



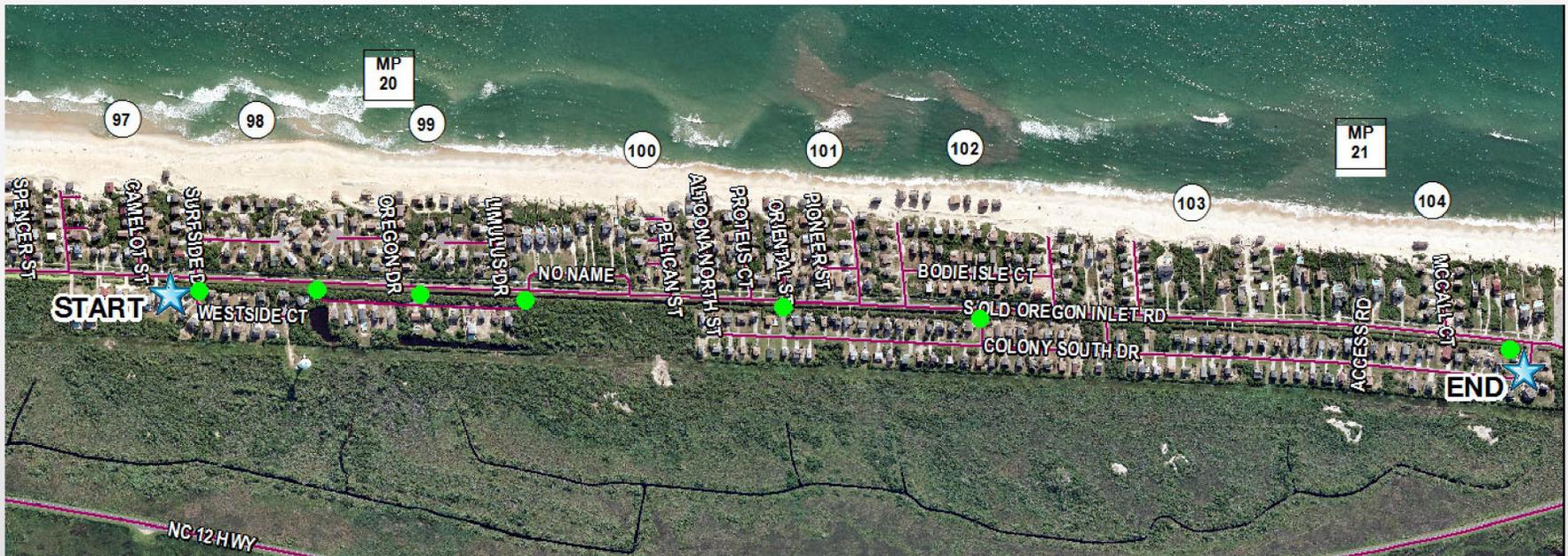
S. Nags Head Drainage Infrastructure Maintenance & Repair Projects

Prepared by:

Department of Public Works

October 22, 2015

Drainage Projects



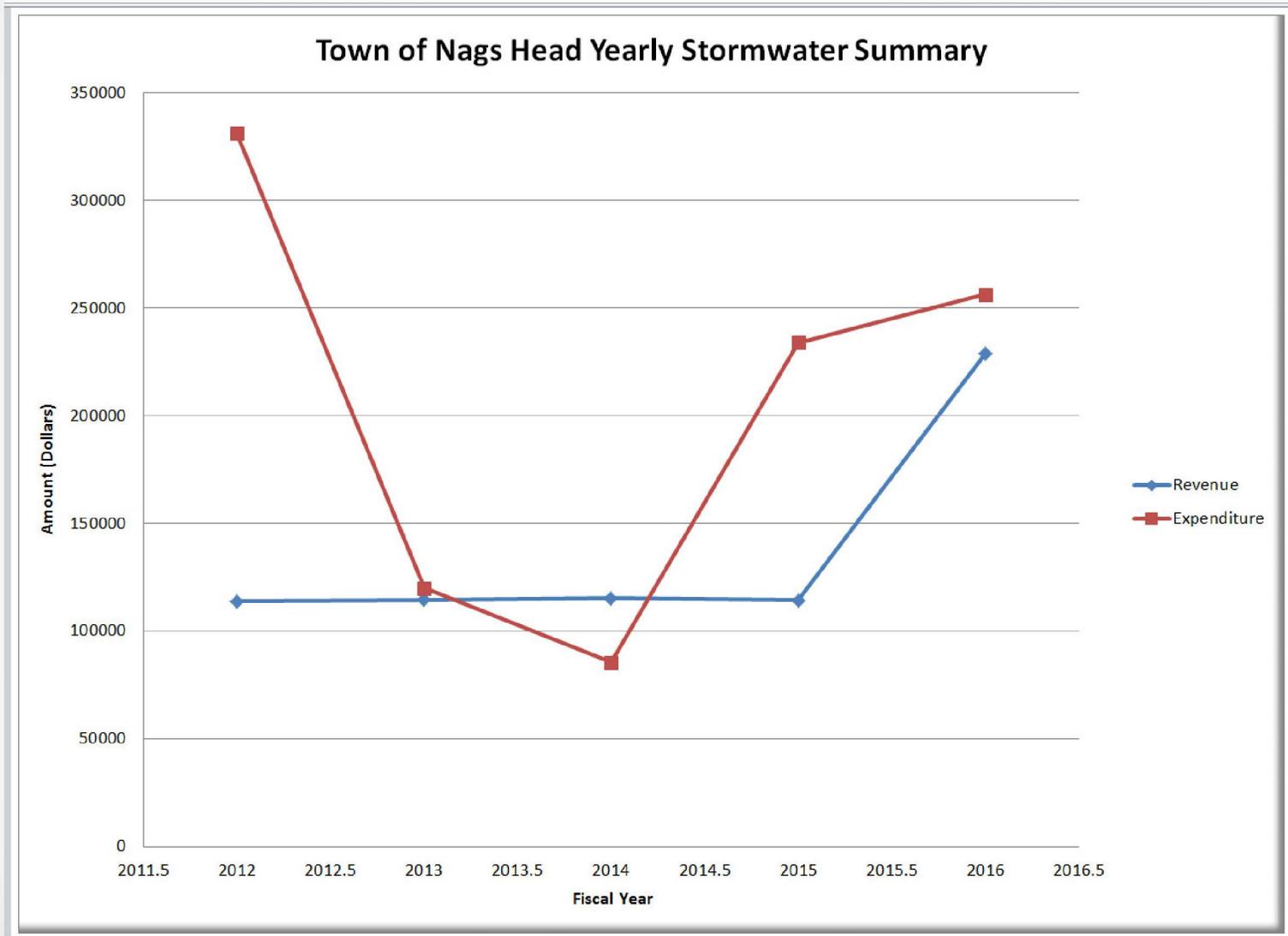
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History

- Stormwater Program History
 - Town Stormwater Committee established in Fall 2004 to discuss drainage issues resulting from excessive summer rainfall
 - Outer Banks Hydrology Task Force to review stormwater management practices based upon a regional approach
 - Town of Nags Head Stormwater Utility Established in Jan. 2005
 - Flat stormwater utility fee of \$2.00 month/\$4.00 bill (\$114,000 annually)
 - Stormwater Utility fee raised in FY 15/16 to \$4.00 month/\$8.00 bill (estimated at \$232,000 annually)
- Objectives
 - Environmental Stewardship by providing a safe place for residents & visitors
 - Address Flood Control and Water Quality issues through public infrastructure
 - Maintenance & repair of existing infrastructure and new construction
 - Coordinated efforts with consultants, local governments & state agencies

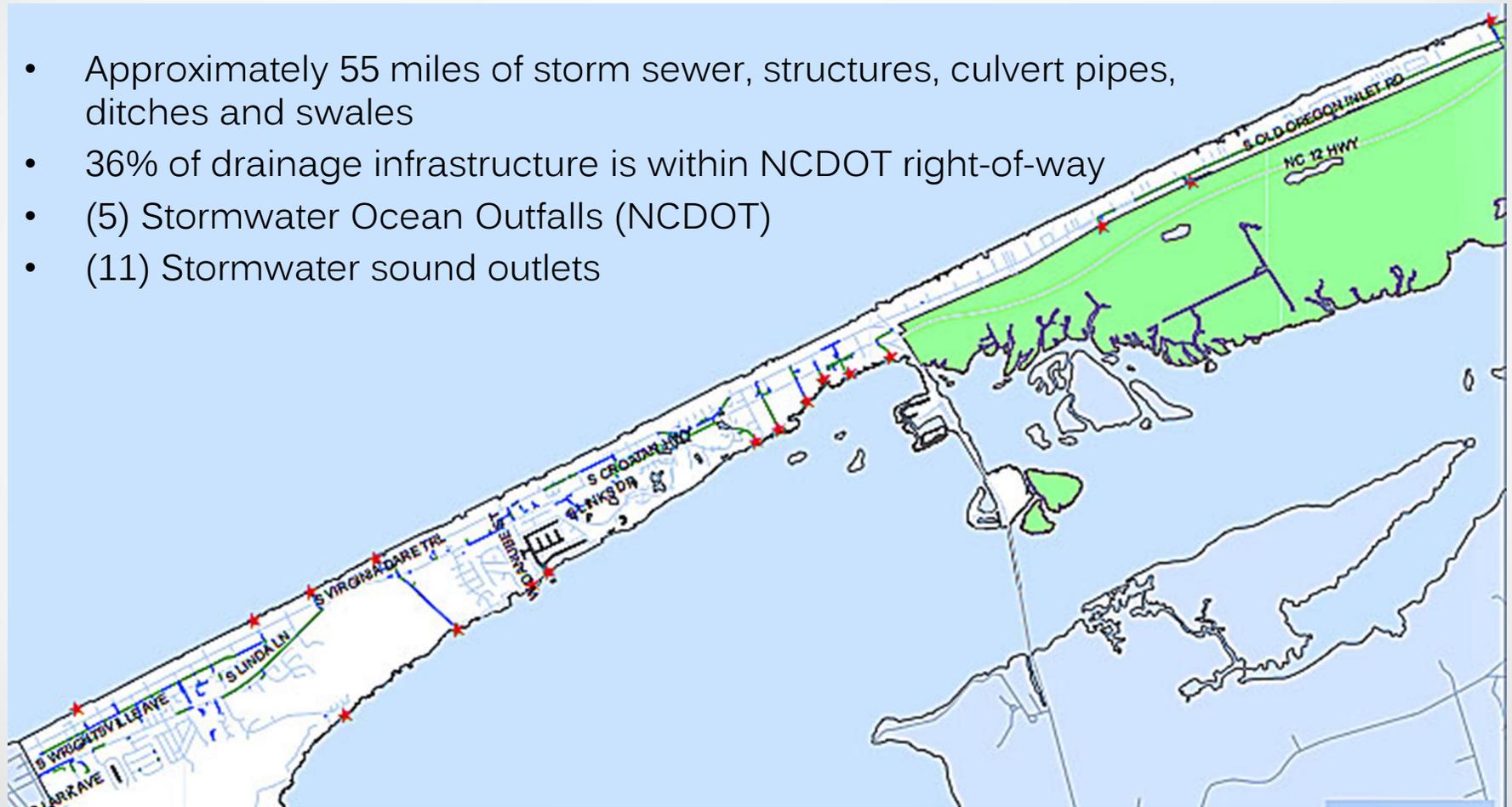


Expenditure vs. Revenue Summary



Town Overview

- Approximately 55 miles of storm sewer, structures, culvert pipes, ditches and swales
- 36% of drainage infrastructure is within NCDOT right-of-way
- (5) Stormwater Ocean Outfalls (NCDOT)
- (11) Stormwater sound outlets



Project Prioritization Criteria

- Frequency and duration of occurrences and extent of flooding conditions observed
- Project Benefit
 - Tributary Area Served
 - Number of Properties Served
- Public Safety
- Flood Control & Water Quality
- Project Cost/Available Funding
- Regulatory Permitting Constraints & Coordination
- Limiting Factors



Recent Projects

New Construction

- E. Gray Eagle St. roadway & drainage improvements
- W. Side Multi-Use Path

Maintenance & Repair

- Red Drum Ocean Outfall
- Nags Head Realty Repair
- Nags Head Acres & Nags Head Pond Drainage Maintenance

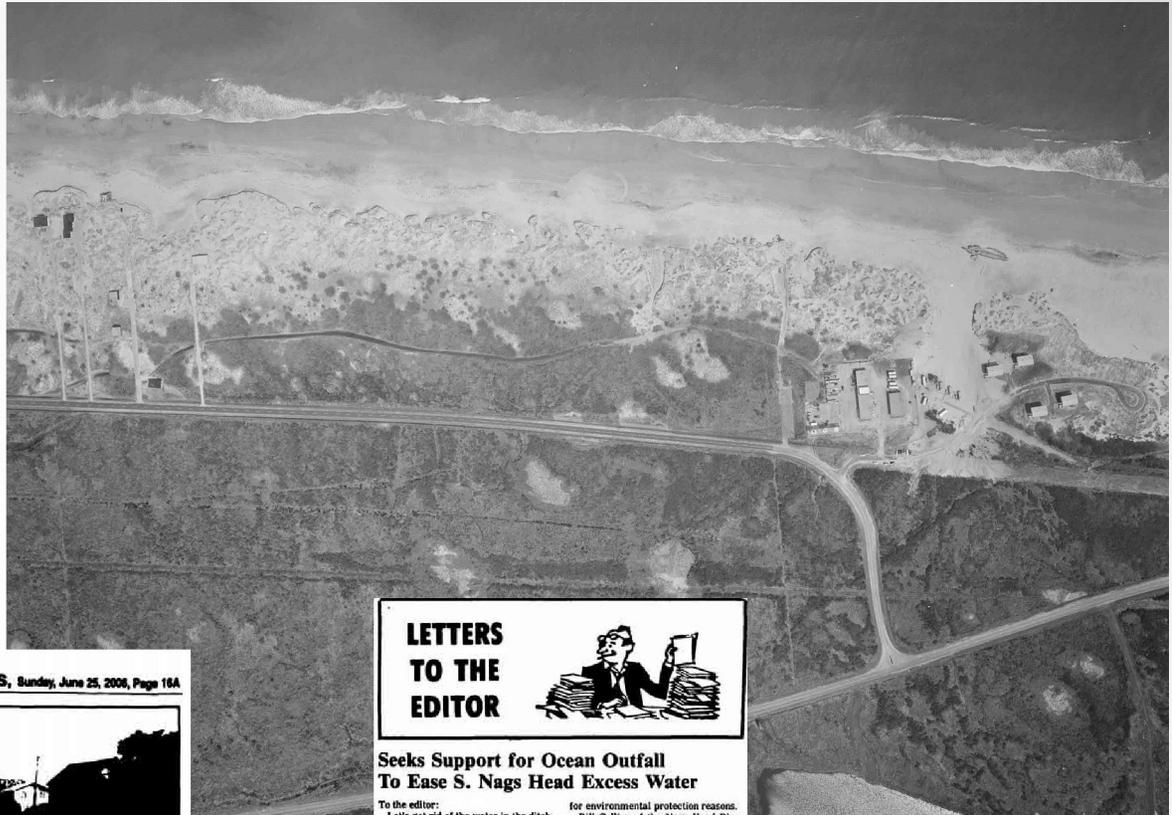
Water Quality

- Vista Colony Groundwater Pilot Project
- Carolinian Circle roadway and drainage improvements
- Stormwater Management Ordinance & Low-Impact Development Design Development Manual





AN APPROXIMATELY one-half mile section of Virginia Dare Trail in Nags Head was flooded with up to five inches of rainwater Friday and over the weekend due to two ocean outfall drainage basins that were stopped up, said Skip Lange, the town's director of public works. State Department of Transportation officials were notified of the situation Monday, and the drains are expected to be cleared because the water had dropped later Monday, Lange said. The drain basins are located near the intersection of Virginia Dare Trail and Conch Street, near Forbes Candy & Gift Shop. Some automobile drivers braved the depths, while others heeded the sign and bypassed the flooded area. (J. Glass photo)



Navigable?

THE COASTLAND TIMES, Sunday, June 25, 2006, Page 16A



THE DITCH which runs along the west side of Old Oregon Inlet Road in south Nags Head, according to town officials, is considered by the United States Army Corps of Engineers to be a "navigable waterway," which means the North Carolina Department of Transportation (DOT), which owns the ditch, must get permits and approval from the Corps before they can clean it. (M. Artz photo)

LETTERS TO THE EDITOR



Seeks Support for Ocean Outfall To Ease S. Nags Head Excess Water

To the editor:
 Let's get rid of the water in the ditch in South Nags Head! This ditch was dug about three years ago to supposedly "drain" surface water to the sound via a drainage ditch near the South Nags Head fire station. This water has about 2 and one-half miles to drain with only 2 feet of fall—which is not possible. Only the northern first mile of the ditch drains, leaving the remaining 1 and one-half miles acting as a holding pond. This makes for stagnant water which has become a haven for Russian rats and other undesirable creatures, not to mention mosquitoes.
 Being a builder and a member of the Nags Head Planning Board, I have given a lot of thought to what can eliminate the water that stays in the ditch all the time. The elevation of the ditch is approximately 7 and one-half feet above sea level at the southern end, where the highway curves by the south town line. At this point, an ocean outfall would be the solution to the problem, as there is 7 and one-half feet of fall to gravitate the water only about 650 feet to the ocean. Then we would be back to dry ground beside the highway in South Nags Head. This outfall would also give the National Park Service a way to drain their ditches at the maintenance and housing complex. The Dare County Health Department would like to see this stagnant water eliminated, also, for environmental protection reasons.
 Bill Collins of the Nags Head Planning Department has also been working on getting rid of the water problem. He is in favor of an ocean outfall, but needs the written backing and help of the property owners in order to carry the request to the State for an ocean outfall off the ditch of S. R. 1343 (Beach Road). Property owners should send letters of support to Bill Collins, Town of Nags Head, Nags Head, 27959.
 JERRY McMANUS
 Rt. 1, Box 510
 Nags Head
 January 23

SCHOOL
 (Continued from Page 1A)

the county superintendent of schools, and Willie Huber, the assistant superintendent, to examine the board's budget and find, if possible, the money for immediate needs.
 The school board also continued, at length, discussions with representatives of Virginia Electric and Power Company about the 15 feet of additional right-of-way easements the utility says it requires for an additional 115 k.v. power line across property of the Kilty Hawk school. Wilford Griffin and Earl



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Maintenance

Lack of Maintenance

Aesthetics and Curb Appeal LITTER

Overgrown Vegetation Erosion

Sediment Accumulation

Deteriorated Pipes

Algae Blooms

Stagnant water



Physical Constraints

Elevated Groundwater Levels

Low-lying topography

FREQUENT FLOODING

Poor Soils

Insufficient infrastructure

Lack of Hydraulic Gradient

Tidal Influences

Underground Utility Conflicts

Water Quality Concerns



Regulatory Constraints

NCDOT

Maintenance Responsibility

National Park Service

Water Quality Concerns

NC Division of Water Resources

High Quality Surface Waters (SA
Classification)

Army Corps of Engineers

Clean Water Act





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Milepost 18

- Problem
 - Elevated Groundwater conditions and Rainfall Surface Runoff
 - Superelevated roadway curve.
 - Low-lying topography
 - No drainage outlet
 - Regulatory Constraints
 - Underground Utility Conflicts
 - Requires coordinated effort with NCDOT to resolve
- Objectives
 - Improve public safety
 - Reduce amount of standing water on pavement
 - Reduce duration of standing water on pavement
 - Expand areas for enhanced infiltration
 - Time frame for implementation



Milepost 18



Milepost 20

- Problem
 - Public safety concern of failing pavement sections, (i.e. potholes)
 - Failing drainage infrastructure
 - Clogged or impeded drainage flow
 - Underground utility conflicts
 - Regulatory Constraints
 - Requires coordinated effort with NCDOT
 - Stormwater surface runoff, elevated groundwater conditions and wastewater disposal system impacts
- Objectives
 - Address immediate public safety concern
 - Reduce maintenance requirements
 - Improved flow efficiency through pipes
 - Coordinated pipe installation
 - Time frame for implementation



Milepost 20



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Summary

- Maintenance, Repair & Improvement
 - Improve conditions but will not solve the problem
 - Rapidly Implemented
 - Minimal utility outages
 - Work within existing regulatory framework
 - Examine opportunities for future maintenance, repairs and improvements
 - Explore coordinated efforts with state and federal agencies to mitigate existing issues
 - Investigate innovative solutions to addressing stormwater, groundwater and wastewater concerns
 - Continue to research state and federal funding opportunities



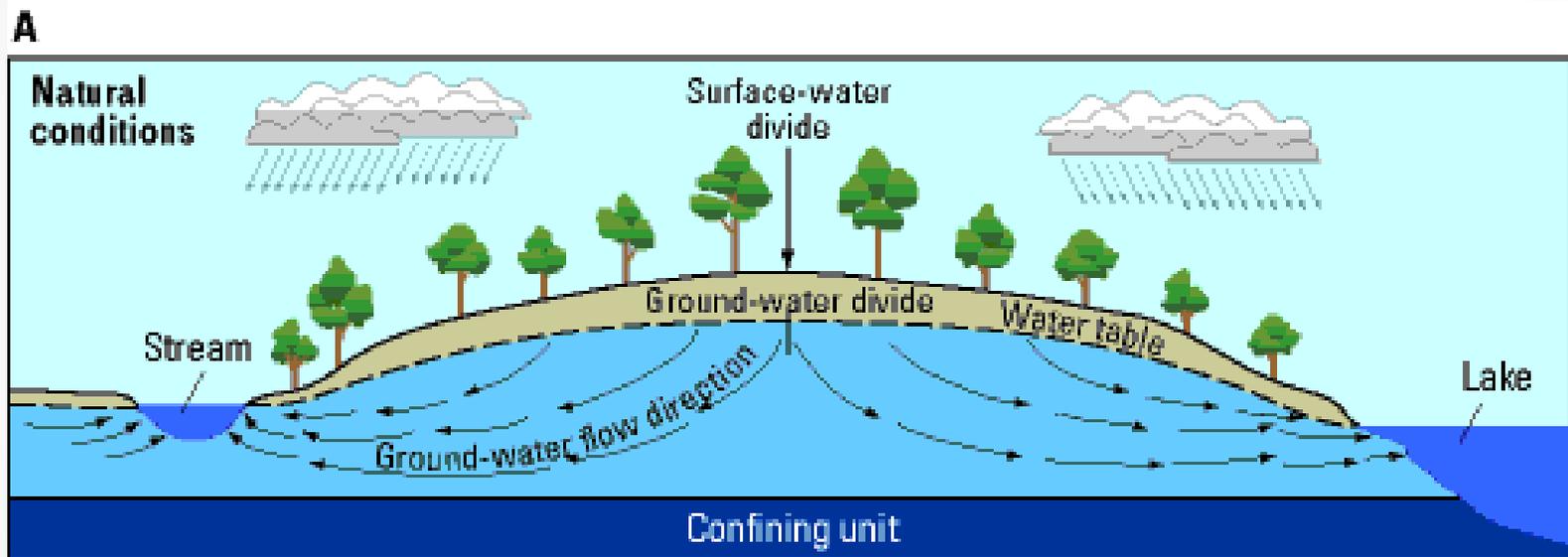
Questions???



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Groundwater Flow



W. Side Ditch Profile

