

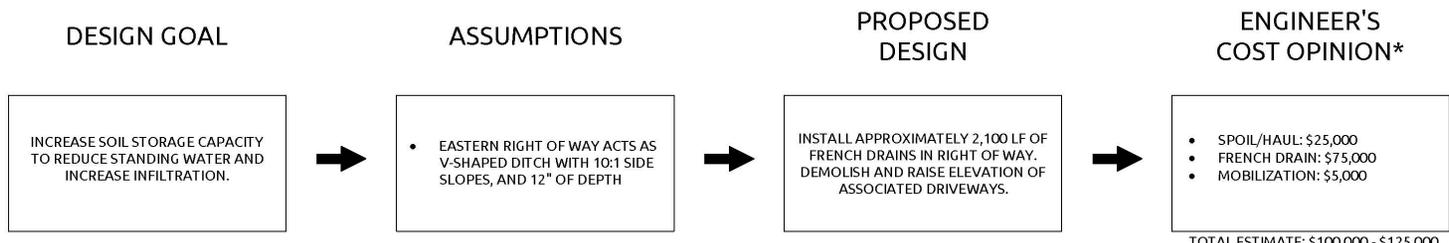
PROBLEM STATEMENT

THE AREA BETWEEN OLYMPIC STREET AND JUNCOS STREET REMAINS FLOODED FOR PROLONGED PERIODS OF TIME AFTER RAINFALL EVENTS. SOUTH OLD OREGON INLET ROAD IS OFTEN RESTRICTED TO ONE LANE OF TRAVEL DUE TO STANDING WATER. SATURATED SOILS AND DAMAGE TO DRIVEWAYS HAS BEEN OBSERVED IN THE AREA.

CONSTRAINTS AND CONSIDERATIONS

- AREA HAS LITTLE RELIEF
- EXISTING SWALES HAVE BEEN OBSERVED WITH STANDING WATER, INDICATING HIGH GROUNDWATER
- LOCALIZED GROUNDWATER LOWERING NOT FEASIBLE

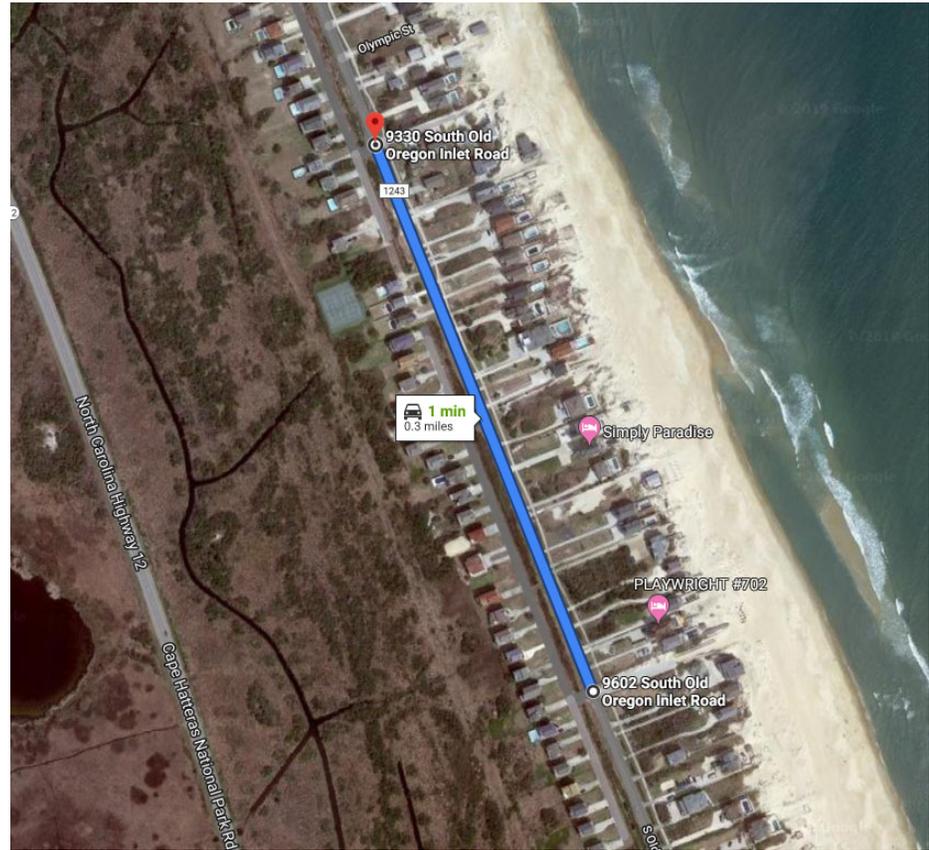
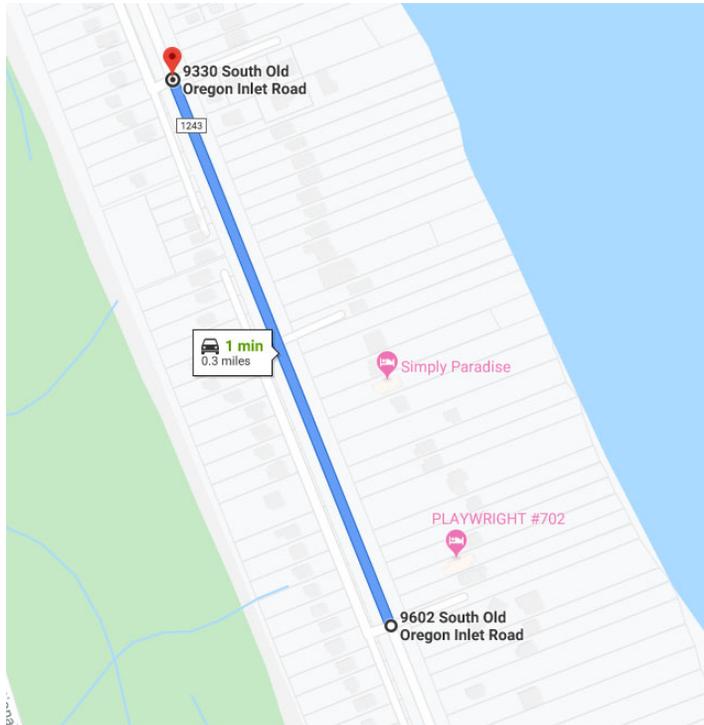
PROJECT AREA #12 - SOUTH NAGS HEAD (MILEPOST 19.5)



PRELIMINARY RESULTS:** REDUCES DEPTH OF FLOODING BY 2-INCHES IN 4-MONTH 24-HOUR STORM. DRIVEWAY FLOODING TO BE REDUCED.

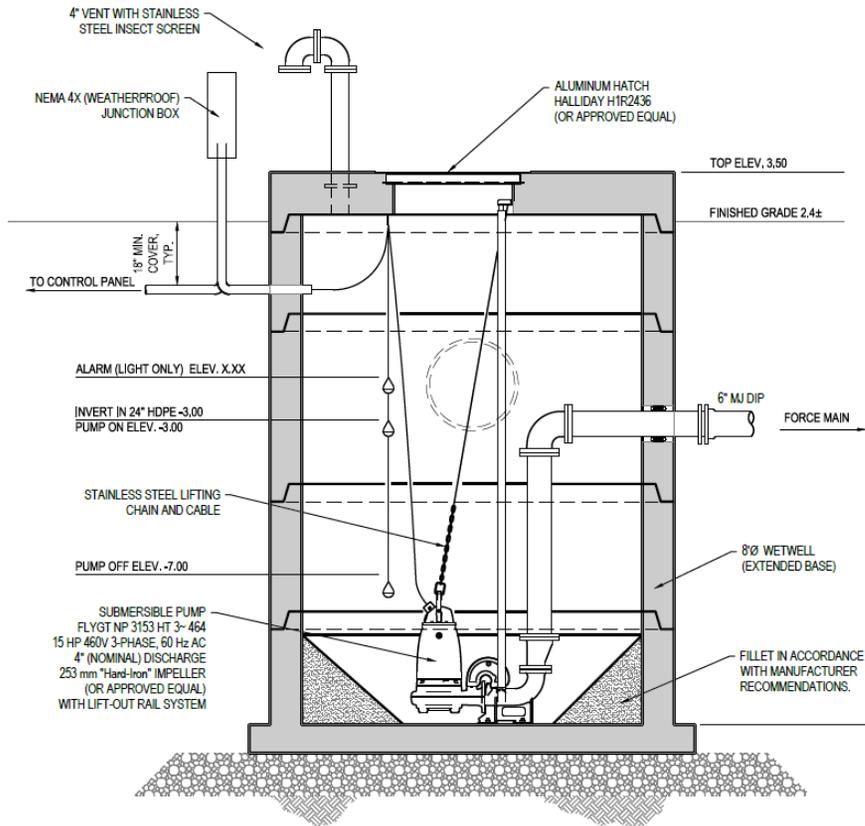
**IMPROVED BEACH ACCESS MAY PROVIDE RECHARGE BASIN AS PUMP OUTFALL. PUMPING OF FRENCH DRAINS RESULTS IN REDUCING DEPTH OF FLOODING TO WITHIN FRENCH DRAINS (SUBSURFACE) IN 4-MONTH 24-HOUR STORM.

*THIS ESTIMATE OF PROBABLE COST IS APPROXIMATE. ACTUAL CONSTRUCTION BIDS MAY VARY SIGNIFICANTLY FROM THIS STATEMENT OF PROBABLE COSTS. DOES NOT INCLUDE COST OF BEACH ACCESS DESIGN AND CONSTRUCTION.

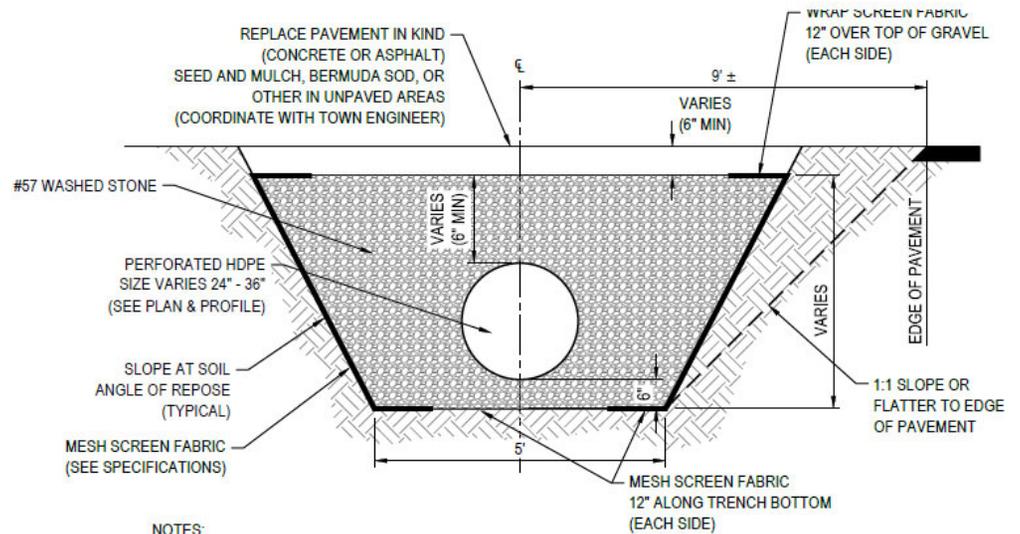




. 205333 OI IUHQ FK GUDIQ) SISH
63 GUIYHZ D\ UHSDIW 2UHSODFHP HQ WV



PUMP STATION SECTION
NOT TO SCALE



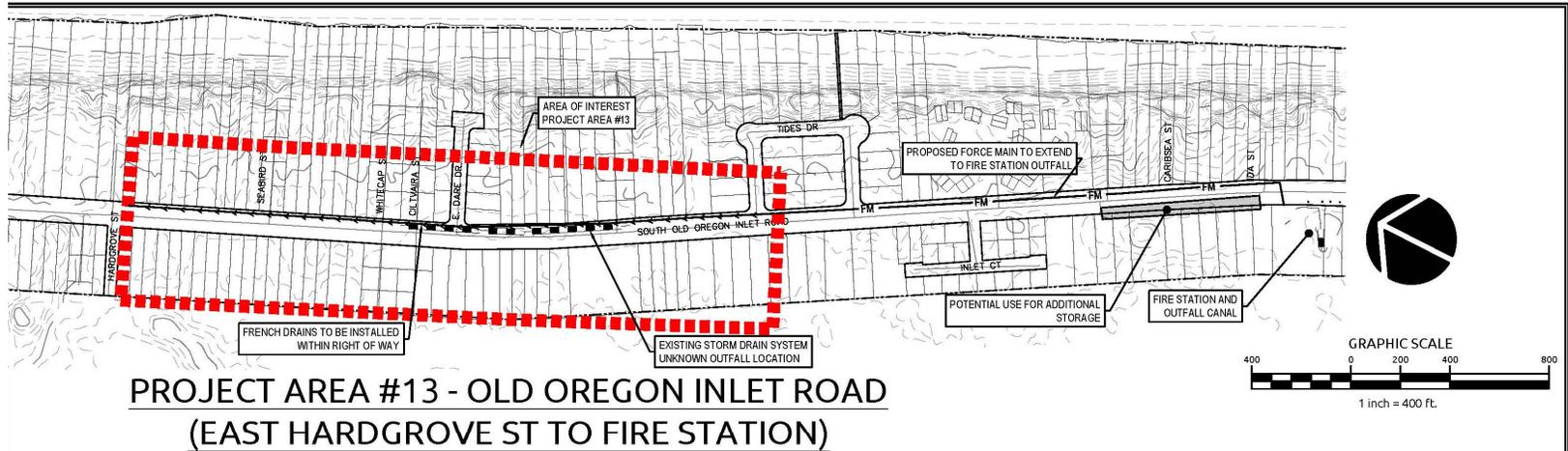
NOTES:
FIELD CONDITIONS MAY REQUIRE DEVIATION FROM PLAN LOCATION AND TYPICAL SECTION. CONTRACTOR SHALL COORDINATE ALL DEVIATIONS WITH THE TOWN AND THE ENGINEER.

ALL STONE BACKFILL USED IN INFILTRATION TRENCHES SHALL BE CLEAN, WASHED #57 WASHED STONE. THE CONTRACTOR SHALL PROVIDE SAMPLES OF THE MATERIAL FOR THE OWNER'S INSPECTION PRIOR TO INSTALLATION. ANY CONTAMINATED STONE SHALL BE REMOVED FROM THE SITE AT NO EXTRA CHARGE.

MESH SCREEN SHALL BE HIGH TENSILE STRENGTH ANTI-CORROSIVE PLAIN WOVEN SCREEN WITH UNIFORM OPENINGS OF AT LEAST 1/16" BUT NOT MORE THAN 1/8" AND A TOTAL OPEN AREA RATIO OF AT LEAST 50%. CONTRACTOR MAY SUBMIT ALTERNATE MATERIAL FOR NCDOT AND TOWN APPROVAL.

INFILTRATION TRENCH DETAIL
NOT TO SCALE





PROBLEM STATEMENT

FLOODING ALONG THE EAST SIDE OF OLD OREGON INLET ROAD FOR PROLONGED PERIODS AFTER SMALL AND LARGE RAINFALL EVENTS. SATURATED SOILS AND HIGH GROUNDWATER HAS BEEN OBSERVED IN THE AREA.

CONSTRAINTS AND CONSIDERATIONS

- HIGH GROUNDWATER AND SENSITIVE NATURAL AREAS LIMIT DESIGNS TO EAST SIDE OF ROAD
- THERE ARE NO SIGNIFICANT SWALES OR DITCHES IN THE PROJECT AREA
- UTILITIES MAY RESTRICT CONSTRUCTION OPTIONS
- EASEMENT ACQUISITION MAY BE NEEDED

DESIGN GOAL

PUMP STANDING WATER TO REDUCE FLOOD TIMES.

ASSUMPTIONS

- EASTERN RIGHT OF WAY MODELED AS DITCH WITH 10:1 SIDE SLOPES, AND 12" OF DEPTH
- EXISTING STORM DRAIN CAPACITY NOT INCLUDED DUE TO UNKNOWN OUTLET

PROPOSED DESIGN

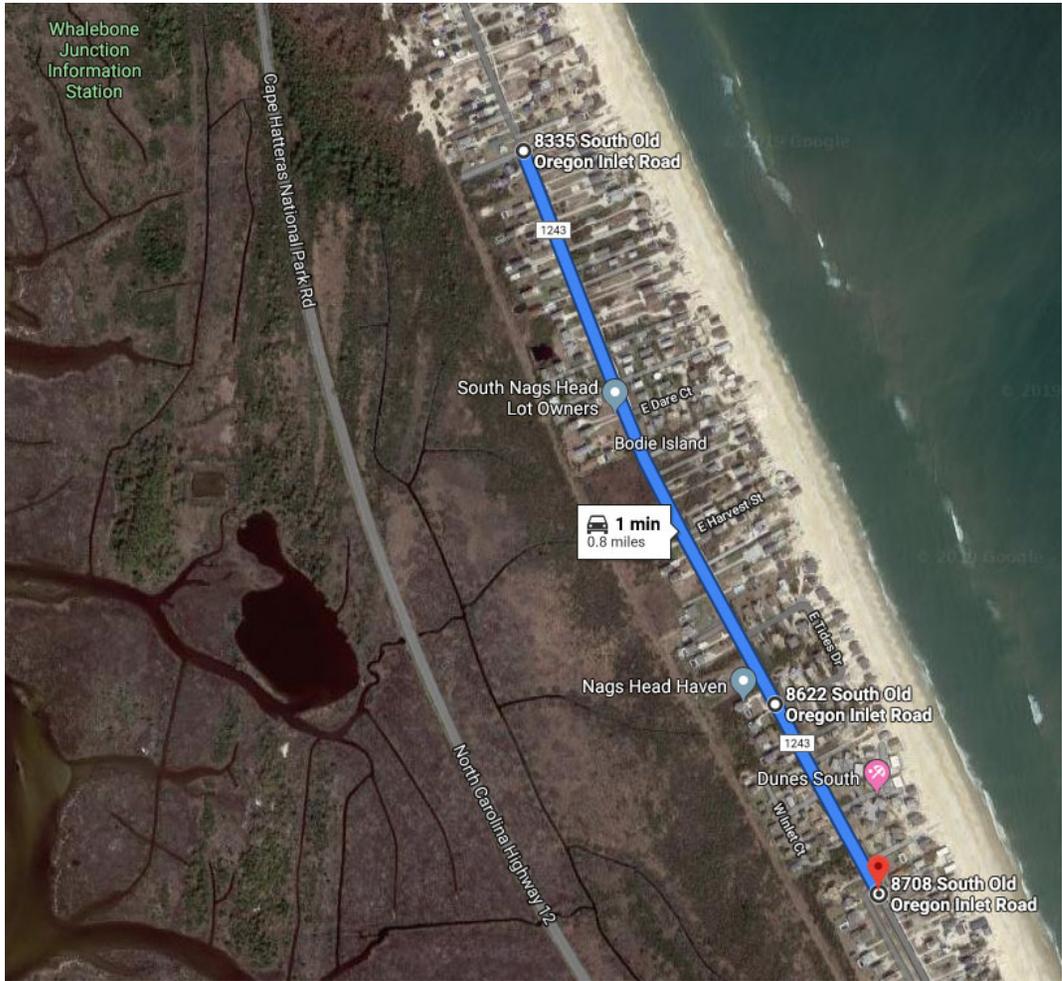
INSTALL APPROXIMATELY 2,050 LF OF FRENCH DRAINS WITHIN THE RIGHT OF WAY. OUTLET VIA 3,100 LF OF FORCE MAIN TO CANAL ADJACENT TO SOUTH NAGS HEAD FIRE STATION. ADDITIONAL STORAGE MAY BE ADDED AT SOUTH CREEK ACRES PHASE 2.

ENGINEER'S COST OPINION*

- GROUNDWATER PUMPS: \$30,000
 - SPOIL/HAUL: \$10,000
 - FRENCH DRAIN: \$75,000
 - FORCE MAIN: \$125,000
 - MOBILIZATION: \$10,000
- TOTAL ESTIMATE: \$225,000 - \$275,000

PRELIMINARY RESULTS: REDUCES DEPTH OF FLOODING TO WITHIN FRENCH DRAINS (SUBSURFACE) IN 4-MONTH 24-HOUR STORM.

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5; GUIYHZ D\ UHSDIW 2UHSODFHP HQ WV
4633 OI IR UFH P DIQ
833 JSP SXP SUDWH