



WALTON LAKE DAM OVERTOPPING AND WASHOUT

Presenter: Edward LaBelle P.E.

Crawford Murphy & Tilly Inc.

March 15, 2012

SUMMARY

- First call
- Lake history
- Lake uses
- Emergency repairs
- Interim repairs
- Funding
- Permanent repairs
- Implementation
- Conclusion

LOCATION

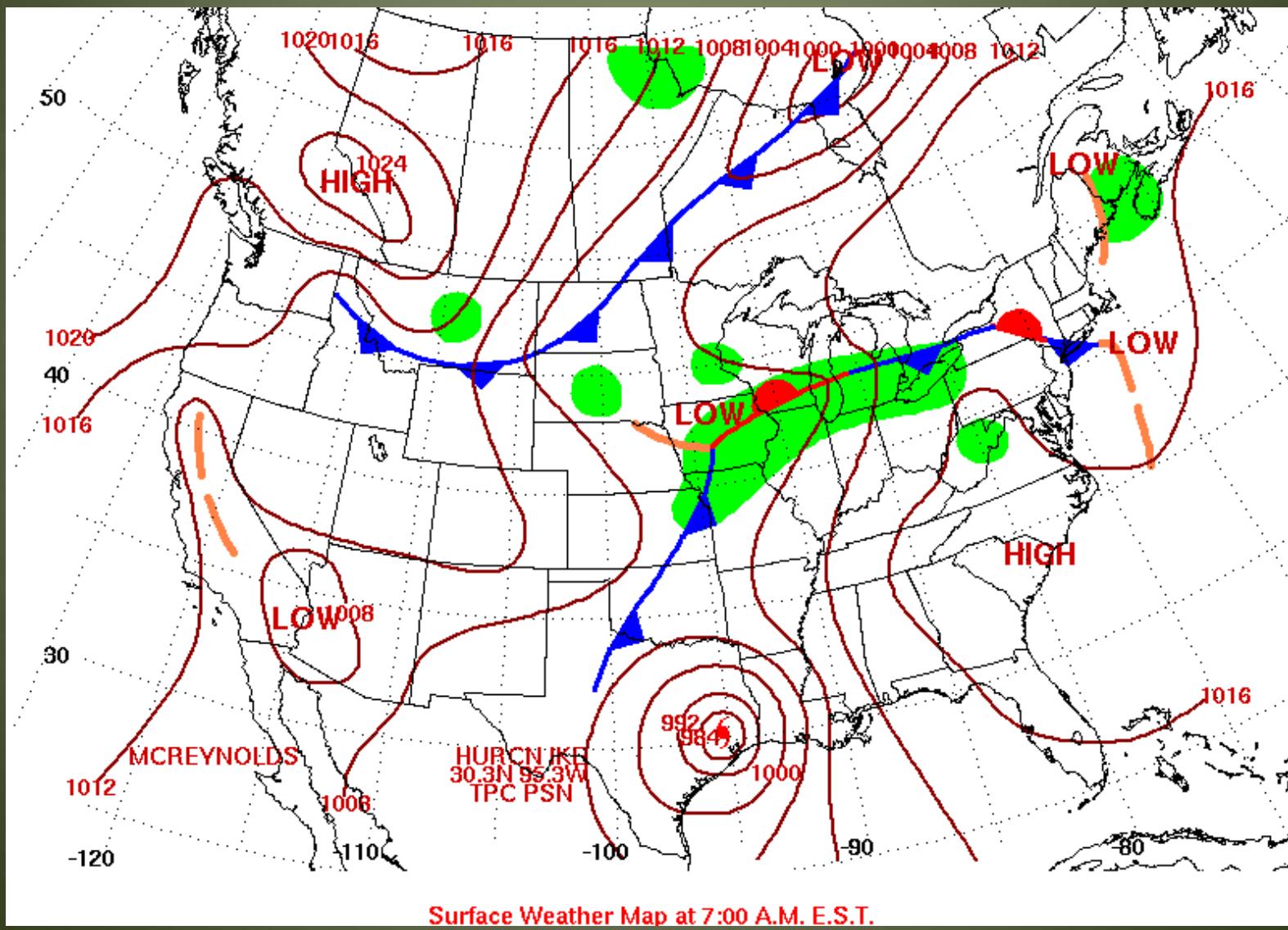


FIRST CALL

- Sunday, September 14, 2008
- Several inches of rain
 - 6.6 inches in prior 96 hours
 - 3.9 inches in prior 24 hours
- Lake flowing around spillway
- Several homes evacuated
- Closed road along dam

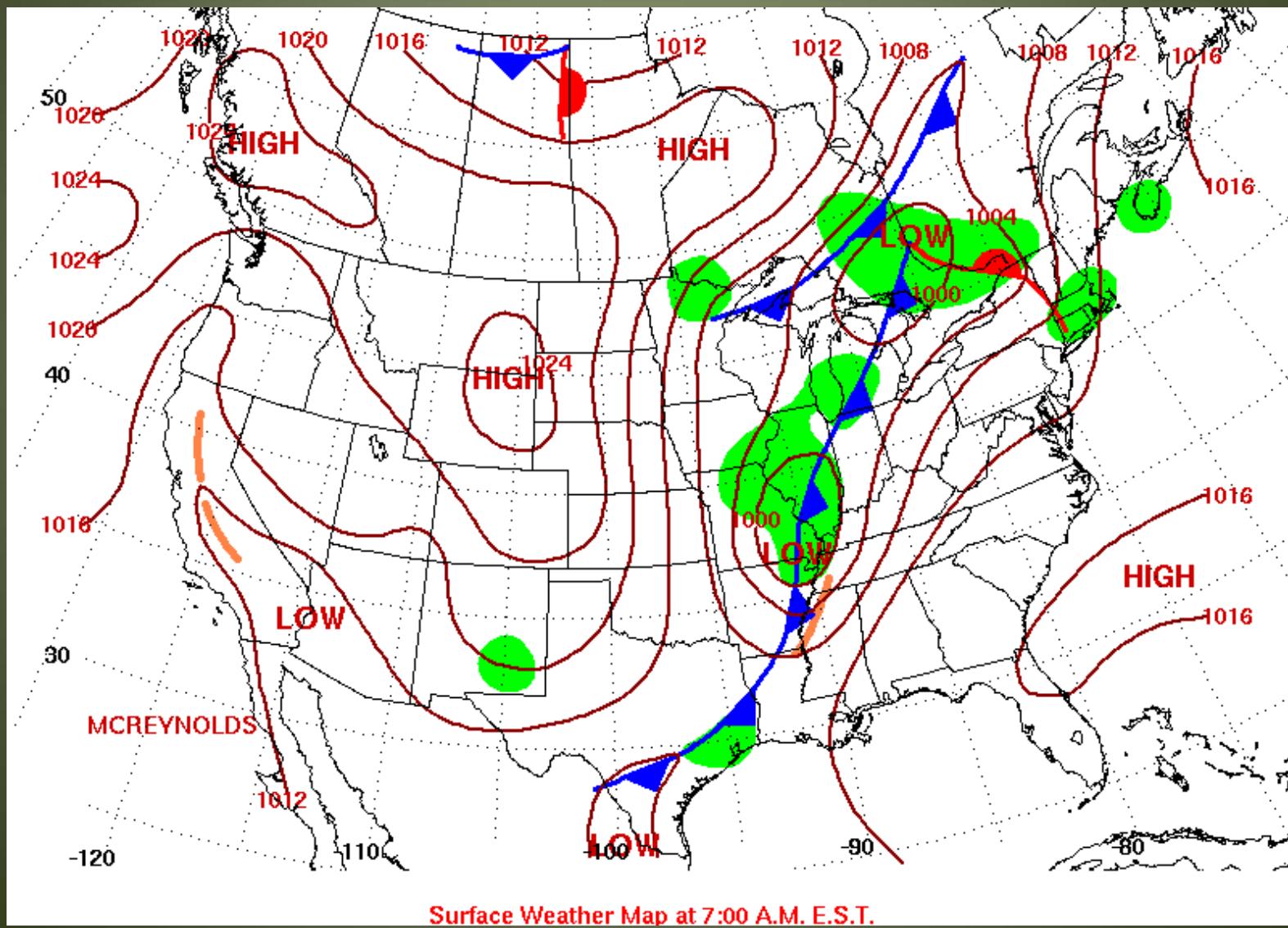
HURRICANE IKE

September 13, 2008



HURRICANE IKE

September 14, 2009



OVERFLOW MOVIE



OVERFLOW MOVIE



PHOTOS DURING WASHOUT

September 14, 2008











PHOTOS AFTER WASHOUT EVENT

September 18, 2008



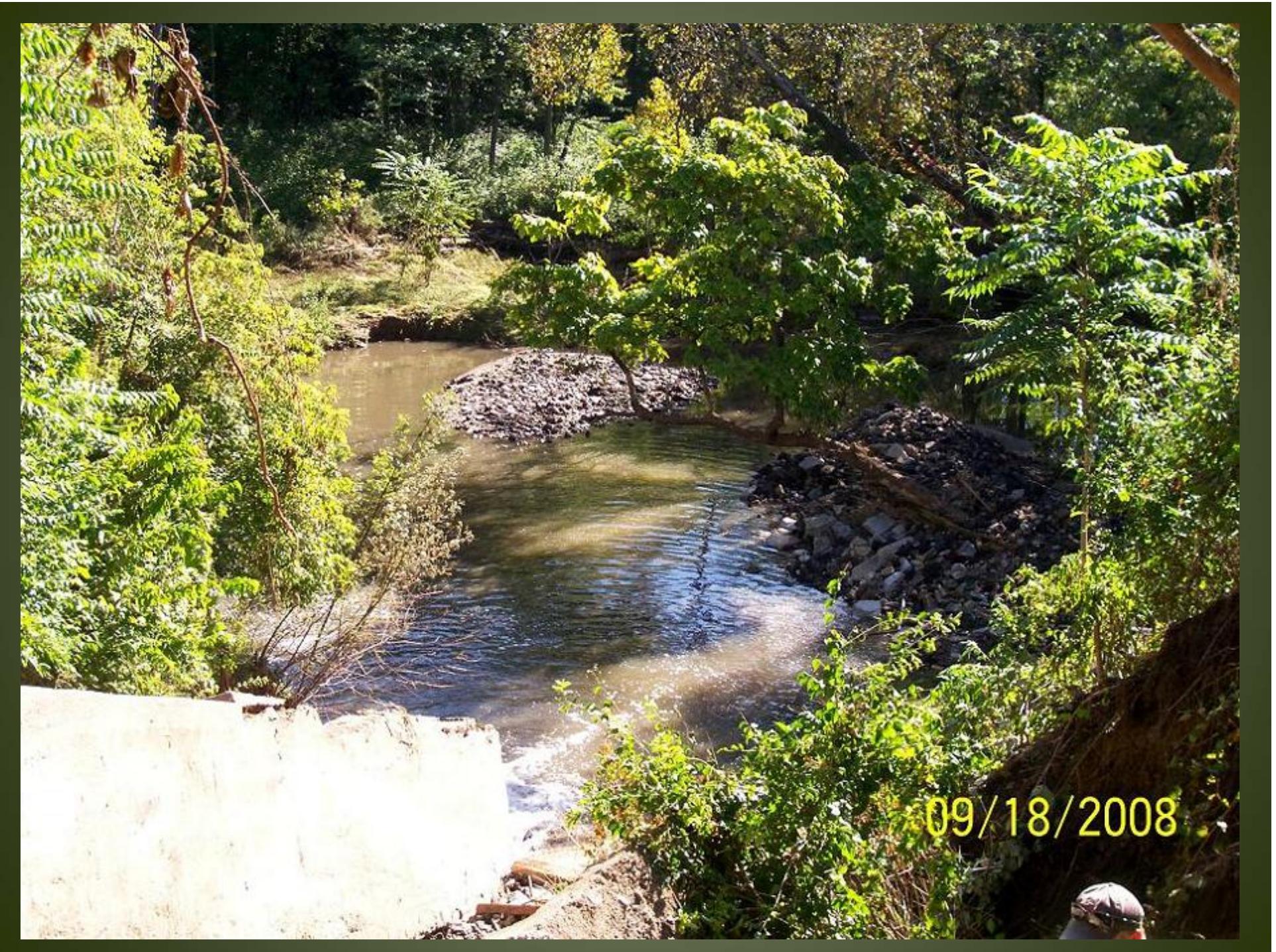
09/18/2008



09/18/2008



09/18/2008



09/18/2008



09/18/2008



09/18/2008





1/9/2009

LAKE HISTORY

- Walton Lake Dam built in 1870s
- First water supply lake for City of Litchfield
- Used as water supply until 1920s
- Used as park since 1920s
- Park - 58 acres
- Lake - 29 acres
- Drainage area - 4.5 square miles
- Walton Lake owned by City of Litchfield
- Park is operated by Litchfield Park District
- Road is under Montgomery County jurisdiction

WALTON LAKE



1870 DEED

the said party of the first part did on the Eighth day of January A.D. 1874 between them
of the Clerk in the forenoon and ten o'clock in the afternoon of such day at the premises
express to sale by public auction to the highest bidder the lands and Real Estate so called
to be sold in said town being first given notice of the time, terms and place of such sale
with a description of such lands and real estate according to the terms and requirements
of said order and decree and of the Statute regulating such sales as will more fully
and at large appear by the report of such sale made by said party of the first part an
Administrator as aforesaid to the said County Court and wherein at such sale the said
party of the second part became the purchaser of the following described lands and Real
Estate being the highest bidder therefor at the following prices, that is to say, one hundred
and twenty one dollars for the South half of the South East quarter of the South East
quarter of Section Three, in Township Second North Range three & half of the 8th P.M. and one
hundred and four dollars for the South half of the North East quarter of the South East
quarter of Section Three, in Township Second North Range Three & half of the 8th P.M.
Also therefore this instrument witnesseth that the said party of the first part by virtue of the
order and decree aforesaid and in consideration of the premises and for further consideration
of the sum of One Hundred and Twenty five dollars to him in hand paid by the said party
of the second part the receipt of which is hereby acknowledged hereto counter bargained sold
and bargained and by these presents do grant bargain sell and convey unto the said party
of the second part his heirs and assigns the lands and Real Estate just above described as
having been sold to the said party of the second part to have and to hold the same with all
the appurtenances thereunto belonging or in anywise appertaining to it only for pasture, hay
and the benefit of the said party of the second part his heirs and assigns forever. And the said
party of the first part for the consideration aforesaid covenant with the said party of the
second part his heirs and assigns that he has in all respects complied with the order and
decree aforesaid, and with the divisions of the land generally in such case made and provided
by Writs whereof the said party of the first part as Administrator as aforesaid has
summons set his hands and seal the day and year first above written.

In presence of 
James Miller 
State of Illinois 
Montgomery County This day personally appeared before the undersigned writing under
and seal for the County and State aforesaid William C. McDaniel Administrator of the
Estate of Aaron G. Fox deceased who is personally known to me to be the person whose
name as such Administrator is subscribed to the foregoing and as having executed the same
and acknowledged that he had as such administrator subscribed to the foregoing and
as having executed the same and acknowledged that he had as such Administrator
executed the same for the uses and purposes herein expressed. In witness whereof I
have sealed set my hand and affixed seal at my Office in said County this thirtieth
day of January A.D. 1874

James Miller Notary Public
Sworn January 19th A.D. 1874 at 11 o'clock A.M. before me Robert M. Van Doren Notary.

LAKE AND PARK USES

- Fishing
- Boating (self propelled or electric motors)
- Basketball
- Volleyball
- Disc golf
- Softball and baseball
- Remote control cars tracks
- Four pavilions (reunions, outings)

EMERGENCY REPAIRS

- Sandbags
- Siphon pipe for drawdown
- Close road

SANDBAG REPAIR



SIPHON PIPE FOR DRAWDOWN



INTERIM REPAIRS

- Engineering evaluation of bridge foundation
- Construction drawings and IDNR permit
- Remove debris
- Haul fill dirt to site
- Place and compact dirt
 - Under spillway
 - In dam washout
- Install gabions
- Re-open road

Work not completed due to winter onset

INTERIM REPAIR



FUNDING

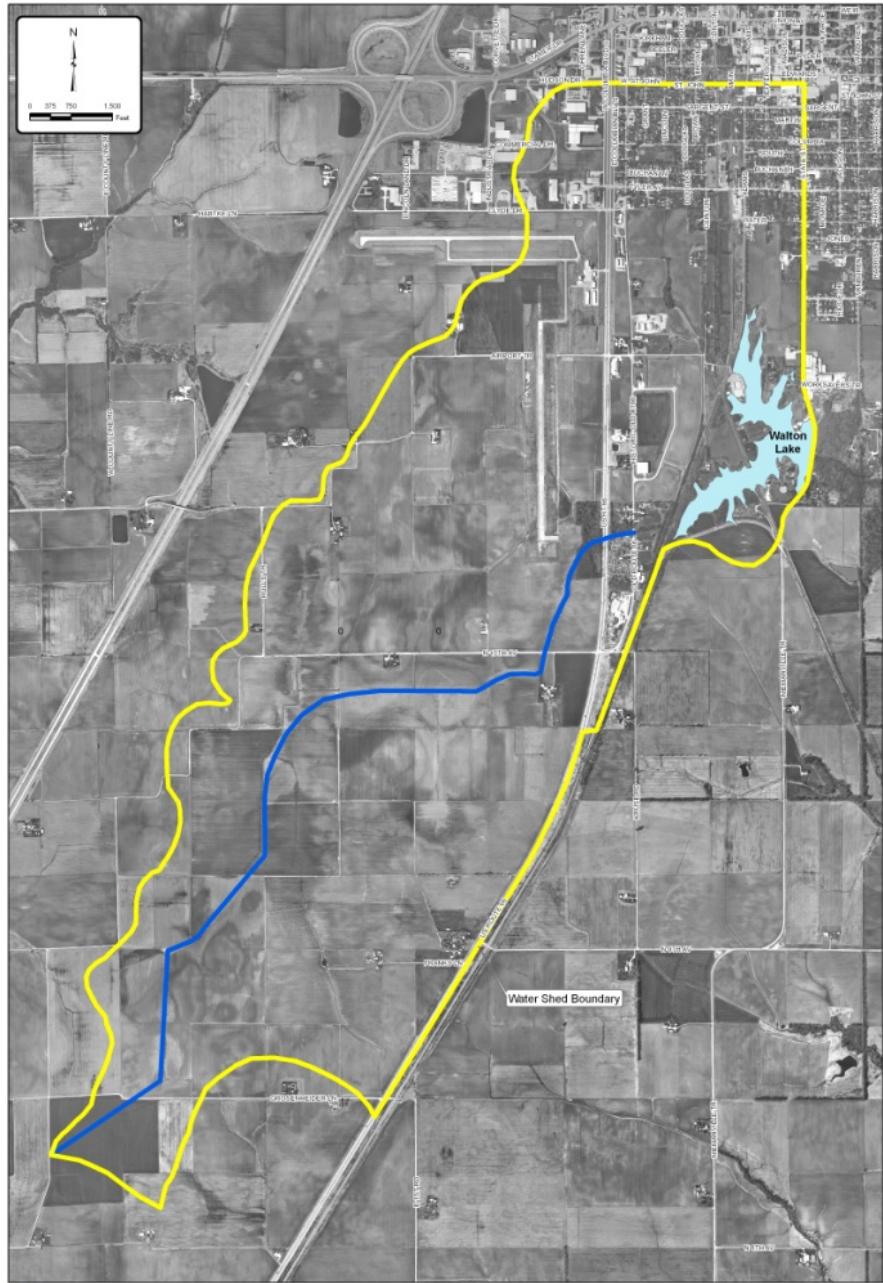
- EMERGENCY AND INTERIM REPAIRS
 - Federal Emergency Management Agency (FEMA)
 - Federal share 75%
 - City & County share 25%
- PERMANENT REPAIRS
 - Federal Highway Administration (FHwA)
 - First 6 months 100%
 - Project Federal share 80%
 - Project County share 10%
 - Project City share 10%
 - Funding through IDOT
- INTERGOVERNMENTAL AGREEMENT

REGULATORY

- Illinois Department of Natural Resources
- Issued letter day after overtopping
 - Maintain drawdown in lake
 - Repair will be major modification
 - Will issue first permit for dam
- Issued permit for interim repairs
- Will issue permit for permanent repairs

PROJECT DESIGN

- No records of construction
- Watershed boundary and characteristics
- Hydrologic and hydraulic analysis – HEC-1
- Determination of Class III
- No breach analysis required
- Prepared for IDOT letting



WATERSHED



CRAWFORD, MURPHY & TILLY, INC.
CONSULTING ENGINEERS

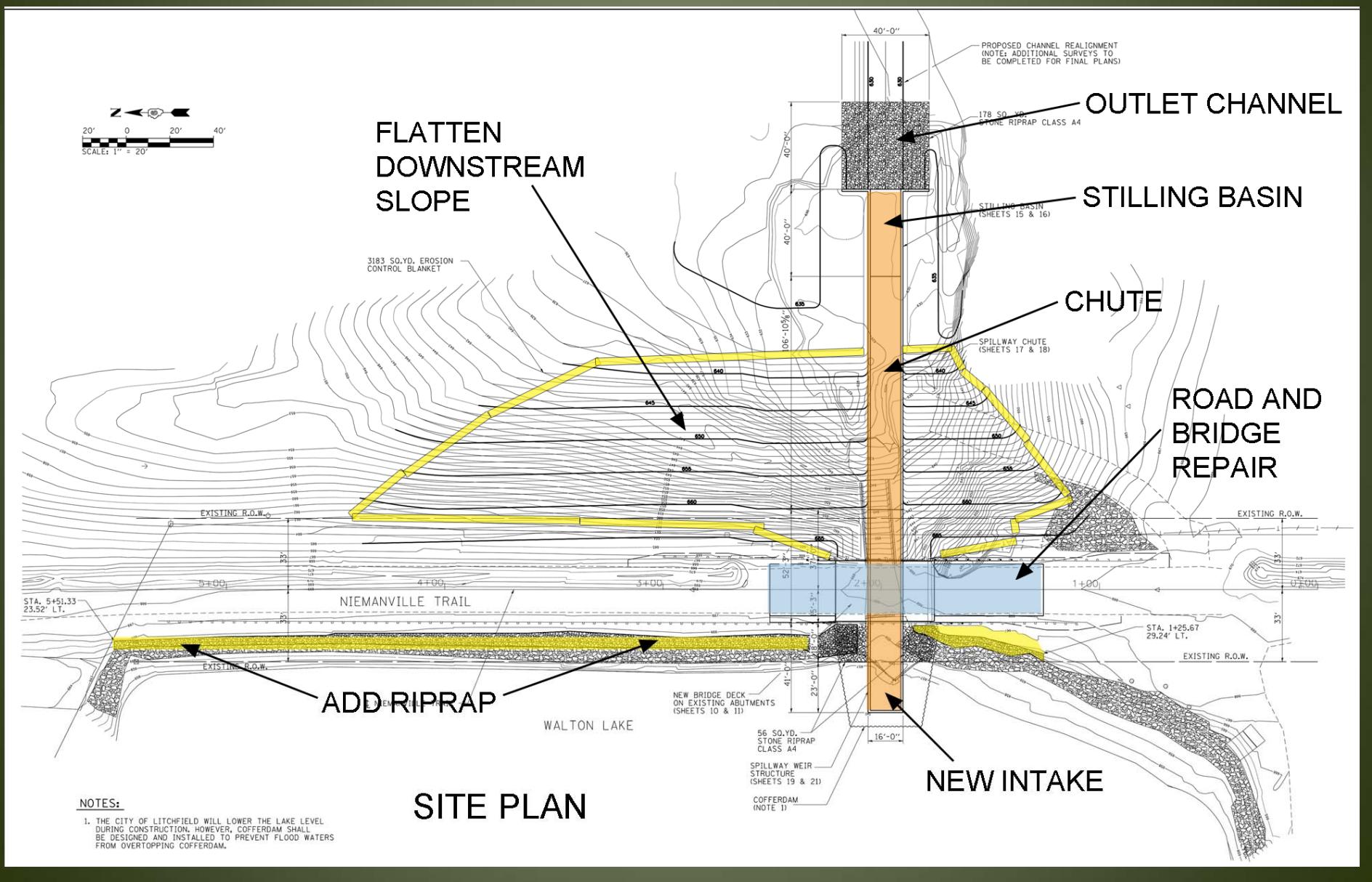
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Walton Lake Dam Watershed Area
Niemanville Trial Damage Repairs
Exhibit 3

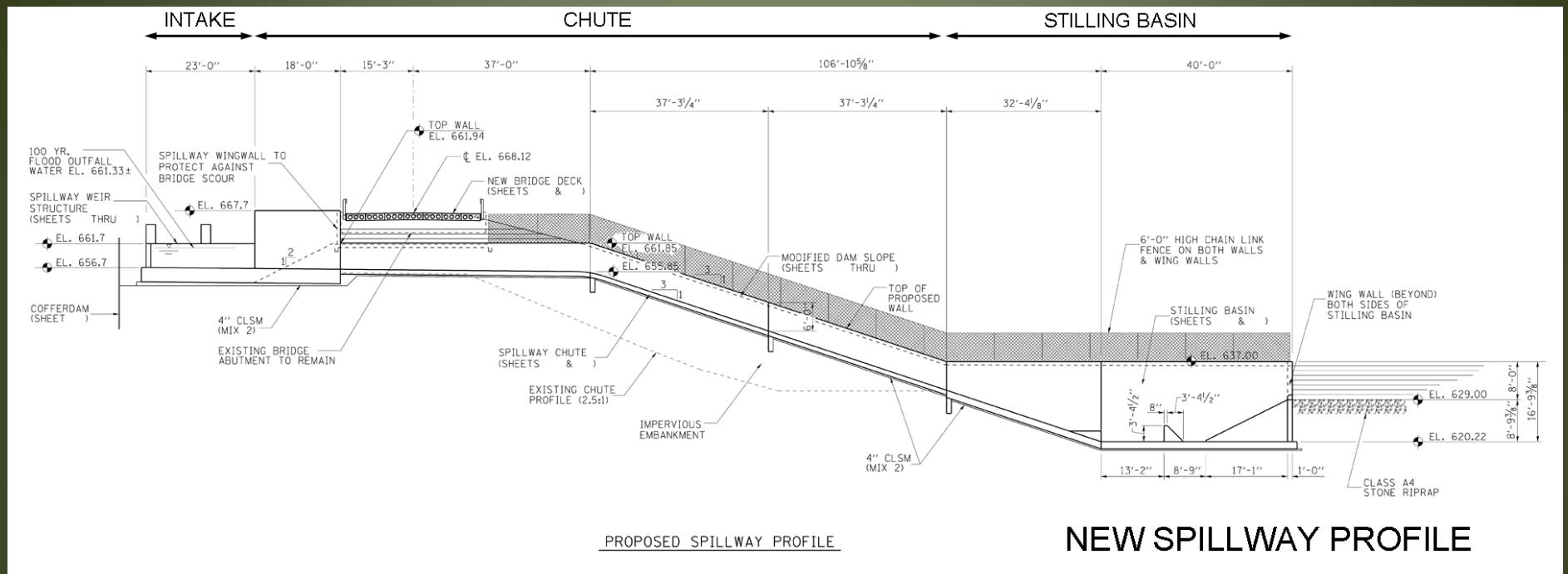
PERMANENT REPAIRS

- Principal spillway replacement
- No emergency spillway
- Outlet channel area
- Fill downstream dam slope to 3:1
- Repair road and guardrail
- Replace bridge deck and guardrail
- Replace telephone cable
- Supplement riprap on upstream slope
- Permanent drawdown method for upper 50%
- Diversion outlet during construction

OVERALL PLAN



SPILLWAY SECTION



IMPLEMENTATION

- Dam overtopped September 2008
- Corps of Engineer Permit December 2009
- IDNR Construction Permit April 2010
- IDOT Bid letting June 2010
- IDOT Second letting January 2011
- Construction begins March 2011
- Completion August 2011
- Road re-opened September 2011



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NEW PRINCIPAL SPILLWAY



NEW SPILLWAY AND BRIDGE



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ROADWAY RESTORED



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UPSTREAM SLOPE OF DAM



DOWNSTREAM SLOPE OF DAM

CONCLUSIONS

- The 140 year old dam was overtopped for the first time in memory of residents.
- No injuries and no property damage occurred as a result of the washout.
- Dam and spillway were brought up to current IDNR regulations for existing dams.
- A period of 30 years elapsed from the time that the bridge was replaced until the washout occurred.
- Rainfall event was much less than the 100 year frequency event. The new spillway is designed to pass the peak flow of the 100 year rainfall event.