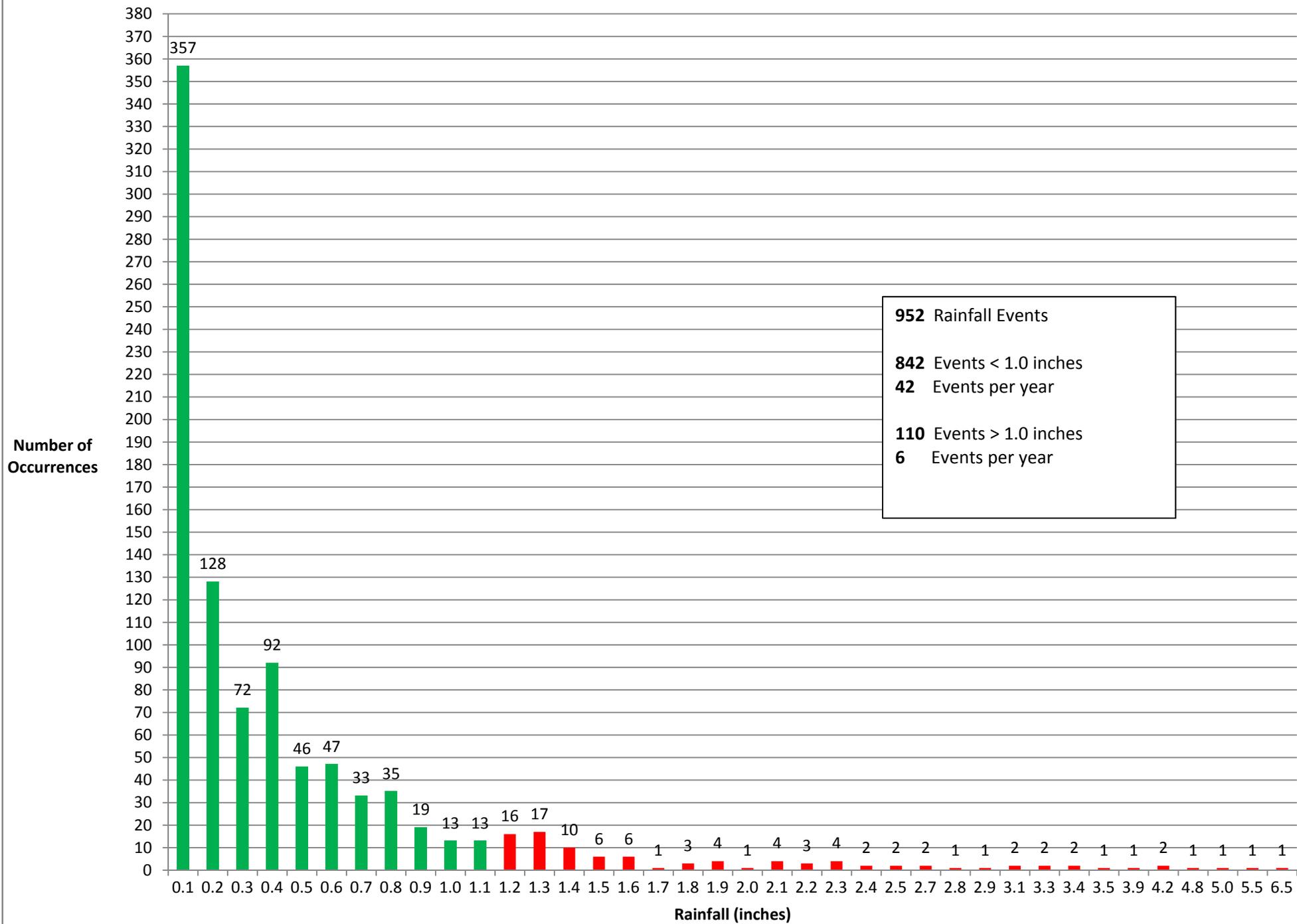
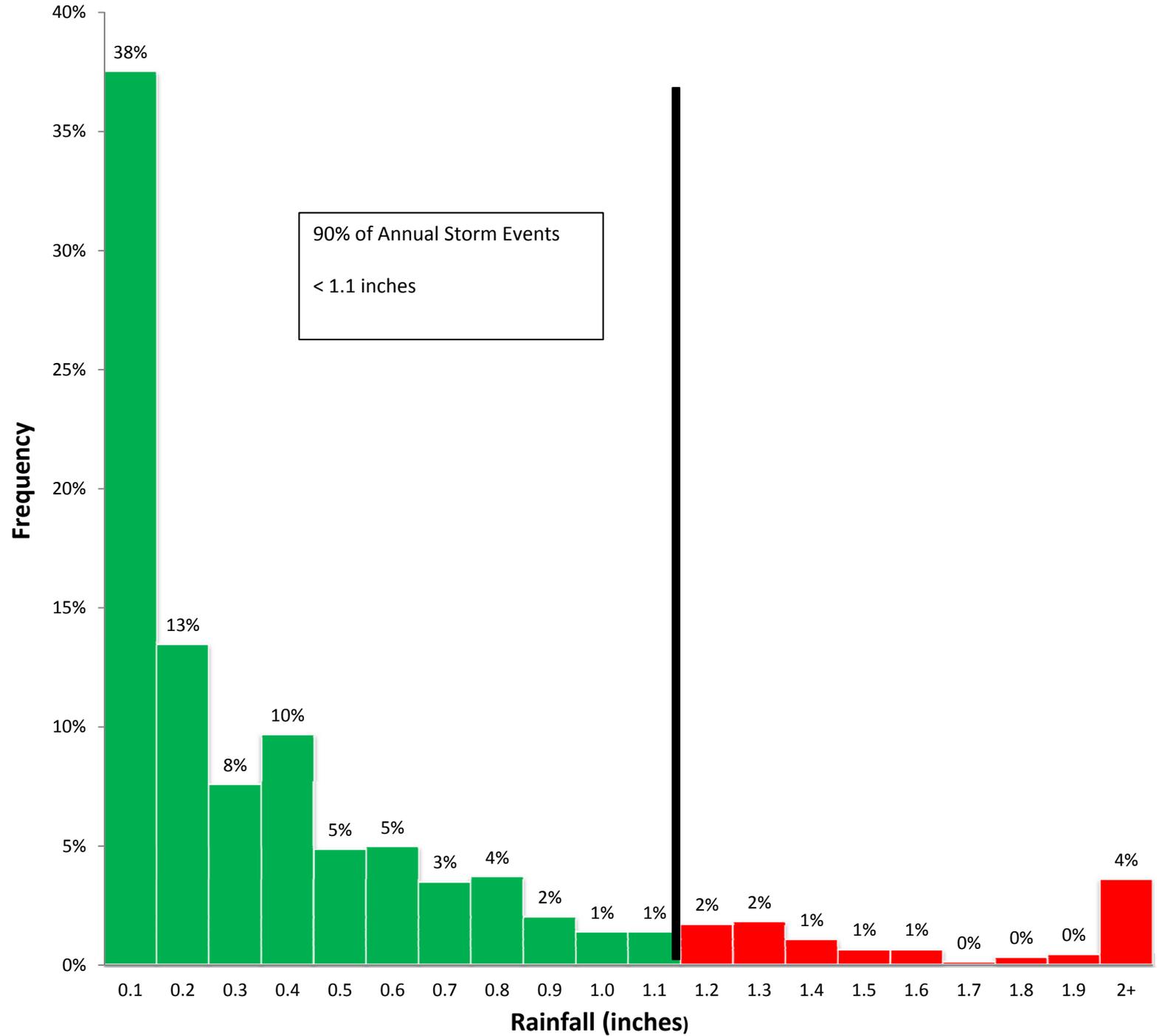


Laurel Hills Area Rainfall Data (1992-2012)



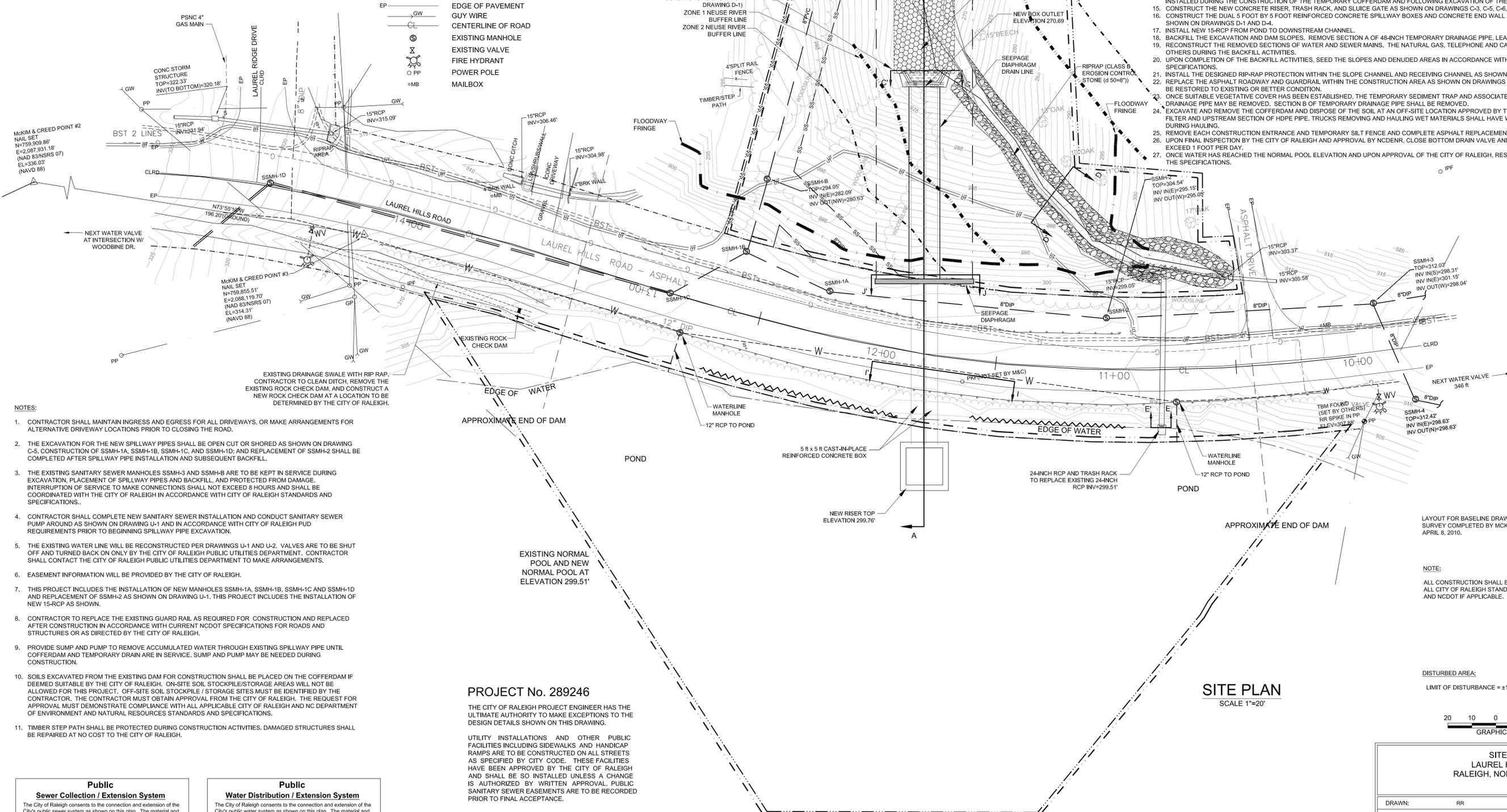
Laurel Hills Area Storm Frequency



NORTH

- LEGEND:**
- G --- EXISTING PSNC GAS LINE (MAIN)
 - S --- EXISTING SANITARY SEWER LINE
 - OHE --- EXISTING OVERHEAD ELECTRIC UTILITIES AND CABLE
 - BST --- EXISTING UNDERGROUND TELEPHONE AND CABLE TV LINES
 - U --- EXISTING UNDERGROUND TELEPHONE LINE
 - W --- EXISTING WATER LINE
 - --- RIGHT OF WAY
 - SS --- PERMANENT CONSTRUCTION EASEMENT
 - --- SANITARY SEWER EASEMENT
 - --- TEMPORARY CONSTRUCTION EASEMENT
 - --- EXISTING GROUND SURFACE CONTOUR LINE
 - SF --- SILT FENCE
 - --- SHEET PILE
 - --- CONSTRUCTION LIMIT (LIMIT OF DISTURBANCE)
 - --- EXISTING GUARDRAIL
 - EP --- EDGE OF PAVEMENT
 - GW --- GUY WIRE
 - CL --- CENTERLINE OF ROAD
 - --- EXISTING MANHOLE
 - --- EXISTING VALVE
 - --- FIRE HYDRANT
 - --- POWER POLE
 - --- MAILBOX

- CONSTRUCTION SEQUENCE:**
- CONTRACTOR TO OBTAIN APPROVAL FROM THE CITY OF RALEIGH TO:
 - NOTIFY NEIGHBORS PRIOR TO START OF CONSTRUCTION ACTIVITIES.
 - ISSUE LETTERS TO NEIGHBORS WITH DATES OF ROAD CLOSURE AND CONTACT INFORMATION.
 - OBTAIN NECESSARY CITY OF RALEIGH PERMITS PRIOR TO START OF CONSTRUCTION ACTIVITIES.
 - INSTALL EROSION AND SEDIMENT CONTROL MEASURES:
 - TEMPORARY SILT FENCE
 - CONSTRUCTION ENTRANCES
 - TEMPORARY SEDIMENT TRAP
 - PUMP AND REMOVE THE WATER STORED WITHIN POND. THE POND SHALL BE DRAINED AT A RATE NO GREATER THAN 1 FOOT PER DAY. THE WATER WILL BE DISCHARGED THROUGH THE EXISTING 24-RCP REINFORCED CONCRETE PIPE LOCATED NEAR THE EAST END OF THE EXISTING DAM.
 - RELOCATE MAILBOX FOR RESIDENCE LOCATED AT 4001 AND 4003 LAUREL HILLS DRIVE.
 - CONSTRUCT THE TEMPORARY COFFERDAM.
 - EXCAVATE THE SOILS AND ASPHALT FROM THE SPECIFIED PORTION OF THE EXISTING DAM AS SHOWN ON DRAWINGS U-1 AND U-2.
 - SANITARY SEWER CONNECTIONS WILL BE TERMINATED AND THE SEWER PUMP AROUND PLAN WILL BE IMPLEMENTED, AS DIRECTED BY THE CITY OF RALEIGH PUBLIC WORKS DEPARTMENT.
 - DISCONNECT AND REMOVE THE WATERMAIN CROSSING THE EXCAVATION IN ACCORDANCE WITH THE DETAILS SHOWN ON DRAWING U-2.
 - REMOVE EXISTING 24-RCP POND DISCHARGE PIPE.
 - THE NATURAL GAS, TELEPHONE AND CABLE TV LINES WILL BE RELOCATED BY OTHERS DURING EXCAVATION ACTIVITIES, AND COORDINATED BY THE CONTRACTOR.
 - REMOVE EXISTING 8-INCH DRAIN LINES FROM NORTHERN SLOPE OF EXISTING DAM.
 - CONSTRUCT THE TEMPORARY COFFERDAM WITHIN THE DRAINED POND AS SHOWN ON DRAWINGS C-4 AND D-5. UPON COMPLETION OF THE CONSTRUCTION OF THE COFFERDAM, SEE THE TOP AND SLOPES OF THE COFFERDAM IN ACCORDANCE WITH THE TEMPORARY SEEDING SPECIFICATIONS.
 - INSTALL THE EXCAVATION SUPPORTS AS DESIGNED BY THE CONTRACTOR'S ENGINEER AND AS SHOWN ON DRAWING C-5. FINAL AUTHORIZATION TO CONSTRUCT TO BE ISSUED BY DAM SAFETY. FOLLOWING REVIEW AND APPROVAL OF CONTRACTOR'S DESIGN FOR EXCAVATION SUPPORTS.
 - INSTALL THE 48-INCH HDPE TEMPORARY DRAINAGE PIPE AS SHOWN ON DRAWINGS C-4, C-5 AND D-5. PORTIONS OF THE TEMPORARY DRAINAGE PIPE WILL BE INSTALLED DURING THE CONSTRUCTION OF THE TEMPORARY COFFERDAM AND FOLLOWING EXCAVATION OF THE NEW SPILLWAY.
 - CONSTRUCT THE NEW CONCRETE RISER, TRASH RACK, AND SLUICE GATE AS SHOWN ON DRAWINGS C-3, C-5, C-6, D-1, D-2 AND D-3.
 - CONSTRUCT THE DUAL 5 FOOT BY 5 FOOT REINFORCED CONCRETE SPILLWAY BOXES AND CONCRETE END WALL AND INSTALL THE SEEPAGE DIAPHRAGM AS SHOWN ON DRAWINGS D-1 AND D-4.
 - INSTALL NEW 15-RCP FROM POND TO DOWNSTREAM CHANNEL.
 - BACKFILL THE EXCAVATION AND DAM SLOPES. REMOVE SECTION A OF 48-INCH TEMPORARY DRAINAGE PIPE, LEAVING SECTION B AS SHOWN ON DWG C-5.
 - RECONSTRUCT THE REMOVED SECTIONS OF WATER AND SEWER MAINS. THE NATURAL GAS, TELEPHONE AND CABLE TV LINES WILL BE REPLACED BY OTHERS DURING THE BACKFILL ACTIVITIES.
 - UPON COMPLETION OF THE BACKFILL ACTIVITIES, SEED THE SLOPES AND DENUDE AREAS IN ACCORDANCE WITH THE PERMANENT SEEDING SPECIFICATIONS.
 - INSTALL THE DESIGNED RIP-RAP PROTECTION WITHIN THE SLOPE CHANNEL AND RECEIVING CHANNEL AS SHOWN ON DRAWINGS C-3 AND D-5.
 - REPLACE THE ASPHALT ROADWAY AND GUARDRAIL WITHIN THE CONSTRUCTION AREA AS SHOWN ON DRAWINGS U-1 AND U-2. ALL ASPHALT PAVEMENT SHALL BE RESTORED TO EXISTING OR BETTER CONDITION.
 - ONCE SUITABLE VEGETATIVE COVER HAS BEEN ESTABLISHED, THE TEMPORARY SEDIMENT TRAP AND ASSOCIATED SEDIMENT AND THE TEMPORARY DRAINAGE PIPE MAY BE REMOVED. SECTION B OF TEMPORARY DRAINAGE PIPE SHALL BE REMOVED.
 - EXCAVATE AND REMOVE THE COFFERDAM AND DISPOSE OF THE SOIL AT AN OFF-SITE LOCATION APPROVED BY THE CITY OF RALEIGH. REMOVE HORSESHOE FILTER AND UPSTREAM SECTION OF HDPE PIPE. TRUCKS REMOVING AND HAULING WET MATERIALS SHALL HAVE WATERTIGHT GATES TO PREVENT STREETS DURING HAULING.
 - REMOVE EACH CONSTRUCTION ENTRANCE AND TEMPORARY SILT FENCE AND COMPLETE ASPHALT REPLACEMENT.
 - UPON FINAL INSPECTION BY THE CITY OF RALEIGH AND APPROVAL BY NCDENR, CLOSE BOTTOM DRAIN VALVE AND IMPOUND WATER AT A RATE NOT TO EXCEED 1 FOOT PER DAY.
 - ONCE WATER HAS REACHED THE NORMAL POOL ELEVATION AND UPON APPROVAL OF THE CITY OF RALEIGH, RESTOCK THE PONDS IN ACCORDANCE WITH THE SPECIFICATIONS.



- NOTES:**
- CONTRACTOR SHALL MAINTAIN INGRESS AND EGRESS FOR ALL DRIVEWAYS, OR MAKE ARRANGEMENTS FOR ALTERNATIVE DRIVEWAY LOCATIONS PRIOR TO CLOSING THE ROAD.
 - THE EXCAVATION FOR THE NEW SPILLWAY PIPES SHALL BE OPEN CUT OR SHORED AS SHOWN ON DRAWING C-5. CONSTRUCTION OF SSMH-1A, SSMH-1B, SSMH-1C, AND SSMH-1D; AND REPLACEMENT OF SSMH-2 SHALL BE COMPLETED AFTER SPILLWAY PIPE INSTALLATION AND SUBSEQUENT BACKFILL.
 - THE EXISTING SANITARY SEWER MANHOLES SSMH-3 AND SSMH-8 ARE TO BE KEPT IN SERVICE DURING EXCAVATION. PLACEMENT OF SPILLWAY PIPES AND BACKFILL, AND PROTECTED FROM DAMAGE. INTERRUPTION OF SERVICE TO MAKE CONNECTIONS SHALL NOT EXCEED 8 HOURS AND SHALL BE COORDINATED WITH THE CITY OF RALEIGH IN ACCORDANCE WITH CITY OF RALEIGH STANDARDS AND SPECIFICATIONS.
 - CONTRACTOR SHALL COMPLETE NEW SANITARY SEWER INSTALLATION AND CONDUCT SANITARY SEWER PUMP AROUND AS SHOWN ON DRAWING U-1 AND IN ACCORDANCE WITH CITY OF RALEIGH PUD REQUIREMENTS PRIOR TO BEGINNING SPILLWAY PIPE EXCAVATION.
 - THE EXISTING WATER LINE WILL BE RECONSTRUCTED PER DRAWINGS U-1 AND U-2. VALVES ARE TO BE SHUT OFF AND TURNED BACK ON ONLY BY THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT. CONTRACTOR SHALL CONTACT THE CITY OF RALEIGH PUBLIC UTILITIES DEPARTMENT TO MAKE ARRANGEMENTS.
 - EASEMENT INFORMATION WILL BE PROVIDED BY THE CITY OF RALEIGH.
 - THIS PROJECT INCLUDES THE INSTALLATION OF NEW MANHOLES SSMH-1A, SSMH-1B, SSMH-1C AND SSMH-1D AND REPLACEMENT OF SSMH-2 AS SHOWN ON DRAWING U-1. THIS PROJECT INCLUDES THE INSTALLATION OF NEW 15-RCP AS SHOWN.
 - CONTRACTOR TO REPLACE THE EXISTING GUARD RAIL AS REQUIRED FOR CONSTRUCTION AND REPLACED AFTER CONSTRUCTION IN ACCORDANCE WITH CURRENT NCDOT SPECIFICATIONS FOR ROADS AND STRUCTURES OR AS DIRECTED BY THE CITY OF RALEIGH.
 - PROVIDE SUMP AND PUMP TO REMOVE ACCUMULATED WATER THROUGH EXISTING SPILLWAY PIPE UNTIL COFFERDAM AND TEMPORARY DRAIN ARE IN SERVICE. SUMP AND PUMP MAY BE NEEDED DURING CONSTRUCTION.
 - SOILS EXCAVATED FROM THE EXISTING DAM FOR CONSTRUCTION SHALL BE PLACED ON THE COFFERDAM IF DEEMED SUITABLE BY THE CITY OF RALEIGH. ON-SITE SOIL STOCKPILE/STORAGE AREAS WILL NOT BE ALLOWED FOR THIS PROJECT. OFF-SITE SOIL STOCKPILE / STORAGE SITES MUST BE IDENTIFIED BY THE CONTRACTOR. THE CONTRACTOR MUST OBTAIN APPROVAL FROM THE CITY OF RALEIGH. THE REQUEST FOR APPROVAL MUST DEMONSTRATE COMPLIANCE WITH ALL APPLICABLE CITY OF RALEIGH AND NC DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES STANDARDS AND SPECIFICATIONS.
 - TIMBER STEP PATH SHALL BE PROTECTED DURING CONSTRUCTION ACTIVITIES. DAMAGED STRUCTURES SHALL BE REPAIRED AT NO COST TO THE CITY OF RALEIGH.

PROJECT No. 289246

THE CITY OF RALEIGH PROJECT ENGINEER HAS THE ULTIMATE AUTHORITY TO MAKE EXCEPTIONS TO THE DESIGN DETAILS SHOWN ON THIS DRAWING.

UTILITY INSTALLATIONS AND OTHER PUBLIC FACILITIES INCLUDING SIDEWALKS AND HANDICAP RAMPS ARE TO BE CONSTRUCTED ON ALL STREETS AS SPECIFIED BY CITY CODE. THESE FACILITIES HAVE BEEN APPROVED BY THE CITY OF RALEIGH AND SHALL BE SO INSTALLED UNLESS A CHANGE IS AUTHORIZED BY WRITTEN APPROVAL. PUBLIC SANITARY SEWER EASEMENTS ARE TO BE RECORDED PRIOR TO FINAL ACCEPTANCE.

- TRANSPORTATION SERVICES _____
- PUBLIC UTILITIES _____
- CONSERVATION ENGINEER _____
- PLANNING _____

Public Sewer Collection / Extension System

The City of Raleigh consents to the connection and extension of the City's public sewer system as shown on this plan. The material and construction methods used for this project shall conform to the standard and specification of the City's Public Utilities Handbook.

City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

Public Water Distribution / Extension System

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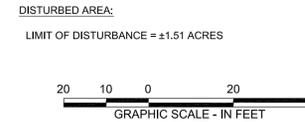
City of Raleigh
Public Utilities Department Permit # _____

Authorization to Construct _____

Date _____

LAYOUT FOR BASELINE DRAWING BASED ON THE SURVEY COMPLETED BY MCKIM & CREED, PA DATED APRIL 8, 2010.

NOTE:
ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL CITY OF RALEIGH STANDARD AND SPECIFICATIONS AND NCDOT IF APPLICABLE.



SITE PLAN
SCALE 1"=20'

REV.	DATE	BY	APPR	DESCRIPTION
3	03/21/2013	JAM	JAT	Revised Notes & Construction Sequence
2	04/06/2012	JAM	JAT	Final Issued for Construction.
1	10/10/2011	JAM	JAT	Revised for Dam Safety Comments.
0	07/14/2011	JAM	JAT	RESUBMITTAL - Drawing set replaces all previous design drawings.

SITE PLAN LAUREL HILLS DAM RALEIGH, NORTH CAROLINA

DRAWN:	RR
DFT CHECK:	JAM
ENG CHECK:	JAT
APPROVAL:	JAM
DATE:	JANUARY 2011
SCALE:	AS SHOWN
REFERENCE DWGS:	

amec
AMEC Environment & Infrastructure, Inc.
4021 STRIPP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
NC Engineering F-0653 NC Geology C-247

JOB NO.	DWG NO.
30720-S-3090	C-2



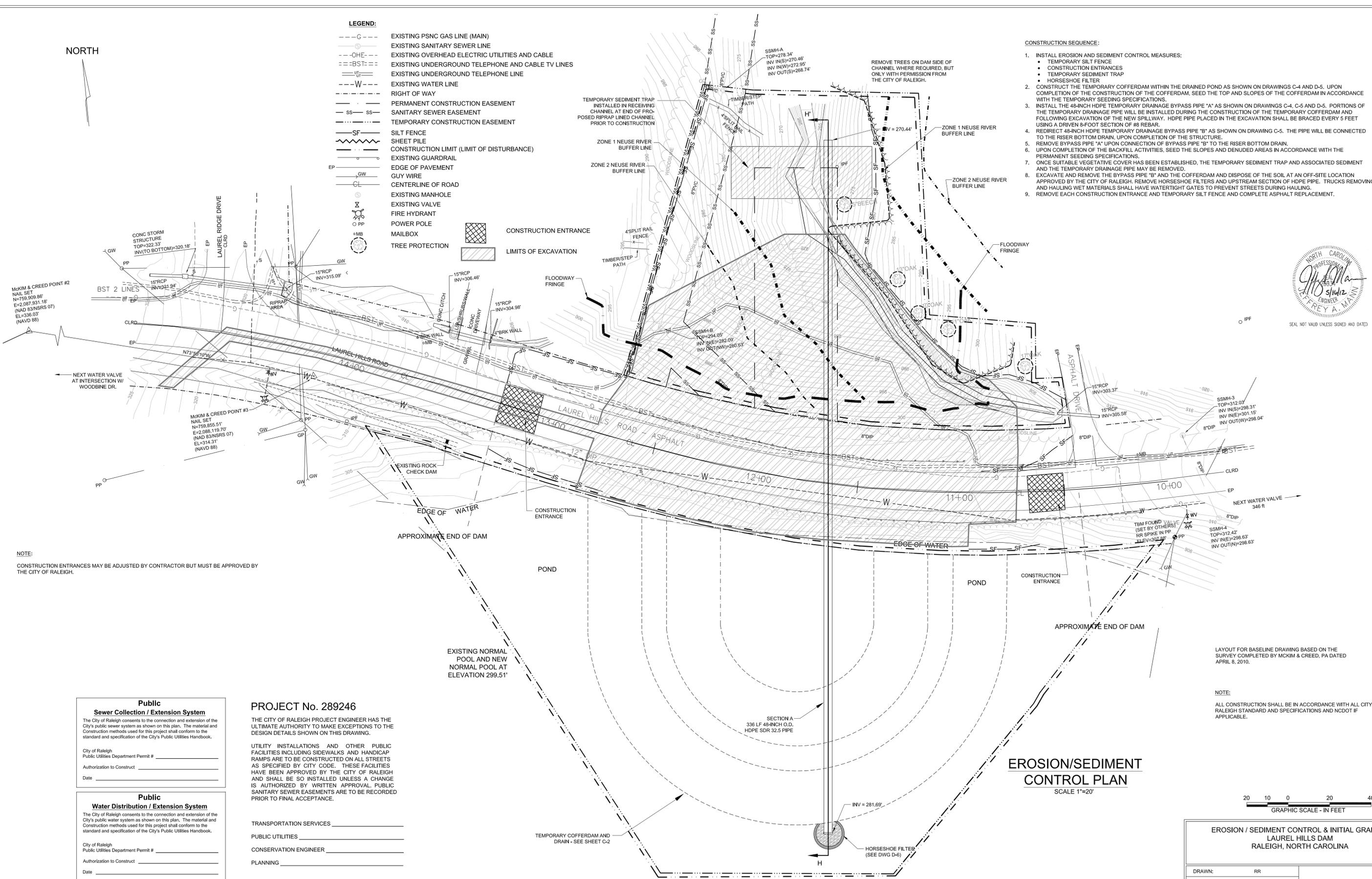
NORTH

- LEGEND:**
- G--- EXISTING PSNC GAS LINE (MAIN)
 - S--- EXISTING SANITARY SEWER LINE
 - OHE--- EXISTING OVERHEAD ELECTRIC UTILITIES AND CABLE
 - BST--- EXISTING UNDERGROUND TELEPHONE AND CABLE TV LINES
 - UT--- EXISTING UNDERGROUND TELEPHONE LINE
 - W--- EXISTING WATER LINE
 - R--- RIGHT OF WAY
 - SS--- PERMANENT CONSTRUCTION EASEMENT
 - SF--- SANITARY SEWER EASEMENT
 - T--- TEMPORARY CONSTRUCTION EASEMENT
 - SILF--- SILT FENCE
 - SHP--- SHEET PILE
 - CL--- CONSTRUCTION LIMIT (LIMIT OF DISTURBANCE)
 - EG--- EXISTING GUARDRAIL
 - EP--- GUY WIRE
 - CL--- CENTERLINE OF ROAD
 - M--- EXISTING MANHOLE
 - V--- EXISTING VALVE
 - F--- FIRE HYDRANT
 - P--- POWER POLE
 - MB--- MAILBOX
 - X--- TREE PROTECTION
 - H--- CONSTRUCTION ENTRANCE
 - L--- LIMITS OF EXCAVATION

- CONSTRUCTION SEQUENCE:**
- INSTALL EROSION AND SEDIMENT CONTROL MEASURES:
 - TEMPORARY SILT FENCE
 - CONSTRUCTION ENTRANCES
 - TEMPORARY SEDIMENT TRAP
 - HORSESHOE FILTER
 - CONSTRUCT THE TEMPORARY COFFERDAM WITHIN THE DRAINED POND AS SHOWN ON DRAWINGS C-4 AND D-5. UPON COMPLETION OF THE CONSTRUCTION OF THE COFFERDAM, SEED THE TOP AND SLOPES OF THE COFFERDAM IN ACCORDANCE WITH THE TEMPORARY SEEDING SPECIFICATIONS.
 - INSTALL THE 48-INCH HDPE TEMPORARY DRAINAGE BYPASS PIPE "A" AS SHOWN ON DRAWINGS C-4, C-5 AND D-5. PORTIONS OF THE TEMPORARY DRAINAGE PIPE WILL BE INSTALLED DURING THE CONSTRUCTION OF THE TEMPORARY COFFERDAM AND FOLLOWING EXCAVATION OF THE NEW SPILLWAY. HDPE PIPE PLACED IN THE EXCAVATION SHALL BE BRACED EVERY 5 FEET USING A DRIVEN 8-FOOT SECTION OF #8 REBAR.
 - REDIRECT 48-INCH HDPE TEMPORARY DRAINAGE BYPASS PIPE "B" AS SHOWN ON DRAWING C-5. THE PIPE WILL BE CONNECTED TO THE RISER BOTTOM DRAIN. UPON COMPLETION OF THE STRUCTURE.
 - REMOVE BYPASS PIPE "A" UPON CONNECTION OF BYPASS PIPE "B" TO THE RISER BOTTOM DRAIN.
 - UPON COMPLETION OF THE BACKFILL ACTIVITIES, SEED THE SLOPES AND DENUEDED AREAS IN ACCORDANCE WITH THE PERMANENT SEEDING SPECIFICATIONS.
 - ONCE SUITABLE VEGETATIVE COVER HAS BEEN ESTABLISHED, THE TEMPORARY SEDIMENT TRAP AND ASSOCIATED SEDIMENT AND THE TEMPORARY DRAINAGE PIPE MAY BE REMOVED.
 - EXCAVATE AND REMOVE THE BYPASS PIPE "B" AND THE COFFERDAM AND DISPOSE OF THE SOIL AT AN OFF-SITE LOCATION APPROVED BY THE CITY OF RALEIGH. REMOVE HORSESHOE FILTERS AND UPSTREAM SECTION OF HDPE PIPE. TRUCKS REMOVING AND HAULING WET MATERIALS SHALL HAVE WATERTIGHT GATES TO PREVENT STREETS DURING HAULING.
 - REMOVE EACH CONSTRUCTION ENTRANCE AND TEMPORARY SILT FENCE AND COMPLETE ASPHALT REPLACEMENT.



SEAL NOT VALID UNLESS SIGNED AND DATED



NOTE:
CONSTRUCTION ENTRANCES MAY BE ADJUSTED BY CONTRACTOR BUT MUST BE APPROVED BY THE CITY OF RALEIGH.

LAYOUT FOR BASELINE DRAWING BASED ON THE SURVEY COMPLETED BY MCKIM & CREED, PA DATED APRIL 8, 2010.

NOTE:
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EROSION/SEDIMENT CONTROL PLAN
SCALE 1"=20'



Public Sewer Collection / Extension System

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City of Raleigh
Public Utilities Department Permit # _____
Authorization to Construct _____
Date _____

Public Water Distribution / Extension System

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City of Raleigh
Public Utilities Department Permit # _____
Authorization to Construct _____
Date _____

PROJECT No. 289246

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TRANSPORTATION SERVICES _____
PUBLIC UTILITIES _____
CONSERVATION ENGINEER _____
PLANNING _____

REV.	DATE	BY	APPR	DESCRIPTION
3	05/16/2012	JAM	JAT	Revised for City of Raleigh Comments
2	04/06/2012	JAM	JAT	Final Issued for Construction.
1	10/10/2011	JAM	JAT	Revised for Dam Safety Comments.
0	07/14/2011	JAM	JAT	RESUBMITTAL- Drawing set replaces all previous design drawings.

**EROSION / SEDIMENT CONTROL & INITIAL GRADING
LAUREL HILLS DAM
RALEIGH, NORTH CAROLINA**

DRAWN:	RR
DFT CHECK:	JAM
ENG CHECK:	JAT
APPROVAL:	JAM
DATE:	JANUARY 2011
SCALE:	AS SHOWN
REFERENCE DWGS:	

amec
AMEC Environment & Infrastructure, Inc.
4021 STRIP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
NC Engineering F-0653 NC Geology C-247

JOB NO.	DWG NO.
30720-8-3090	C-4