South St. Paul Levee: Path to PL 84-99
City of South St. Paul, Minnesota

ASFPM Annual Conference
June 23, 2016

Nathan Campeau, PE, CFM, Barr Engineering Co.
ncampeau@barr.com

John Sachi, PE, South St. Paul City Engineer
jsachi@southstpaul.org
acknowledgements

- levee sponsor: City of South St. Paul
- funding: Minnesota Department of Natural Resources and City
- key stakeholders: USACE (St. Paul District), FEMA Region 5, Dakota County
- consultant team member: Bolton & Menk, Inc.
overview

- historical context
- regulatory context
  - FEMA
  - USACE
- recent levee improvements
- PL 84-99 timeline
- lessons learned
- long relationship with the Mississippi River
- Dakota settlement of Kaposia
- City incorporated 1887
- industries
  - bootlegging and gangsters during Prohibition
  - stockyards in floodplain – some of largest in the world, since shuttered
historical context

- Mississippi River brought wealth and opportunity...
- and frequent flooding:
Levee construction - 1968

- Levee authorized in 1958 following the 1952 flood.
- Following the devastating 1965 flood, construction was completed in 1968.
- 500-acre protected area.
- 2 miles of earthen levee.
- ½ mile of floodwall.
- 3 major closures (rail and road).
- 3 pumping stations.
- ~20 outfalls/gatewells (10 remain).
regulatory context

- FEMA maps updated in 2011
- City received provisionally-accredited levee (PAL) designation
- Levee certified by a consultant in 2009, never accredited by FEMA (5-year expiration)
- USACE periodic inspections in 2010 (and 2012) rated levee “unacceptable”
- December 2010: City “inactive” in PL 84-99, not eligible for USACE rehabilitation assistance
- 2011 City began addressing USACE deficiencies
- 2014 City entered USACE System-Wide Improvement Framework (SWIF) program
City effectively fought floods and maintained levee for almost 50 years, however...

135 USACE-identified deficiencies in 2012, 66 “unacceptable”

- abandoned/inactive closure structures
- corroding CMP outfalls
- outfalls full of sediment, debris
- inoperable gates
- difficult to use closures
- one pumping station in disrepair (former sewage pumping station)
- stoplog storage building in disrepair, missing stoplogs
- encroachments
levee improvements (recent)

- City hired Barr and Bolton & Menk late 2011
- $4 million in levee improvements (2011-2015)
- 2 USACE modifications
- improvements:
  - abandoning and relining of large diameter culverts
  - new pumping station
  - levee closure improvements
  - new storage building
  - misc. improvements (potpourri)
culvert inspection

- USACE required video inspection of all culverts
- submerged outfalls present challenges to inspection
  - gates rarely exercised (not needed, in many cases)
  - decades of silt and debris
  - no closure at outfall to assist in dewatering
- pre-construction inspection not feasible
- developed plan to dewater/clean/inspect (NASSCO)/repair during construction
- detailed plans anticipated all culvert conditions
- pipes then abandoned or relined
City determined that 7 gatewells (and associated pump house) were not needed
- cleaned, inspected (NASSCO), and filled with flowable fill (low psi concrete)
culvert/gatewell relining

- 6 CMPs were relined with HDPE (almost 900 feet)
- cleaned, inspected (NASSCO), and relined
new pumping station

- originally designed to pump sewage across river to treatment facilities, repurposed as interior drainage feature
- fully replaced
improvements to increase flood fighting efficiency
- rail closure on mainline
- industrial road with heavy truck traffic
misc. improvements

- 2 gates replaced, 5 repaired
- pump station controls improvements
- riprap spot replacement
- debris removal
- rodent hole repairs
- floodwall crack sealing
- building demo (2 buildings)
- stop log building construction
• June 2014, 11th highest flood on record
• enacted flood fighting plan
• closed one closure
December 2010: City removed from PL 84-99
December 2011: City hires consultant team
July 2012: City submits two modification requests to USACE
January 2013: USACE approves modifications
July 2013: construction begins
April 2014: SWIF Letter of Intent approved by USACE
May 2015: construction ends
April 2016: SWIF submitted to USACE for few remaining deficiencies
Late 2016: remaining deficiencies addressed (plans out to bid as of June 2016)
beyond 2016: city plans to recertify levee for FEMA
additional lessons learned

- communication of differences between 408, PL 84-99, and 44 CFR 65.10 to stakeholders/decision-makers is challenging
- addressing all deficiencies creates “potpourri” of projects, hard to build the right team of contractors
- understand the regulatory process and timeline and overcommunicate with all stakeholders!
QUESTIONS?

South St. Paul Levee: Path to PL 84-99
City of South St. Paul, Minnesota

Nathan Campeau, PE, CFM, Barr Engineering Co.
ncampeau@barr.com

John Sachi, PE, South St. Paul City Engineer
jsachi@southstpaul.org

ASFPM Annual Conference
June 23, 2016