating the SFHA for the reach of North Canadian River Tributary 12 (entire detailed reach) in Oklahoma County.</p> <ul style="list-style-type: none"> A portion of the creek between Cross Sections B and D, and located at SW 29th St between Meridian Ave and MacArthur Blvd, has been concrete lined and the SFHA is now shown to be greatly outside of the channel boundaries. Also, there was an increase in Zone AE from the 2002 panels due to the redelineation. This does not appear correct based on new topographic data. Community Comments: This creek has been concrete lined and SFHA is shown to be greatly outside of channel boundaries. 	<ul style="list-style-type: none"> 1.35 miles of detailed hydraulic study. 1.35 miles of floodplain mapping Two panels (40109C0280H, 40109C0290H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 1.35 miles of revised NVUE Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.14, 10.114

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BF	<p>Updating the SFHA for the reach of Campbell Creek (from 59th Street to XS N) in Oklahoma County.</p> <ul style="list-style-type: none"> At SW 59th St and County Line Rd, upstream of Cross Section M, there was an increase in Zone AE from 2002 panels due to the redelineation. This does not appear correct based on new topographic data. 	<ul style="list-style-type: none"> 0.7 mile of detailed hydraulic study. 0.7 mile of floodplain mapping One panel (40109C0270H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 0.7 mile of revised NVUE Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.15
BG	<p>Updating the SFHA for the reach of East Branch Campbell Creek (from XS A to XS C) in Oklahoma County.</p> <ul style="list-style-type: none"> At SW 44th S and Rockwell Ave, between cross section A and C, there was an increase in Zone AE from 2002 panels which does not seem to agree with BFE contour information. Also, the Zone A increases quite a bit from the 2002 panels (due to the redelineation. This does not appear correct based on new topographic data). A portion of this creek is concrete channel around cross section B, and the FIRM does not show the SFHA could be contained in the channel. 	<ul style="list-style-type: none"> 1.2 miles of detailed hydraulic study. 1.2 miles of floodplain mapping One panel (40109C0270H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 1.2 miles of revised NVUE Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.16

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BH	<p>Updating the SFHA for the reach of North Canadian River Tributary 13 (upstream of XS D) in Oklahoma County.</p> <ul style="list-style-type: none"> Community Comments: Creek has been straightened and floodway and floodplain do not follow contour lines 	<ul style="list-style-type: none"> 0.8 mile of detailed hydraulic study. 0.8 mile of floodplain mapping Two panels (40109C0280H, 40109C0290H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 0.8 mile of revised NVUE Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.115
BI	<p>Updating the SFHA (by studying in detail and adding BFEs) for the unnamed tributary to Choctaw Creek (near XS L) in Oklahoma County.</p> <ul style="list-style-type: none"> Community Comments: Add detail. Proposed development in this area. 	<ul style="list-style-type: none"> 0.4 square mile detailed hydrologic analysis 0.7 mile of detailed hydraulic study. 0.7 mile of floodplain mapping Two panels (40109C0220H, 40109C0335H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 0.7 mile of new NVUE Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.119

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BJ	<p>Updating the SFHA for the entire length of Brock Creek in Oklahoma City.</p> <ul style="list-style-type: none"> Community Comments: Increase in Zone AE from 2002 FIRMs (due to redelineation for 2009 update). Increase does not seem warranted when comparing BFE to contour information. This creek has been recently concrete lined and SFHA is shown to be greatly outside of channel boundaries. 	<ul style="list-style-type: none"> 3.6 miles of detailed hydraulic study. 3.6 miles of floodplain mapping Two panels (40109C0295H and 40109C0285H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No change in NVUE (study VALID in CNMS) Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.104
BK	<p>Updating the SFHA for the Choctaw Creek from XS E to Q.</p> <ul style="list-style-type: none"> Community Comments: Restudy (due to effective flood hazards not matching updated topography) 	<ul style="list-style-type: none"> 2.9 miles of detailed hydraulic study. 2.9 miles of floodplain mapping Two panels (40109C0335H, 40109C0355H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No change in NVUE (study VALID in CNMS) Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	Medium	10.105

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BL	<p>Updating the SFHA for the entire length of Crutch Creek Tributary G in Oklahoma City.</p> <ul style="list-style-type: none"> Community Comments: Increase in Zone A from 2002 FIRMs . 	<ul style="list-style-type: none"> 0.6 mile of detailed hydraulic study. 0.6 mile of floodplain mapping One panel (40109C0320H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 0.6 mile of new NVUE Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.109

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BM	<p>Updating the SFHA for the reach of Lightening Creek from downstream LOS to XS A and the entire length of Lightening Creek Tributary 1 in Oklahoma City.</p> <ul style="list-style-type: none"> Community Comments Increase in Zone AE from 2002 panels. Increase does not seem warranted when comparing BFE to contour information. This portion of the creek has been recently concrete lined and SFHA is shown to be greatly outside of channel boundaries. Community Comments: Increase in Zone AE from 2002 panels. Increase does not seem warranted when comparing BFE to contour information. This creek has been recently concrete lined and SFHA is shown to be greatly outside of channel boundaries. 	<ul style="list-style-type: none"> 1.5 miles of detailed hydraulic study. 1.5 miles of floodplain mapping Two panels (40109C0285H and 40109C0295H) affected. Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> No change in NVUE (study VALID in CNMS) Community outreach improved. FIRMs updated to reflect existing conditions. FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.110, 10.111

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BN	Updating the SFHA for the reach of th North Canadian River where Oklahoma, Pottawatomie, and Lincoln Counties meet the North Canadian River is Zone A for a short 5 mile segment with Zone AE on both sides (upstream and downstream).	<ul style="list-style-type: none"> • 5 miles of detailed hydraulic study. • 5 miles of floodplain mapping • Three panels affected. • Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 5.0 miles of new NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. • FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.124
BO	Updating the SFHA for Tributary 2 to Squirrel Creek. It is unverified in CNMS and near a residential area.	<ul style="list-style-type: none"> • 1.1 miles of detailed hydraulic study. • 1.1 miles of floodplain mapping • One panel affected. • Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 1.1 miles of new NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. • FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.95

Table 19 - Metrics and Rankings of Needs (continued)

Item	Description of Need		Impacts From Any Current Map Actions	FEMA Metric or Community Benefit	Evaluation	Relates to Community Comment Number
	Location of Need/Project	Details				
	<p><u>Evaluation Guide</u></p> <p>High – Local community would immediately benefit from the action, and FEMA’s metrics would also be met</p> <p>Medium – Local community would benefit over the longer term from the action, and a portion of FEMA’s metrics may be met</p> <p>Low – Local community activities can continue without this revision, and FEMA’s metrics are not impacted</p> <p>Community Action – Activity would be more appropriate as a community-led action rather than a FEMA-led action</p>					
BP	Updating the SFHA for Tributary A in Seminole County. It is unverified in CNMS and near a Seminole Nation of Oklahoma facility	<ul style="list-style-type: none"> • 3.6 miles of detailed hydraulic study. • 3.6 miles of floodplain mapping • Two panels affected. • Updated topo exists for this study reaches. 	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • 3.6 miles of new NVUE • Community outreach improved. • FIRMs updated to reflect existing conditions. • FY09 Oklahoma County PMR was stopped due to collection of updated LiDAR information and communities told that a future map action would address needs/requests. 	High	10.80