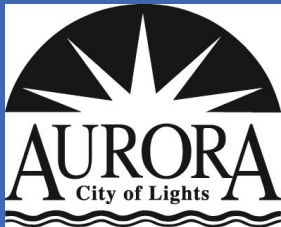


# Illinois Avenue Culvert Replacement Project City of Aurora, IL

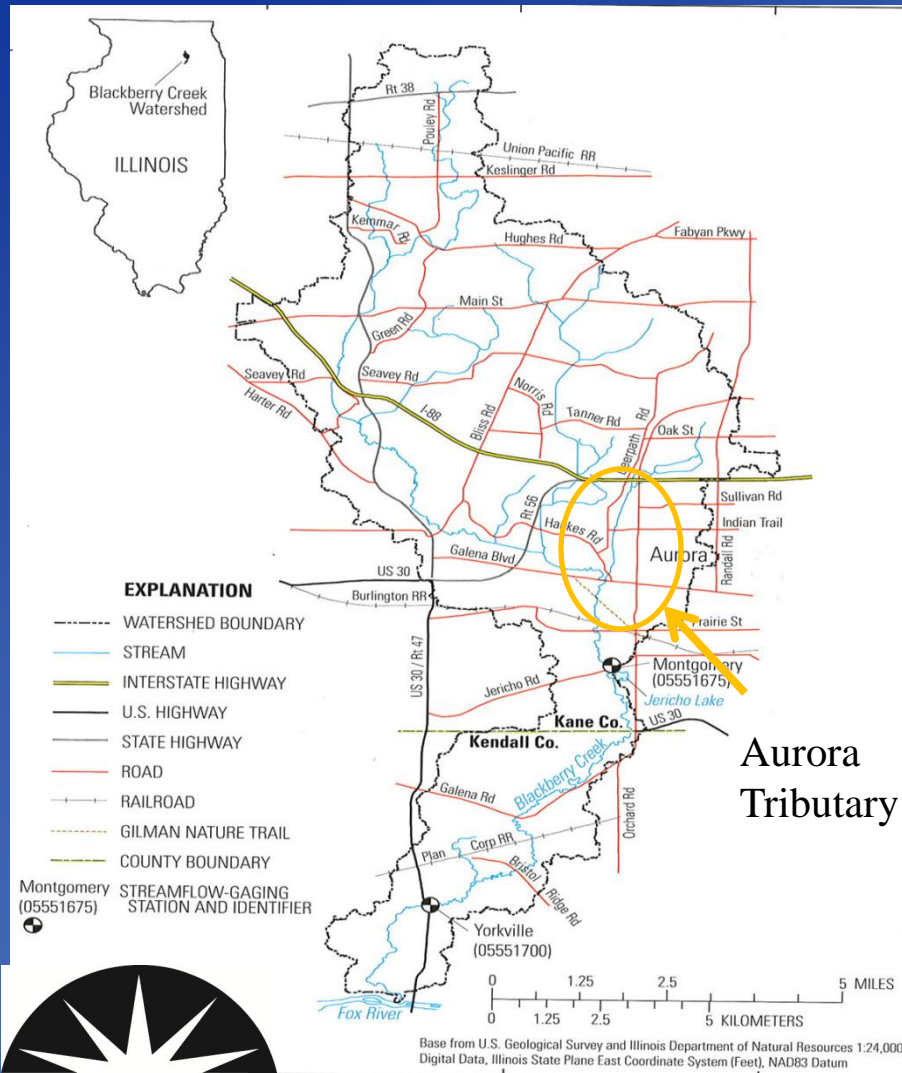
March 14, 2012

Dan Feltman PE, CFM  
City of Aurora

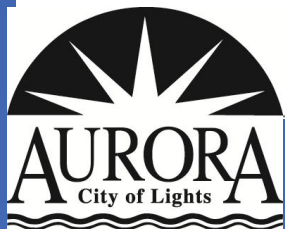
Darren Olson PE, CFM, D.WRE  
Christopher B. Burke Engineering, Ltd.



# Blackberry Creek – City of Aurora



- Kane -Kendall Counties
- Tributary to Fox River
- Watershed 71 Sq Mi
- Aurora Tributary (Chain O'Lakes) Approx. 4 Sq. Mi
- 2<sup>nd</sup> largest City (198,000) incorporated in 1837
- City Limits 44 Sq. Mi.
- City of Lights (1881 Electric Street Lights)

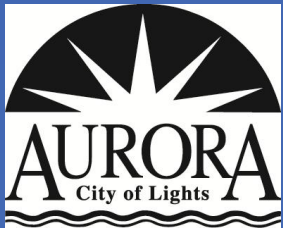


Source: USGS Scientific Investigations Report 2005-5270

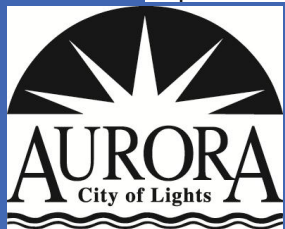
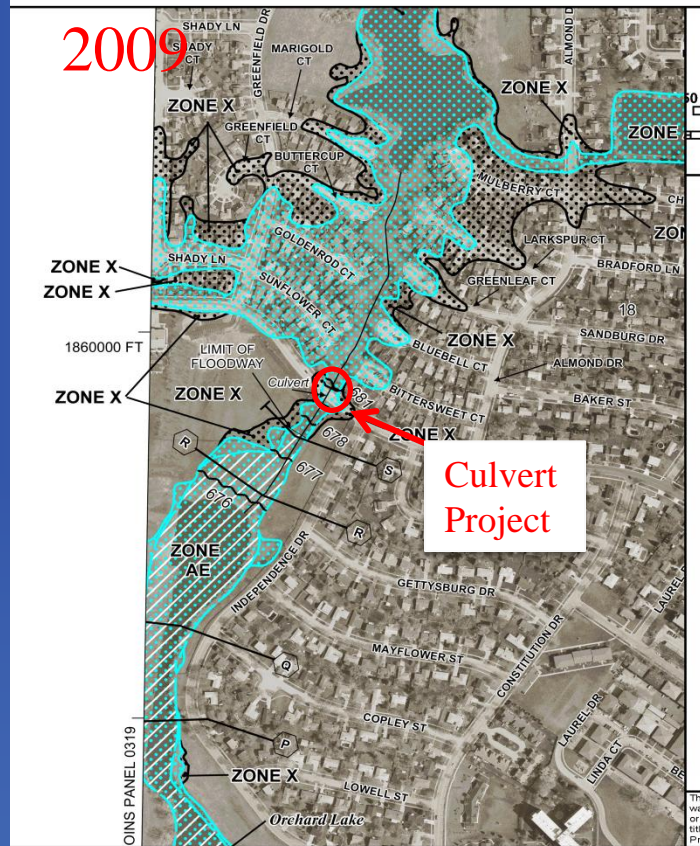
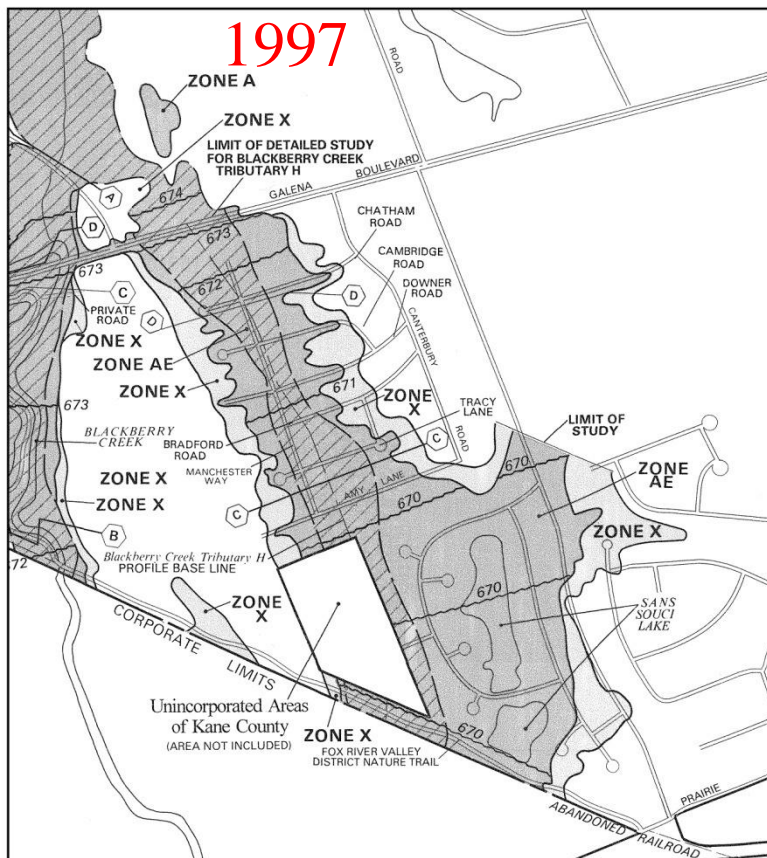


# Chronology of Study Area

- **1940 – 1970** Majority of the Development within Aurora Tributary
- **1996** 16.2” Rain in 24 hours (Back to Back 100 year Events)
- **1998** City Completed Study & began regulating local floodplain by Ordinance
- **2003** Kane County Completed Natural Hazards Mitigation Plan
- **2004** City updated the Flood Study
- **2006** Kane County Environmental Management Department commissioned USGS study Blackberry Creek Watershed
- **2007** Kane County contracted with CBBEL to analyze Blackberry Creek Watershed for potential Flood Mitigation Projects
- **2008** City applied for IEMA Flood Mitigation Grant for the Illinois Ave Culvert
- **2009** Updated FIRM (Map Modernization) included the Aurora Tributary
- **2009** Hurricane Katrina disaster affected Grant Funding and stalled application
- **2010** Finalized Grant, completed Final Engineering Plans and obtained Permits
- **2011** Bid and Constructed project and Applied for LOMR



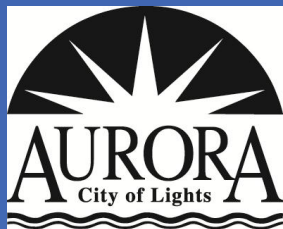
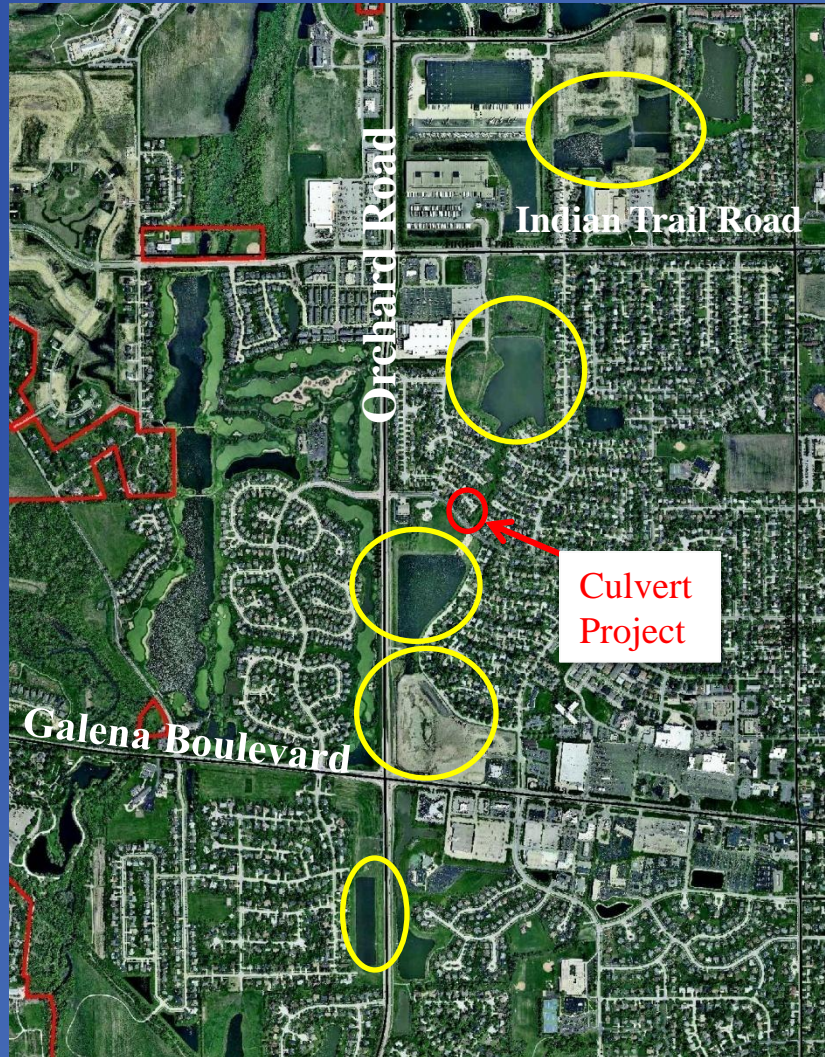
# FIRM





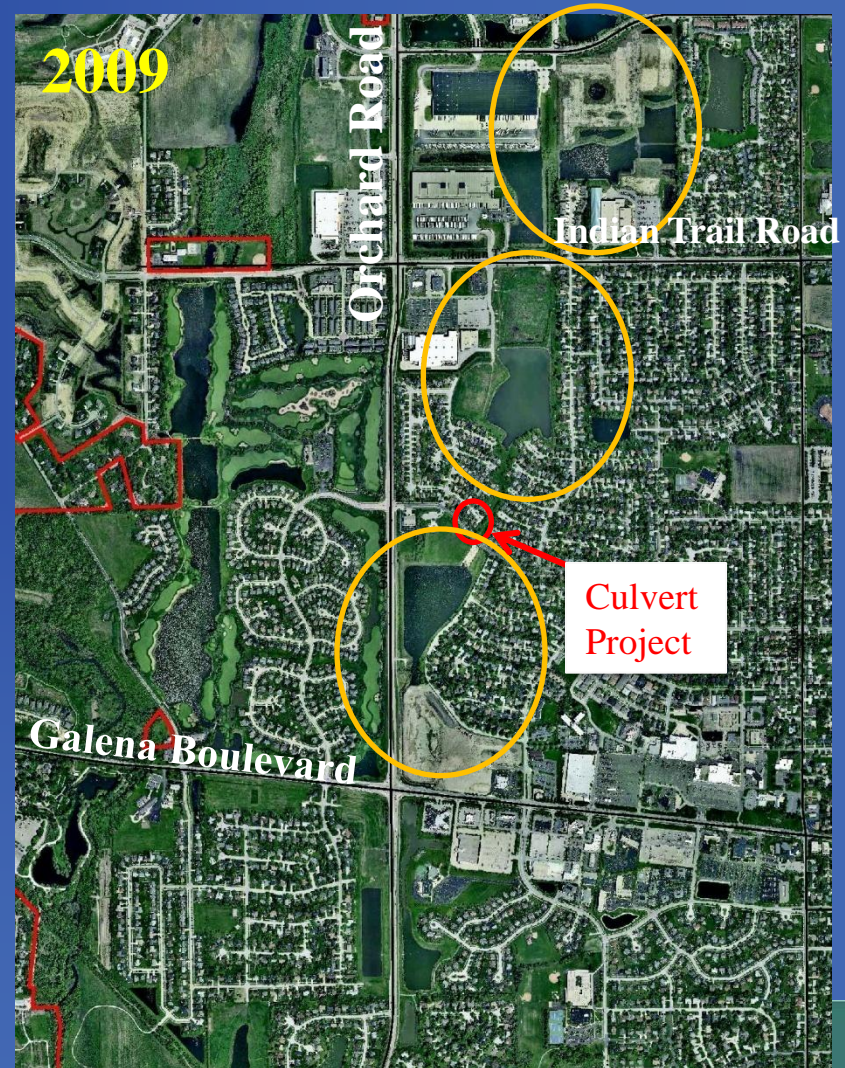
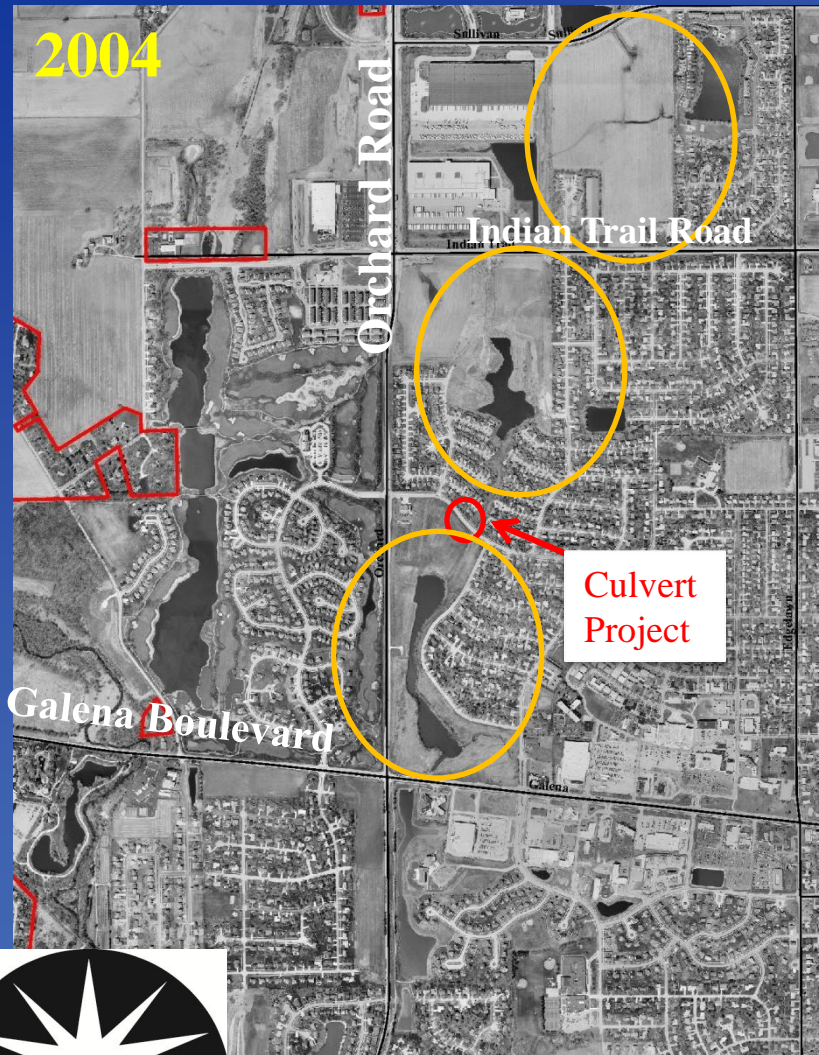
# Aurora Floodplain Projects

- Orchard Corridor Office Park
  - Added 37 Acre-ft 2007
- Greenfield Lake:
  - Added 48 Acre-ft 2006
- Orchard Rd Expansion
  - Added 33 Acre-ft in 2005
- Orchard Lake Development
  - Added 100 Acre-ft in 2009
- 218 Acre-ft Total Floodplain Storage Added





# Study Area History





# Flood Photos





# Flood Photos

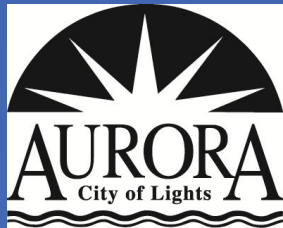




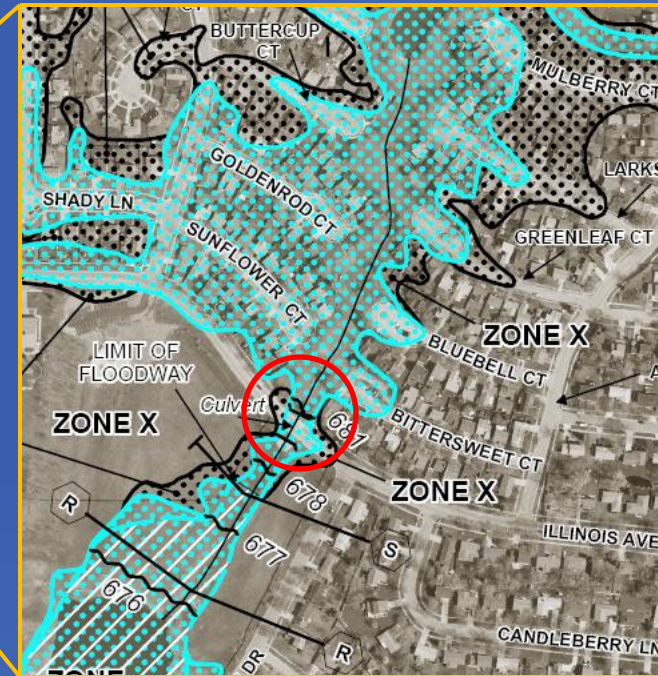
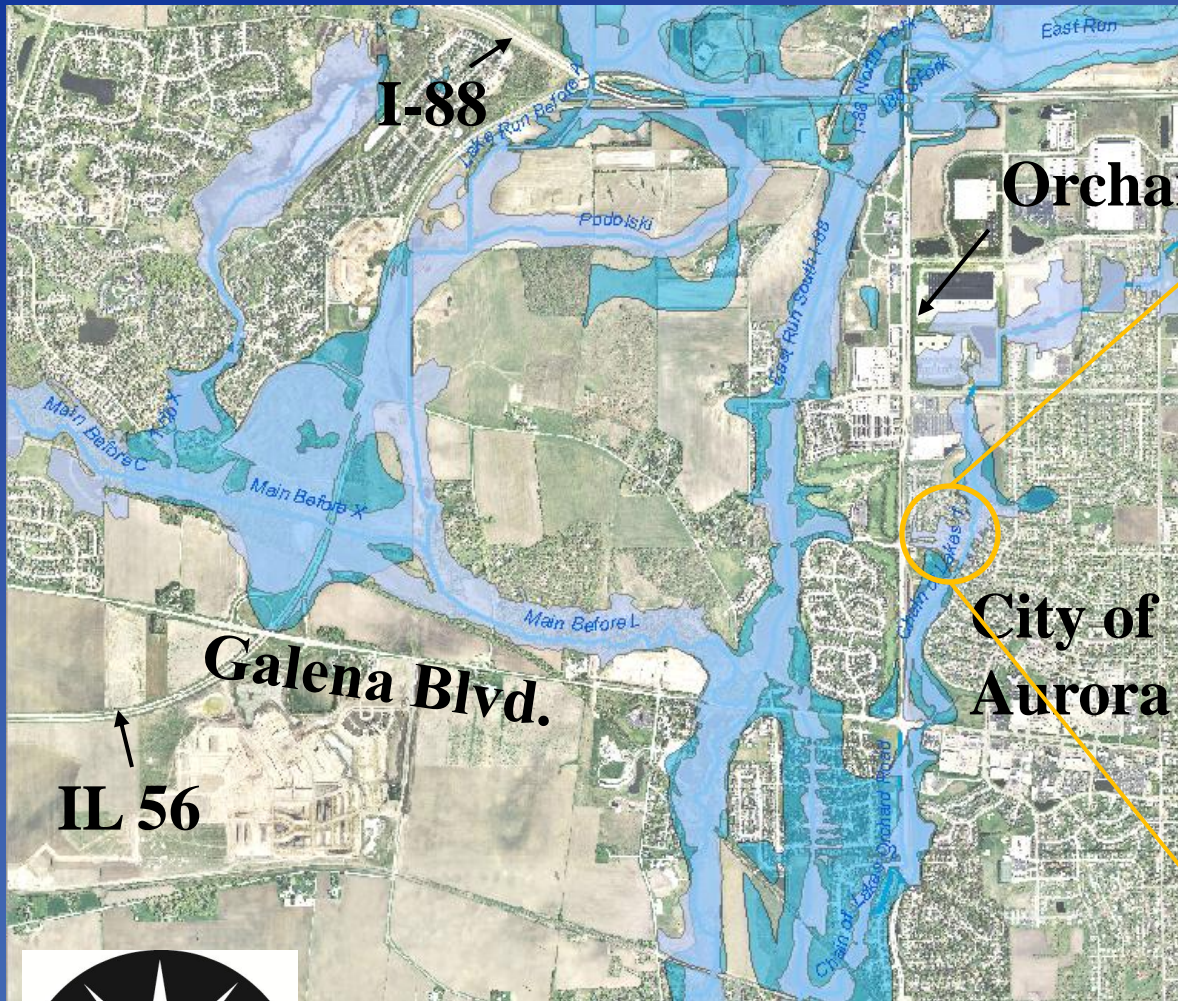
# Blackberry Creek Watershed Study

## Part 1 (2006-2008)

- Kane County Department of Environmental Management
  - Project Management funding
- U.S. Geological Survey
  - HSPF hydrologic and HEC-RAS hydraulic models
  - City provided Aurora Tributary Study for Remapping
- IDNR-OWR
  - Economic Survey
- ISWS
  - Floodplain remapping
- CBBEL
  - economic analysis and identification of flood control projects

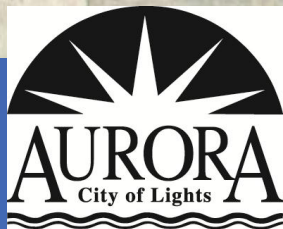


# Baseline Floodplain Mapping by USGS



2009 FIRM

Date USGS





# CBBEL Economic Analysis

GIS data  
linked by  
PIN

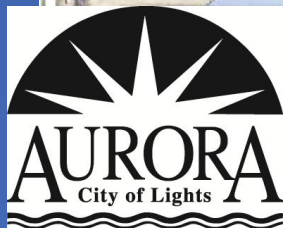
Orchard Road

Illinois  
Avenue

Location: 973,540.355 1,860,

Field	Value
FID	186
Shape	Polygon
PIN	1518101013
MAIN_STRUC	1.0 Story Frm
YEAR_BUILT	1980
MAIN_STR_1	1284
BASEMENT_S	0
GARAGE_SF	0
ASSESSMENT	2005
ASSESSED_V	8491
ASSESSED_1	43002
Total	51493
SALE_DATE	<null>
SALE_AMOUN	98500
Multiplier	DNA
Sale_Amo_1	169926.9
OTHER_BUIL	
PADDRESS_1	2405 Marigold Ct
Struc_Clas	B
Struc_Type	O
Found_Type	S
FIRST_FLOO	683.3
LOW_Water_	683.3
Ground_at_	682.8
GARAGE_ATT	ATT
Garage_Ele	682.8
COMMENTS	None
PADDRESS_2	NA
PCITY_1	Aurora
PZIP_1	0
MUNICIPAL_1	AURORA CITY
TOWNSHIP_1	Aurora - 15
TAXCODE_1	AU05
PROPCLAS_1	0040 Residential
INCORPOR_1	Y
CATAGORY	500 Year
StreamName	Chain of Lakes 1
Station	15458
Structure_	193

- Damage clusters identified
- Transferred to IDNR-OWR for survey
- GIS database created for 412 surveyed properties
- “Damages4” economic analysis

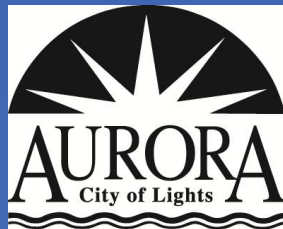


# Hydraulic Analysis & Project Identification



**Greenfield Commons**

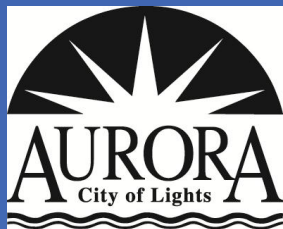
- 10 projects identified
  - Flood storage
  - Conveyance improvements
- Illinois Avenue Culvert
  - Replace restrictive culverts
  - >50 properties affected
  - B/C Ratio >1
  - Additional storage in watershed
  - Project cost  $\approx$  \$250,000





# Funding Breakthrough

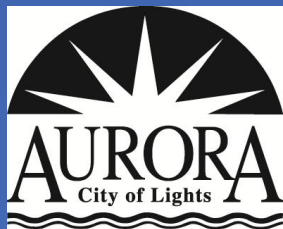
- City engages Molly O'Toole & Associates
- October 22, 2008
  - Disaster FEMA-DR-1722-IL (August 2007 event)
  - \$273,000 available
- Move on to Part 2



# Blackberry Creek Watershed Study

## Part 2 (2008 – 2012)

- City of Aurora
  - Project Management funding
- Molly O'Toole & Associates, Ltd.
  - Grant preparation
- Illinois Environmental Management Agency (IEMA)
  - Grant administration
- Federal Emergency Management Agency (FEMA)
  - The folks with the money
- CBBEL
  - Design, permitting and remapping

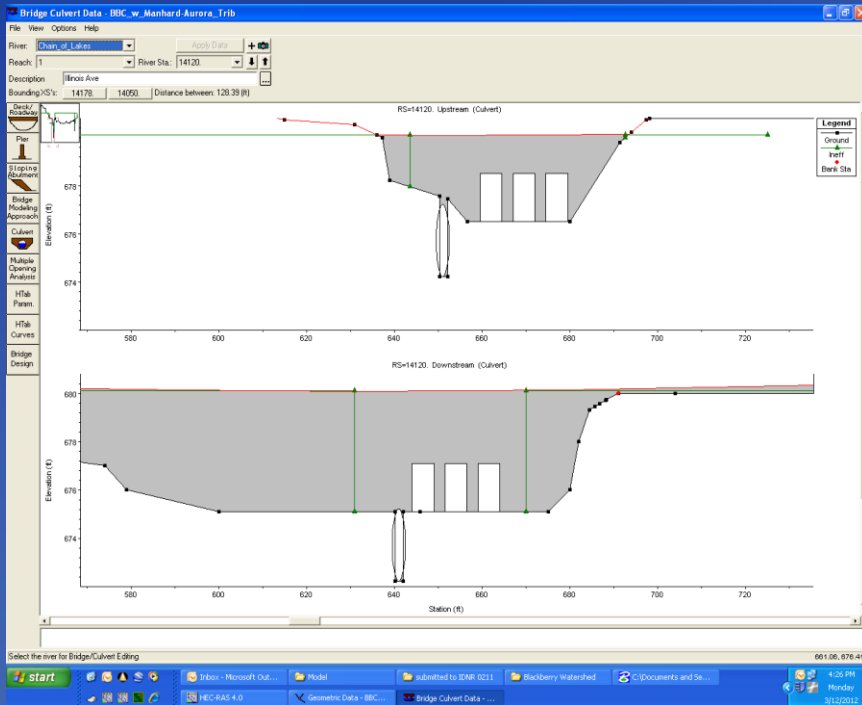




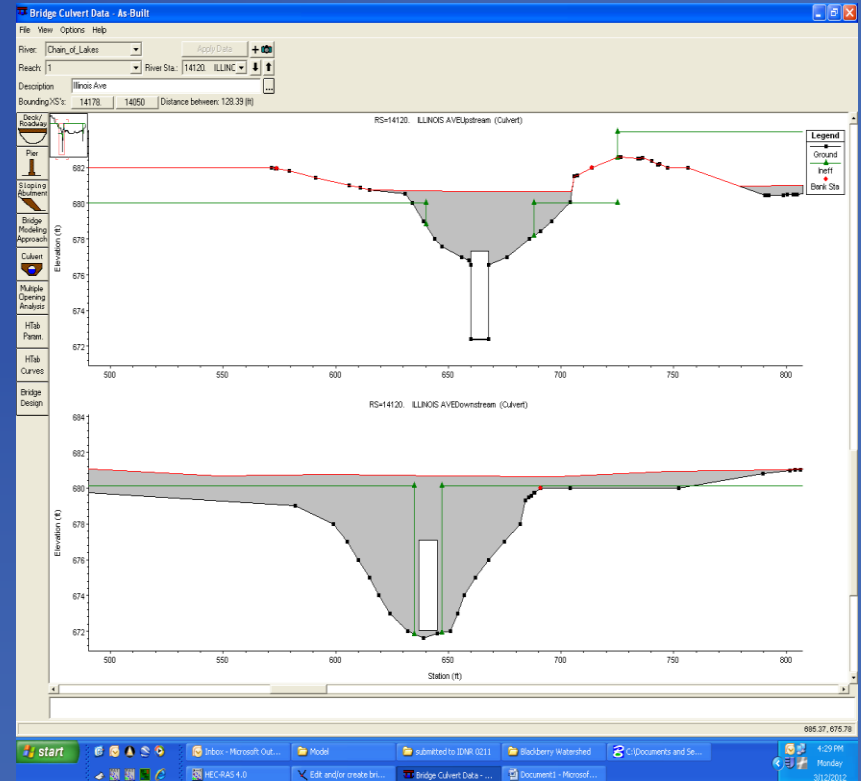


# Design Constraints

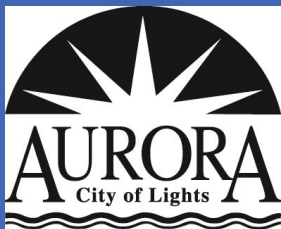
- Design modification after survey



Concept Design



Final Design



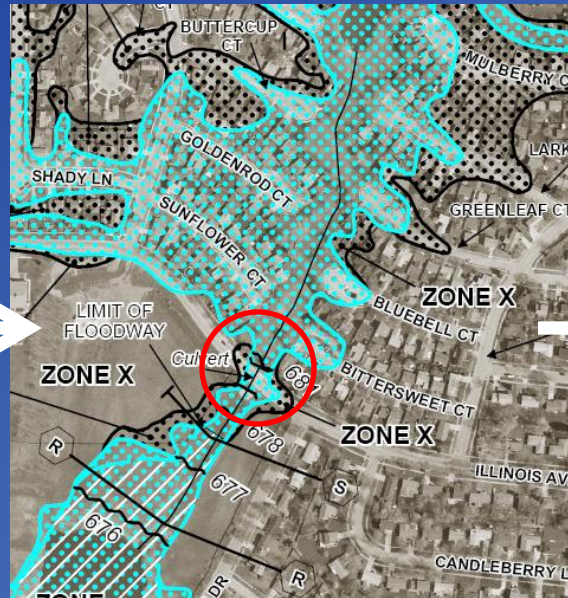


# Permitting and Re-Mapping

- Part 3700 Permit from IDNR-OWR - 2011
- Re-Mapping through FEMA



2002 FIRM



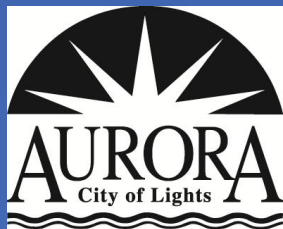
2009 FIRM



2012 LOMR

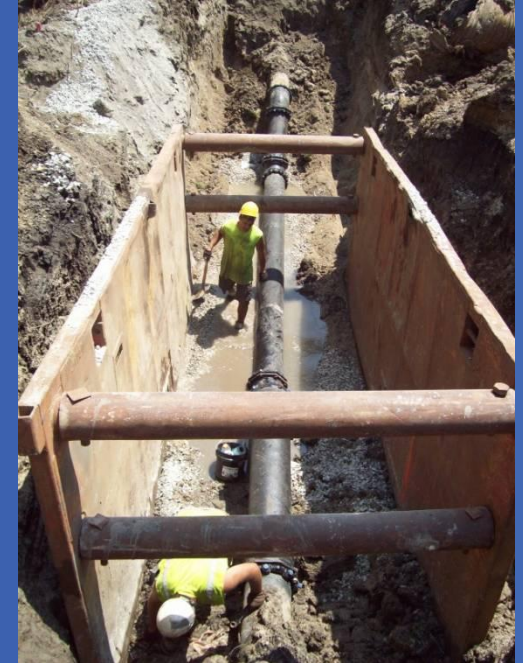
# Administration of the Grant

- Hazard Mitigation Grant Program (HMGP) - 75%/25% cost share
- FEMA Review
- Issue a Public Notice
- Update City Resolution to re-adopt Kane County Natural Hazard Mitigation Plan
- City & IEMA executed Inter-Government agreement
- Bid and Construction 2011
- City has Received Reimbursement (Thanks Ron)
- 36 Houses to be removed from the floodplain
- Applied to FEMA for the LOMR





# Construction photos





# Construction photos





# Pre and Post Construction photos



# Lessons Learned

- Be pro-active
- Be patient
- Its worth it
- Partnerships – Kane County, IEMA, USGS, Consultants
- 

