



Riverside Park Flooding



Delran Township
January 31, 2024

Outline

- Understand the root issues
- Analyze the potential mitigating measures
- Review the historic timeline
- Public Comment



Framing the Two Issues



Berm



Stormwater Drainage

Berm: Issue

- Issue 1: Streambank Erosion
- Issue 2: Berm Height - Water Breaching

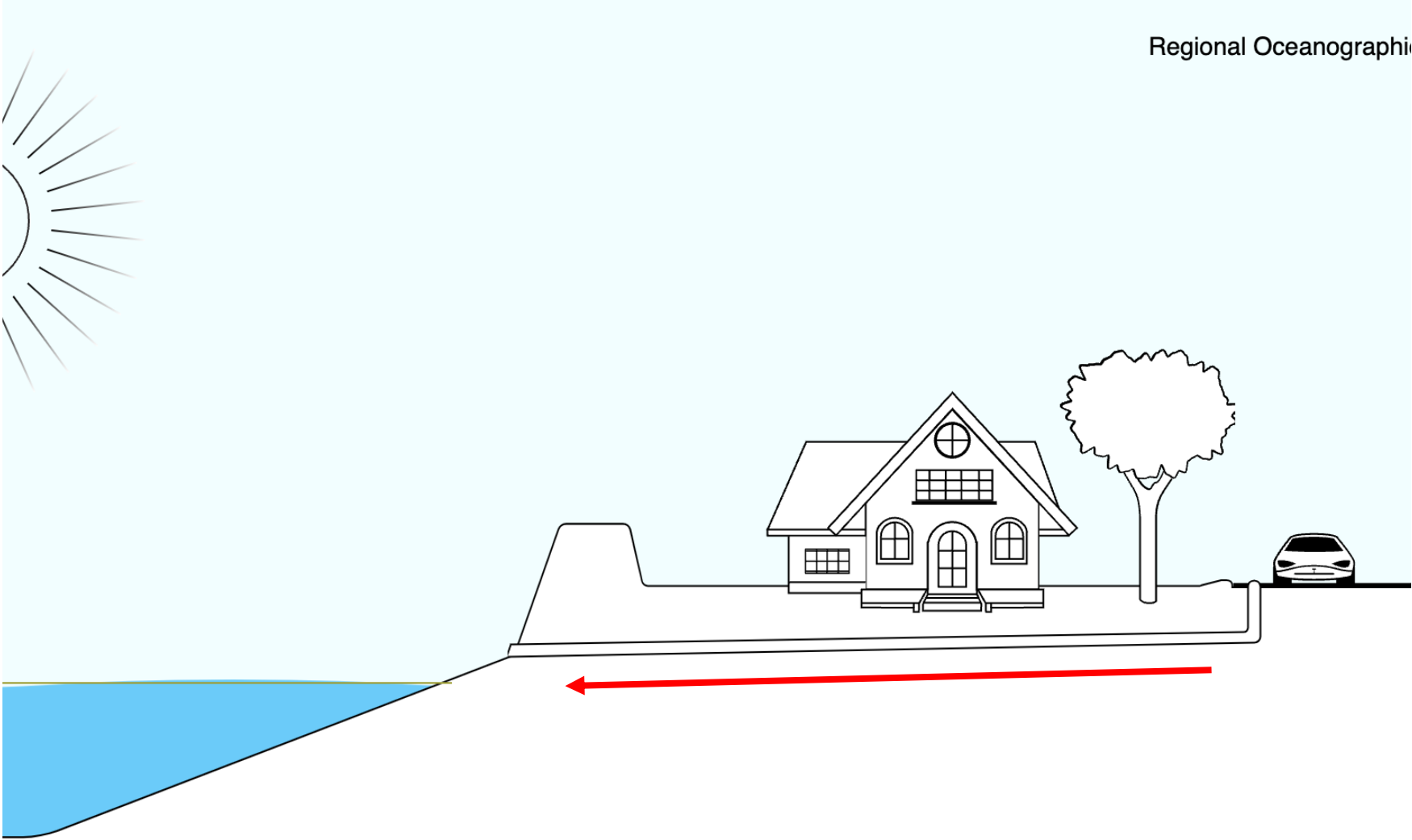


Stormwater: Issue

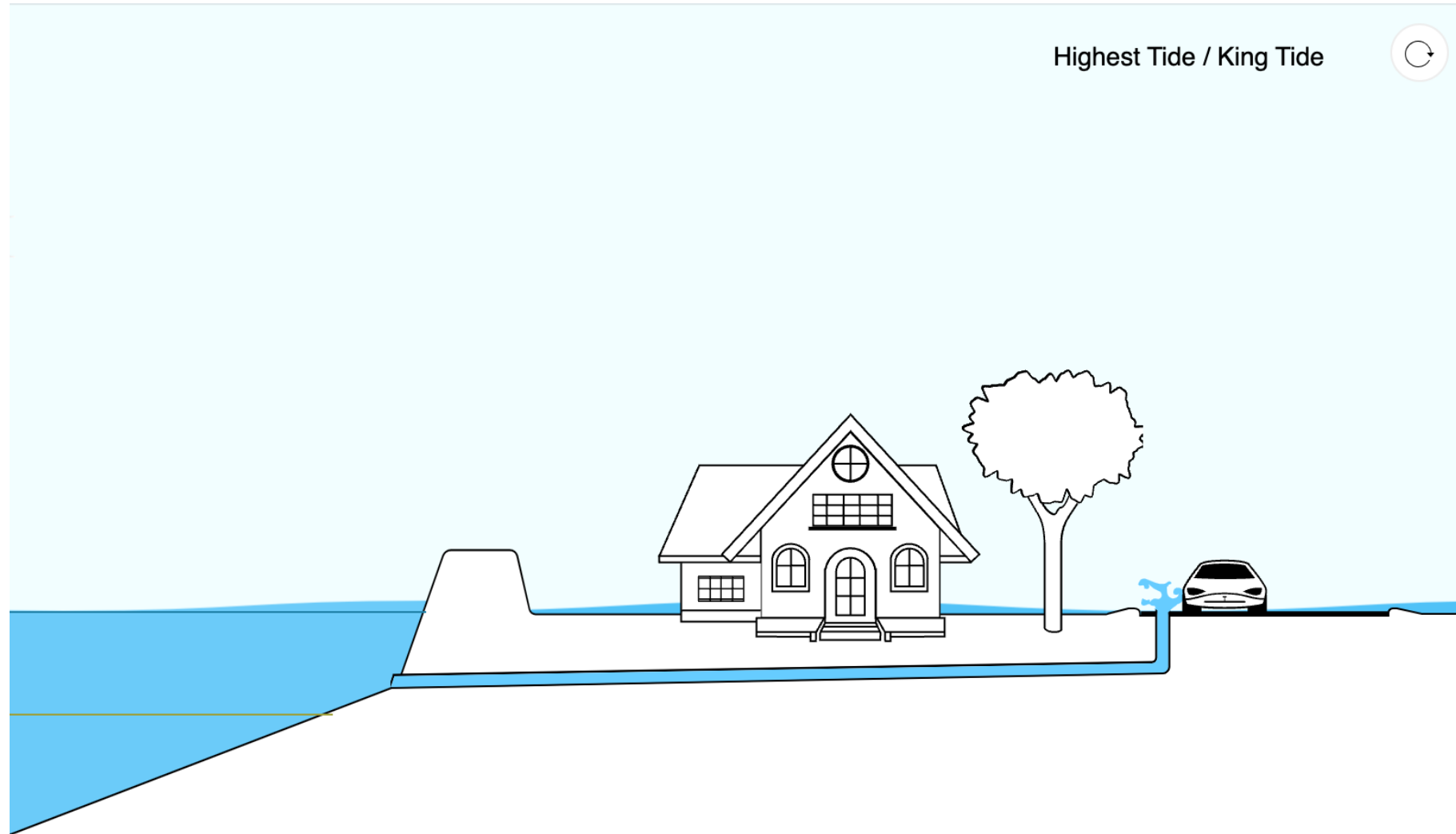
- Low lying geography
- Water levels are higher than outfalls during high tide.
 - Aka Stormwater cannot drain into the river during high tide
- Backflowing
- Rising Sea levels



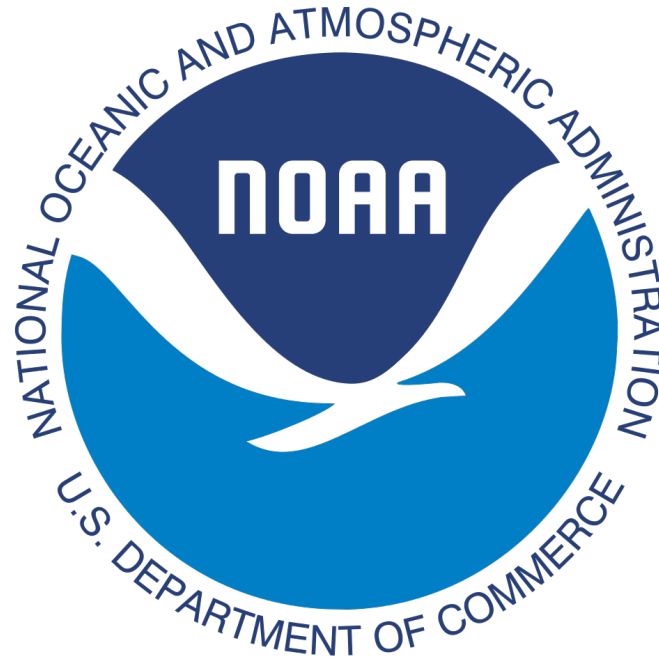
Yes Drainage



No Drainage



Simulation



[Click Here for NOAA Simulation](https://coast.noaa.gov/stormwater-floods/understand/)

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2017 DVRPC Study



Delran's Location

Delran Township is a suburban municipality that encompasses 7.2 square miles in Burlington County, New Jersey. Located along the tidal Delaware River and Rancocas Creek, and containing additional tidal portions of Swede Run, Laurel Run, Boundary Creek, and other smaller tributaries, Delran will feel the effects of sea level rise. At the same time, it will be affected by the stronger storms anticipated in the northeastern United States. The combination of rising tidal waters, increasingly severe coastal storms, and more extreme precipitation events will increase the risk of flooding in the township over time.

Rising Sea Levels

- Since 1900, the sea level has risen approximately **1 foot** in the tidal Delaware River.
- **1.4 feet** from current sea levels by 2050
- **3.3 feet** from current levels by 2100 assuming current rates of emissions continue
- “Absent any changes in storms, a two-foot rise in sea levels, which New Jersey is likely to experience by 2100, would ***more than triple the frequency of dangerous*** coastal flooding in the region.”

Figure C4: Inset 1 with Open Space

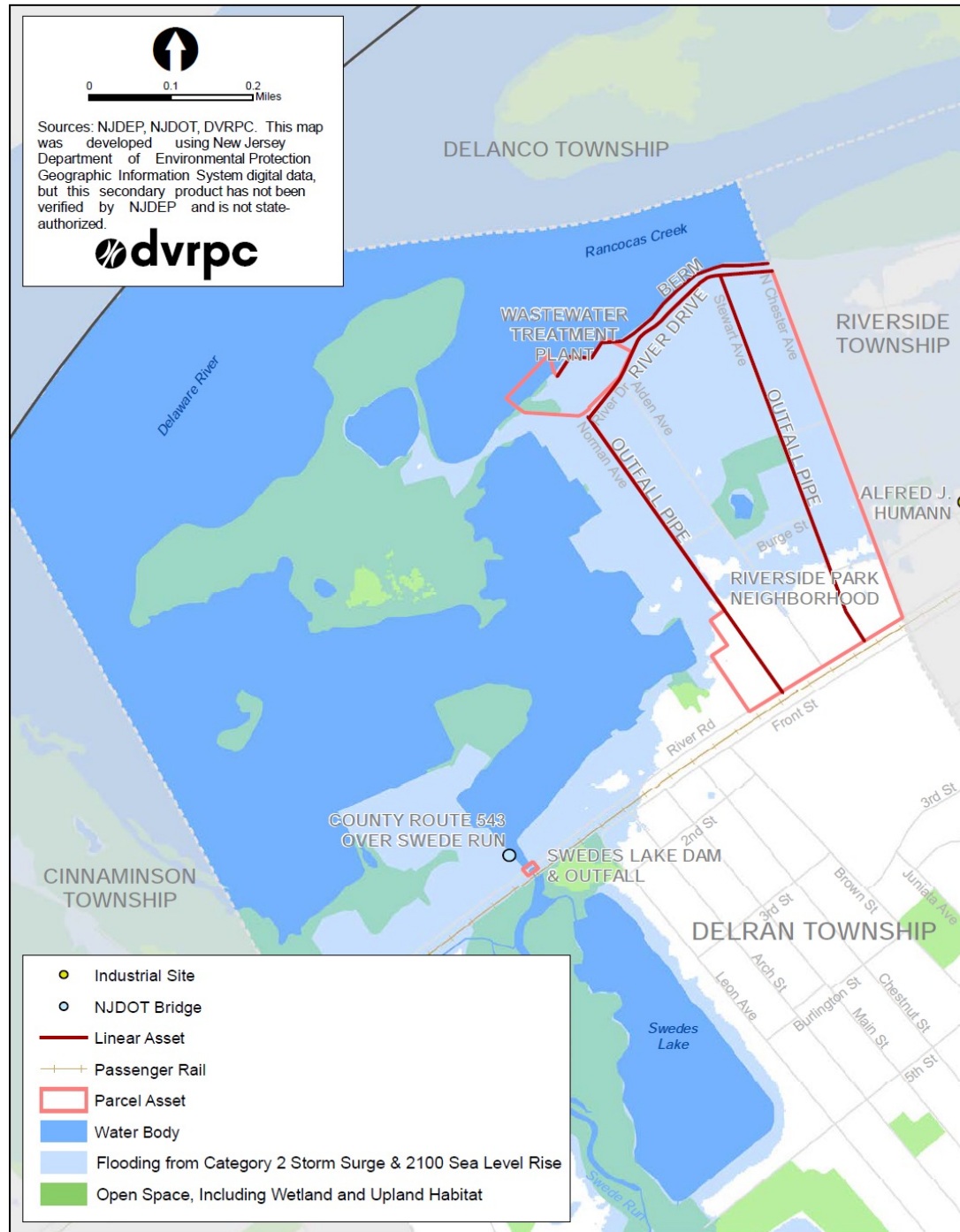
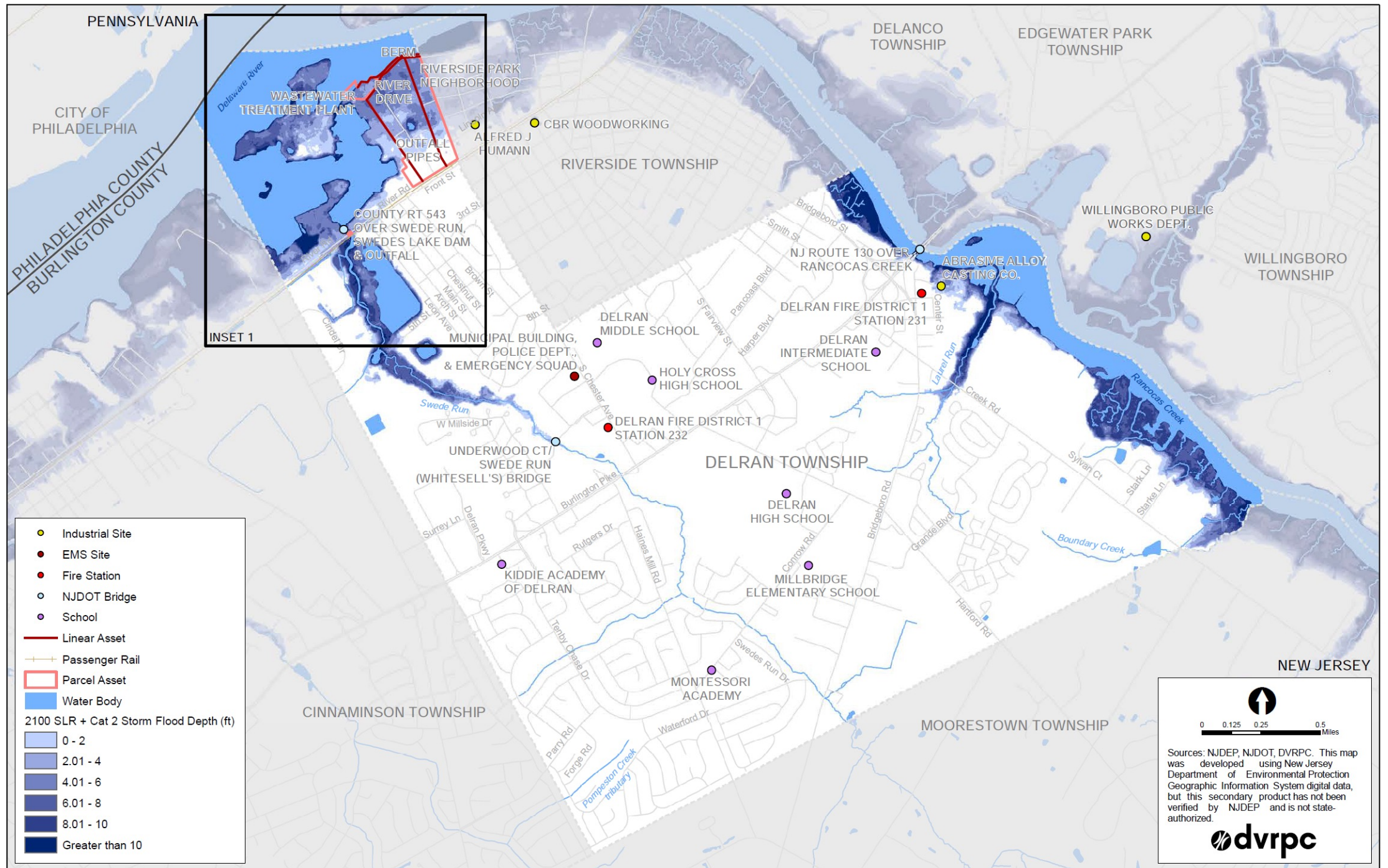
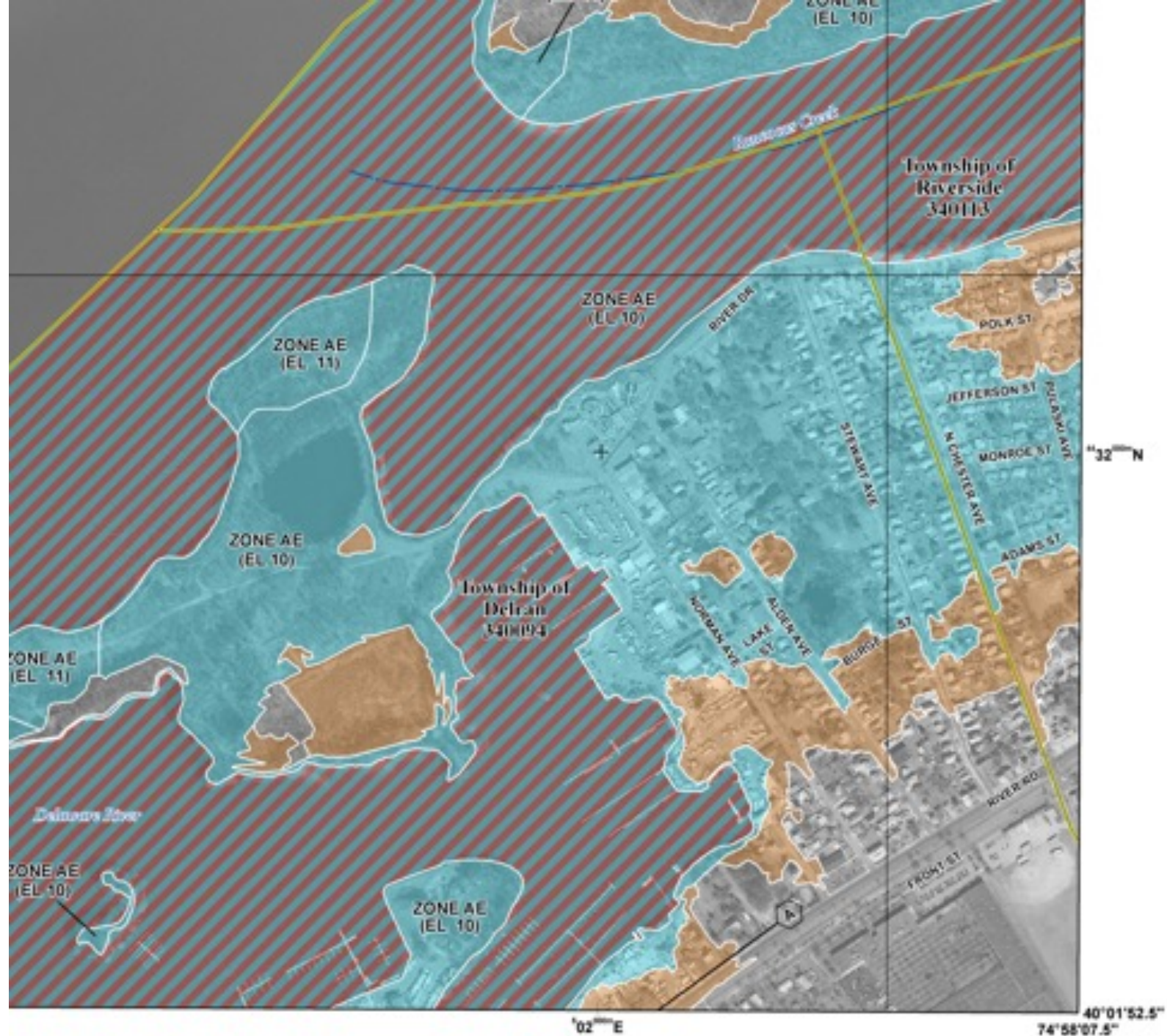


Figure C1: Delran Township with Flooding from Sea Level Rise in 2100 and a Category 2 Storm





DVRPC Recommendations



- “Delran should hold annual presentations for residents, business owners, and other groups to discuss flood hazards.”
- Update zoning code “to require new construction, renovations, and/or flood-sensitive building systems to be elevated above the flood heights”
- “[I]ncorporate flood mitigation projects into a municipal capital improvements plan or hazard mitigation plan.”
- “[I]nclude decisions to avoid long-term capital investments in areas that may be affected by sea level rise in 30 or 50 years.”
- “[A]cquire improved flood-prone properties, both land and structures, demolish or relocate the structures, and restrict future development on the land with a conservation easement.”

Root Problems Summary

- Rising sea level
- High water table
- Geography: homes and streets are low
- High tide is higher than stormwater pipe
- Army Corps approval required for reestablishment of streambank





How Can We Mitigate

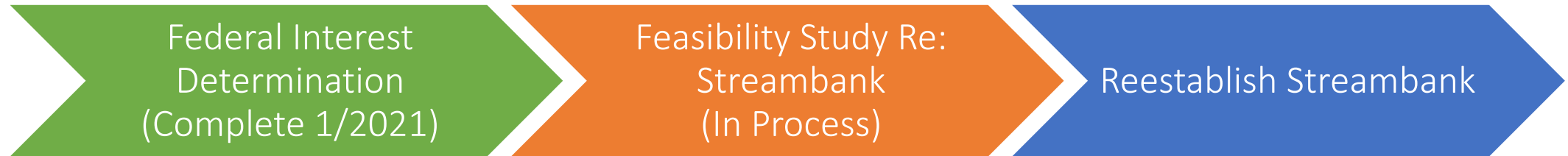
Berm Erosion: Issue

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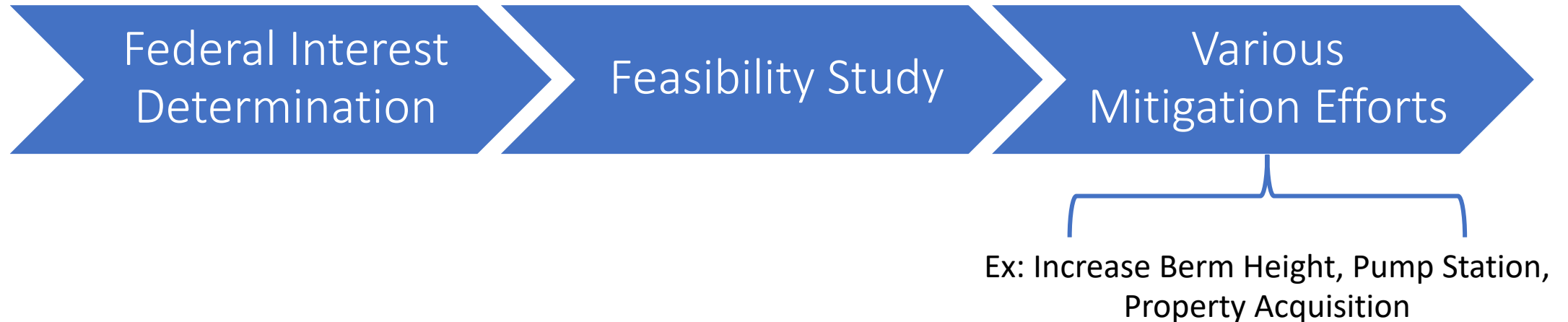


Streambank Erosion: *Potential* Flood Mitigation

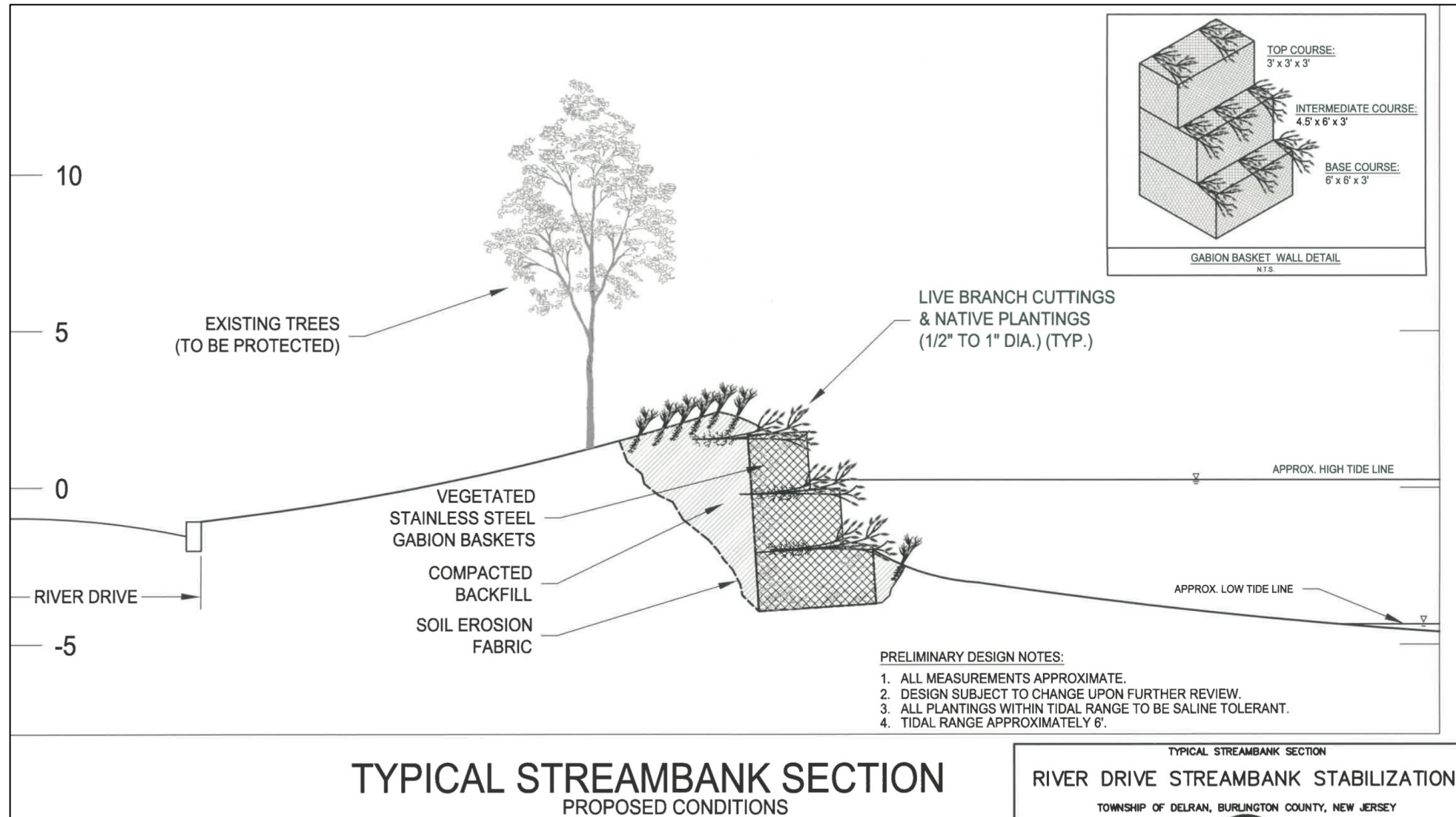
Step 1: Streambank Erosion (Section 14 of the Flood Control Act of 1948)



Step 2: Flood Mitigation (Section 205 of the Flood Control Act of 1948)



Streambank Stabilization: *Potential* Mitigation



Erosion & Stormwater Improvements: Timeline

- 2011-2013 – Hazard Mitigation Grant Program Application & NJDEP Shoreline Protection Program Application – No funding received
- 2012 – First meeting with Army Corps. Recommended to join the existing "Delaware River Comprehensive, NJ Interim Feasibility Study".
- 2013 – Flood Damage Survey conducted
- 2014 - Stewart Avenue Outfall Replacement
- 2014 – HMGP application approved – received \$300,000. No residents followed through with acquisition or flood proofing.
- 2015 – NJDEP Shoreline Protection Program Request Denied – Funding Shortage
- 2016 – Check valve at Wastewater Treatment Plant Replaced
- 2016 – Solicitation letters sent to Army Corps for Streambank Stabilization and Flood Control Projects
- 2017 – Delaware Valley Regional Planning Commission Coastal Vulnerability Assessment Report
- 2017-2018 – Army Corps Federal Interest Determination delayed until federally funded.
- 2019 – Road Program included replacement of storm sewer infrastructure along River Drive from Norman Avenue to Alden Avenue
- 2021 – Army Corps Federal Interest Determination Completed
- 2021 – Delran notified Army Corps the non-federal funding for feasibility study for Section 14 Streambank and shoreline erosion protection budgeted
- 2022 – Draft Project Management Plan submitted to Delran for review
- 2022 – Delran funded cost share for feasibility study
- 2023 – Agreement with modifications submitted to Army Corps
- 2024 – Stewart Avenue storm sewer replacement project to begin.

Berm: *Potential* Flood Mitigation

- Via Section 205 (aka Step 2)
- Increase berm height
- Double edge sword
- “The project scope may have to extend into Riverside to accomplish this component of the project.”

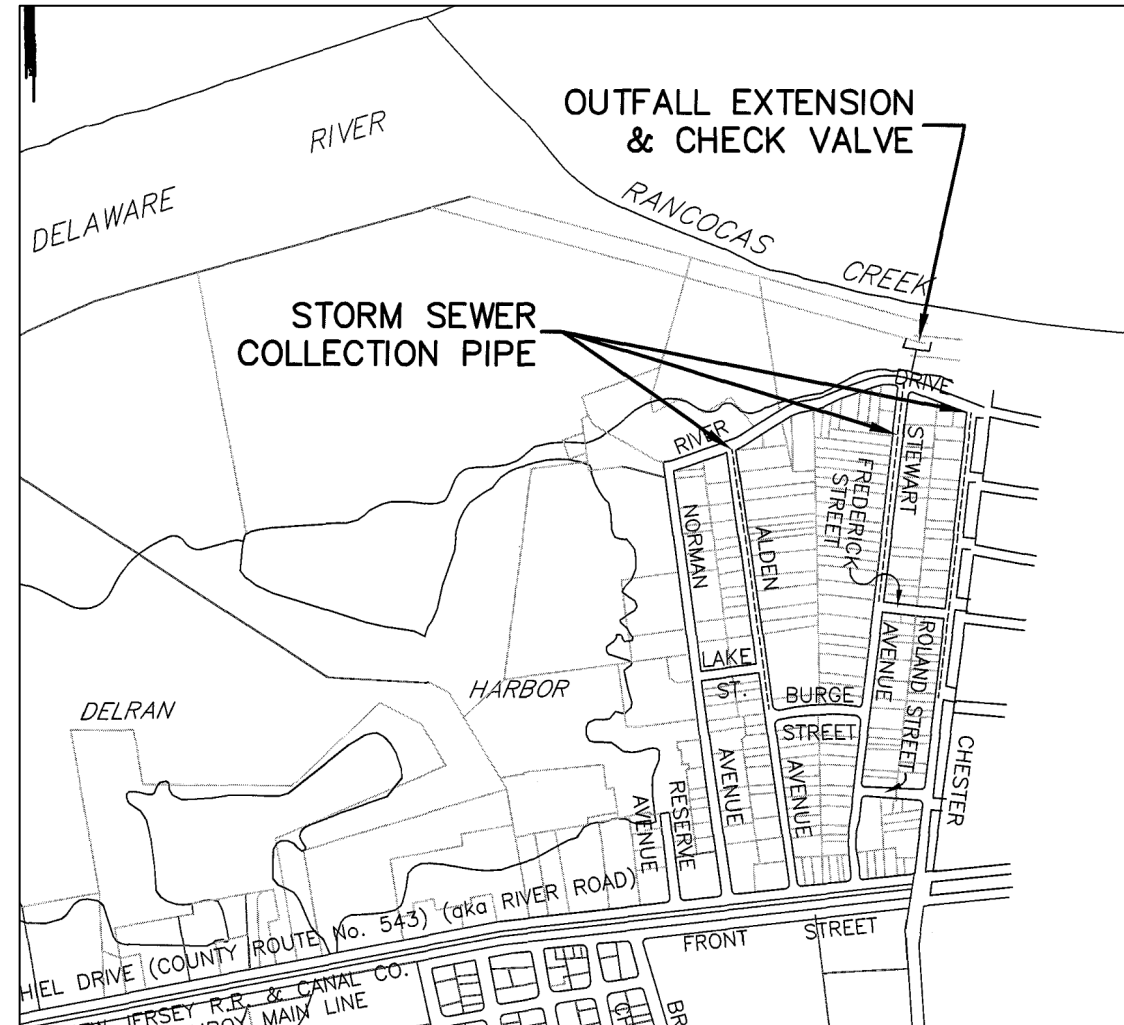
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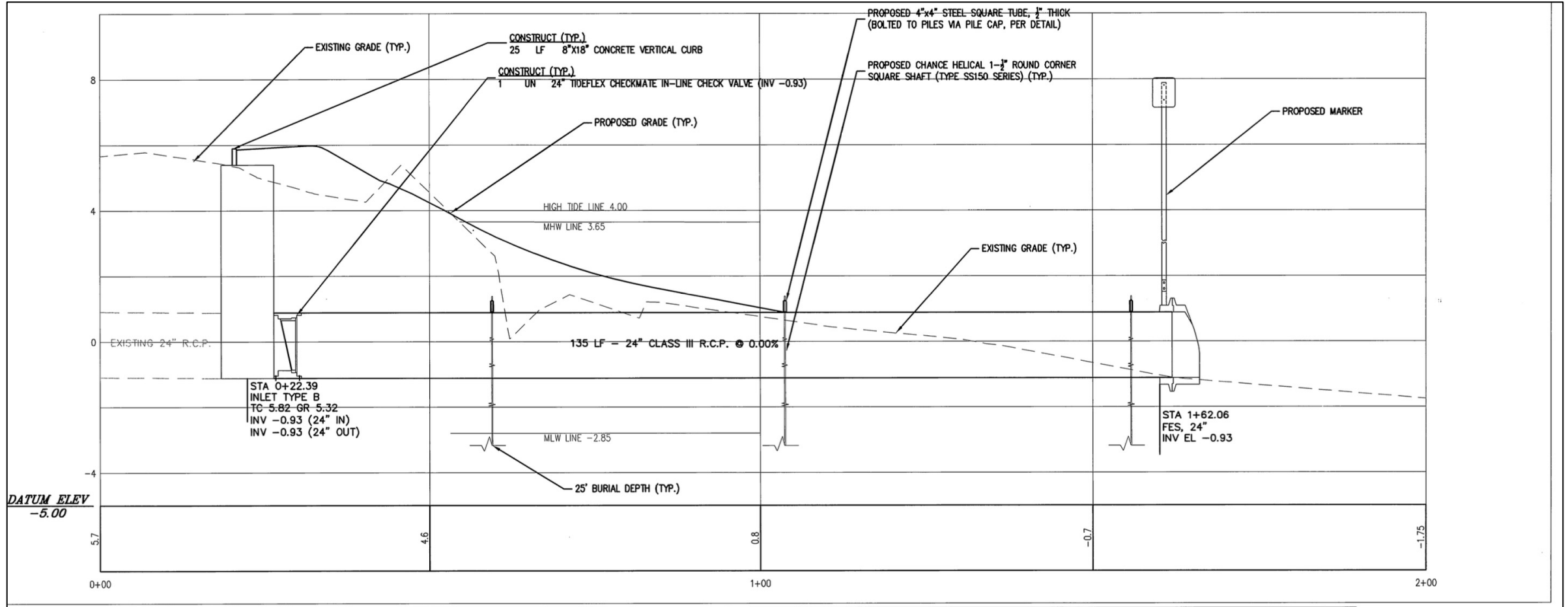


Storm Sewer System Improvements

- Installed a check valve to prevent water from backflowing
- **2014** – Stewart Avenue Storm Sewer Outfall Reconstruction - \$150,215
- **2015** – Replaced WWTP Check Valve - \$6,700
- **2019** – River Drive Storm Sewer Replacement (Approximately \$140,000)
- **2024** - Stewart Avenue Storm Sewer Replacement. (Estimate \$380,000 – Phase I)



Stewart Avenue Outfall Profile



Before

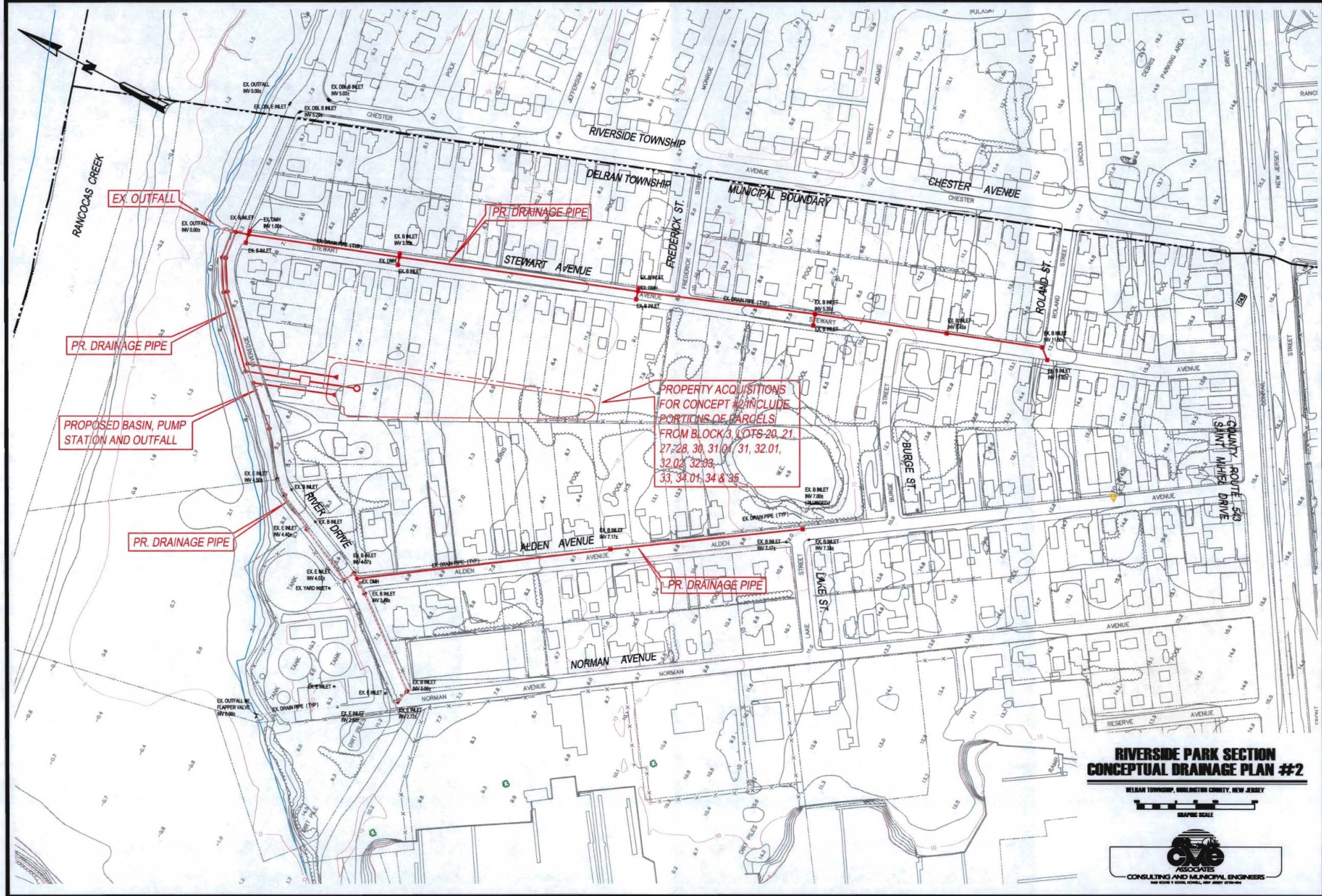


After



Stormwater: *Potential* Pump Station Mitigation

- Addressed via Section 205 process (Step 2)
- Concept is to pump the stormwater back into the river
- Concept plan developed in 2012, which recommended/required a study
- "The preliminary project cost estimate ranges between \$3,000,000 to \$4,400,000." (From 2012 numbers)
- Requires purchasing 4-6 plus property



EX. OUTFALL INV 6.00'

PR. DRAINAGE PIPE

PROPOSED BASIN, PUMP STATION AND OUTFALL

PR. DRAINAGE PIPE

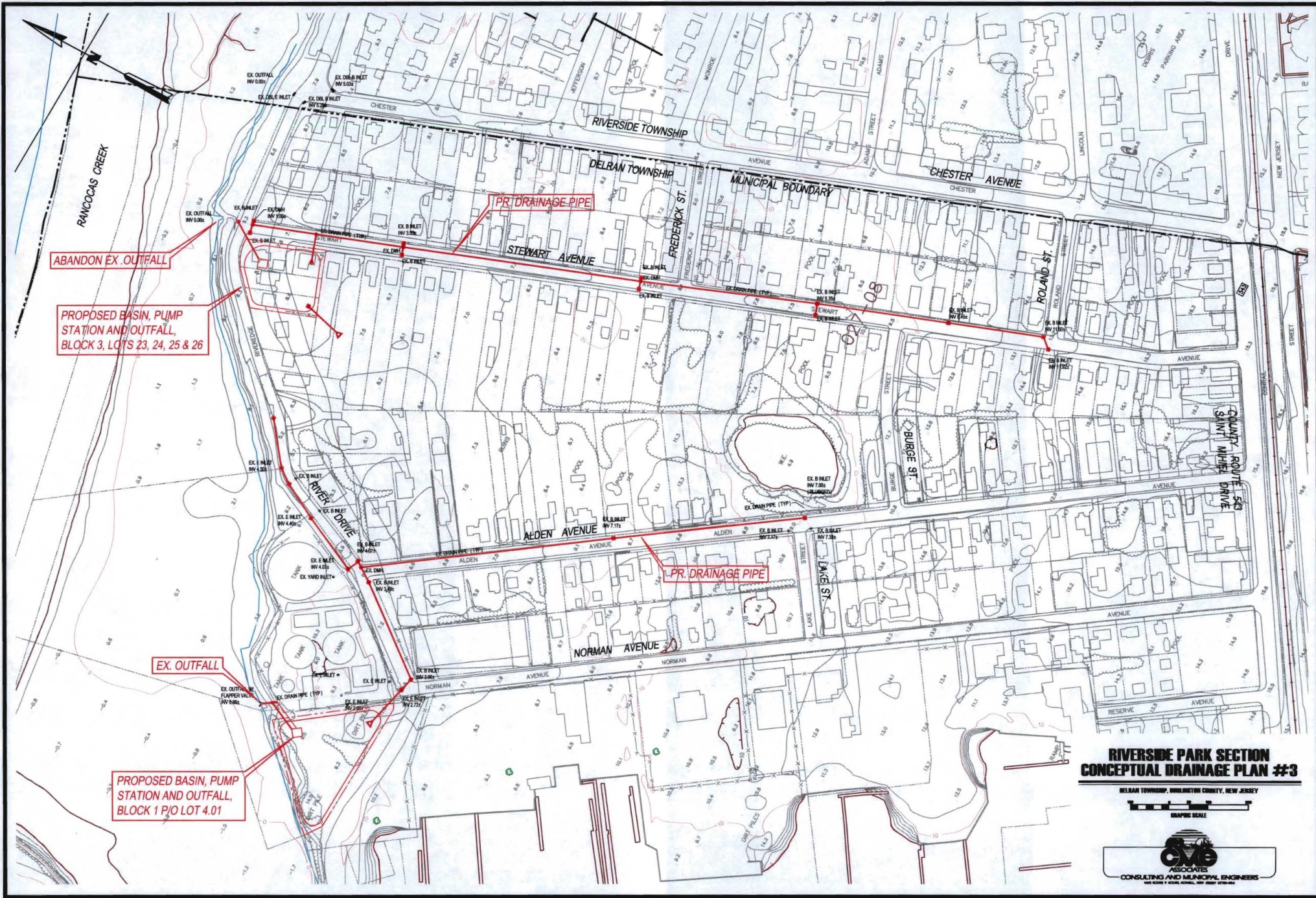
PROPERTY ACQUISITIONS FOR CONCEPT #2 INCLUDE PORTIONS OF PARCELS FROM BLOCK 3, LOTS 20, 21, 27, 28, 30, 31, 01, 31, 32, 01, 32, 02, 32, 03, 33, 34, 01, 34 & 35

PR. DRAINAGE PIPE

**RIVERSIDE PARK SECTION
CONCEPTUAL DRAINAGE PLAN #2**

MELBAN TOWNSHIP, WILMINGTON COUNTY, NEW JERSEY





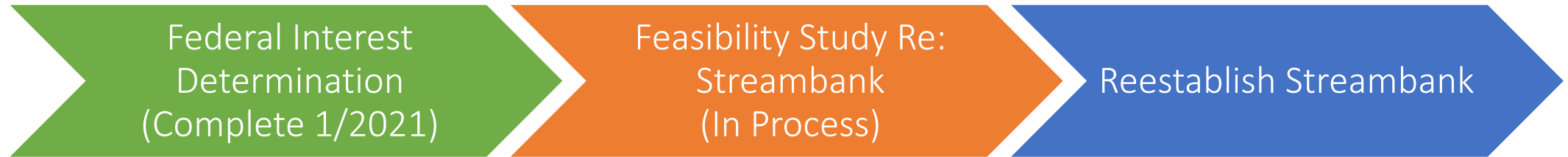
**RIVERSIDE PARK SECTION
CONCEPTUAL DRAINAGE PLAN #3**

DELAN TOWNSHIP, WASHINGTON COUNTY, NEW JERSEY

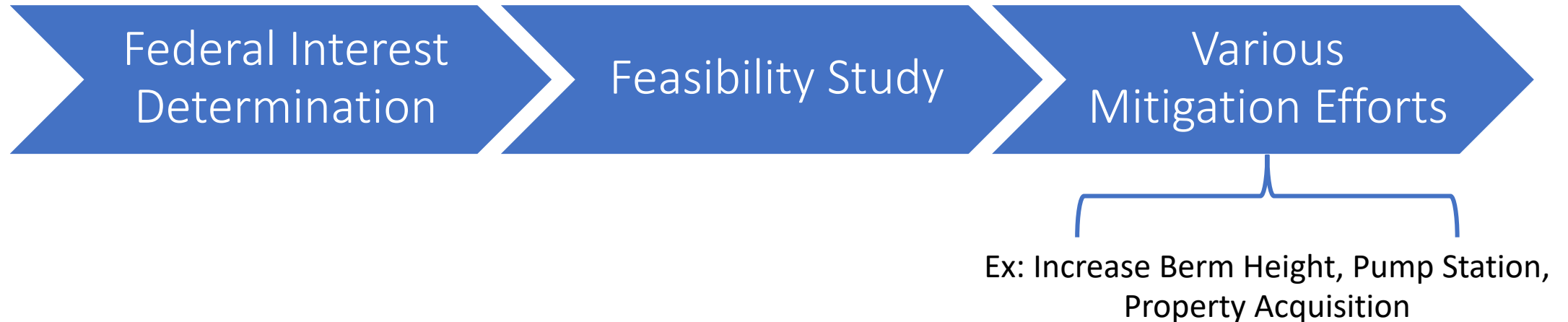


Streambank Erosion: *Potential* Flood Mitigation

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Image Source: The Philadelphia Inquirer, LLC | Monica Herndon