

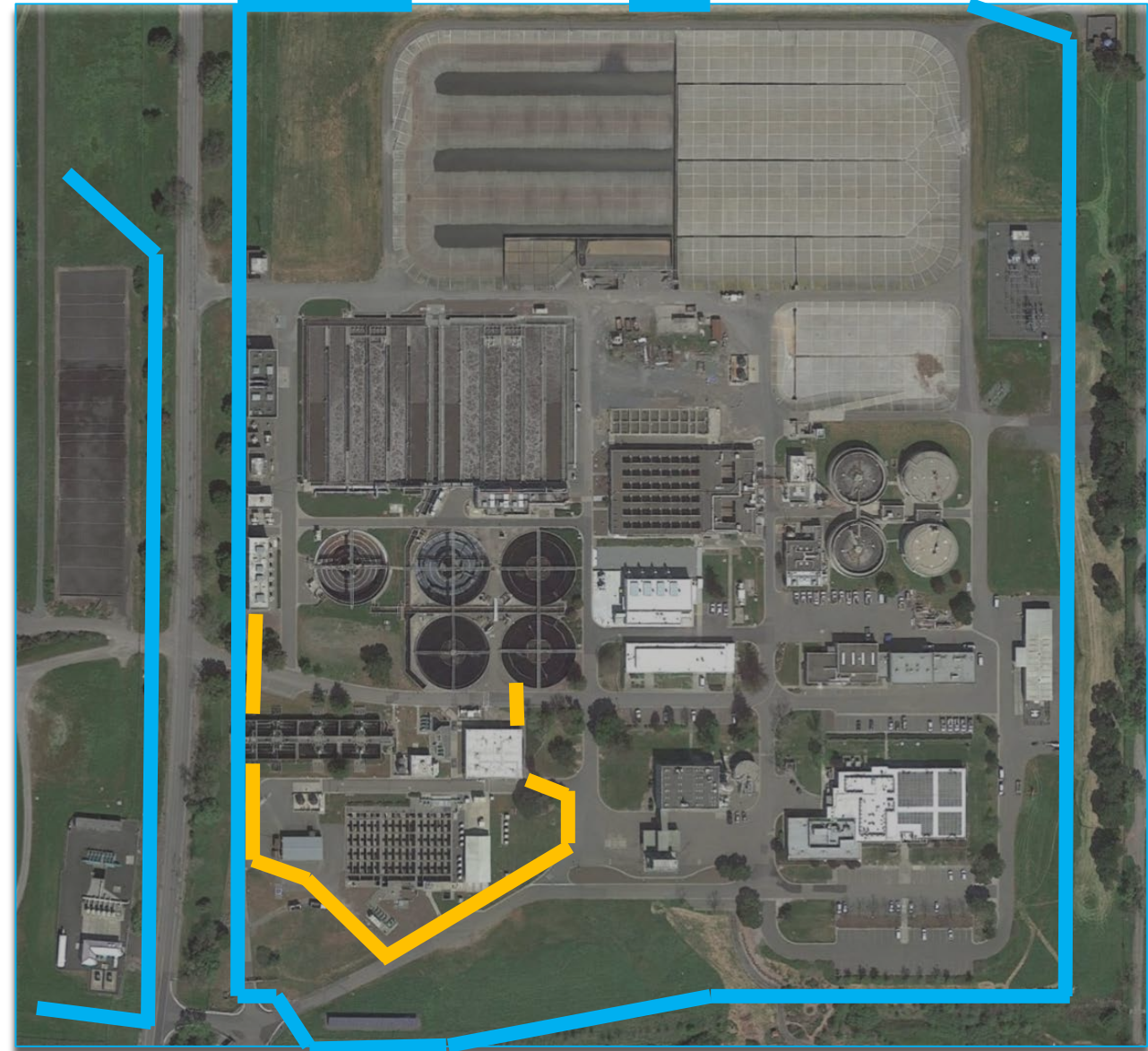
Laguna Treatment Plant Flood Protection



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Civil Engineer
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Outline

- Flooding History
- Preliminary Design
- Cost Estimate
- Benefit / Cost Ratio
- Estimated Schedule
- Funding



Temporary flood wall 

2016 Feasibility Study proposed floodwall 

History

Flood/storm events:

1955-1956 Flood

1964-1965 Flood

1966-1969 Plant constructed

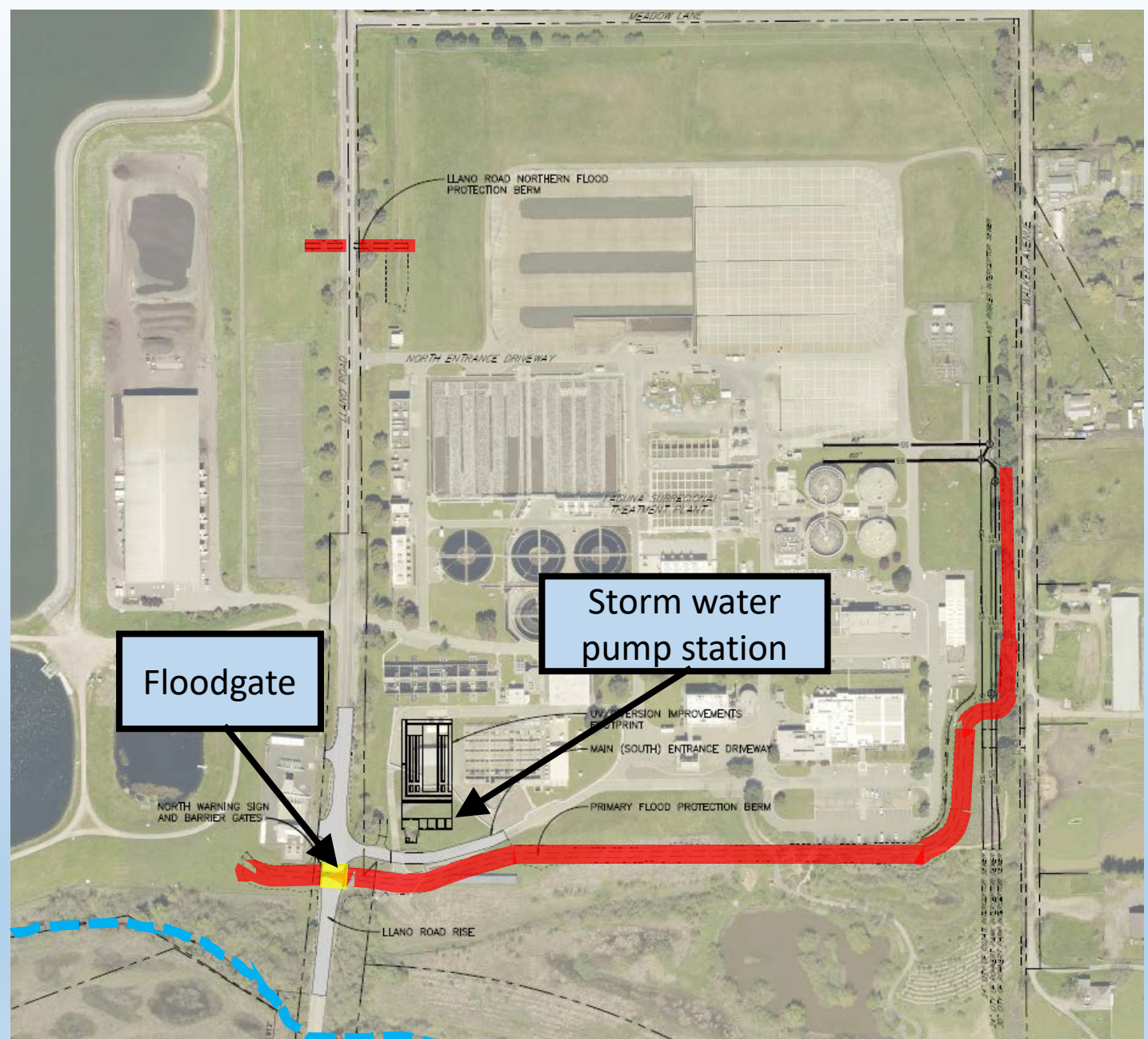
1982 flood


1985-1986 storm

2005-2006 flood



Preliminary Design



 Yellow = Floodgate

 Red = berm

Versatility - protecting roadway openings

Designed to provide permanent passive, low maintenance
Flood protection for floodwall / levee openings and crossings



Innovative solution: Use the power of rising water against itself



*Over 600 flood
barriers in the
ground since 2001*

Warning sign and barrier gate

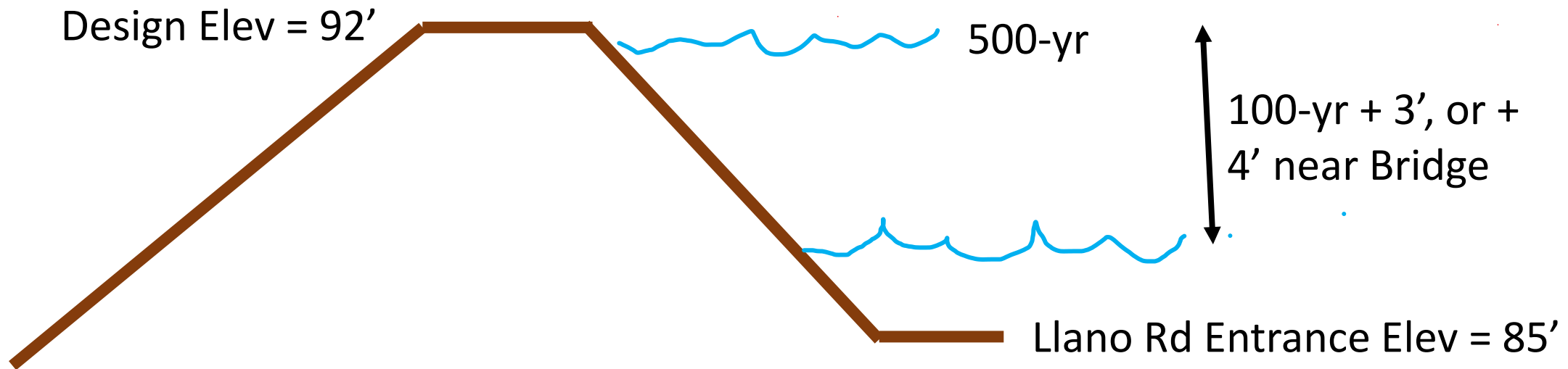




Lourdes Hospital
' SAVED
Binghamton, NY
September 2011

Floodplain Analysis

- 2018 Schaaf & Wheeler Tech Memo – Flood height
 - FEMA compliant analysis
 - Elevation of wall must meet the following:



Note: FEMA is in process of updating flood maps -> impact flood WSEL

Cost Estimate

Design:	\$3 million
Construction:	<u>\$11 million</u>
Total:	\$14 million

Benefit / Cost Ratio

	<u>1% (100-yr) Event</u>	<u>0.02% (500-yr)</u>
Physical damage:	\$850,000	\$13.5 million
Off-spec. Effluent	< 1 day	180 days
Estimated Value of full treatment of sewage		\$49 /customer/day
Benefit/Cost Ratio:	4	> 1 very favorable

Estimated Schedule

Design completion: Summer 2021

Construction: Fall 2021 → Summer 2023

Funding

Option 1:

FEMA Grant:	\$5 - \$10 million
CIP budget (cash funding):	\$4 – 9 million

Option 2:

CIP budget (cash funding):	\$1 million
Bond funding:	\$13 million