

SYMBOL LEGEND

- CONTROL POINT
- SURVEYED BENCHMARK
- AIR RELEASE VALVE
- ELECTRIC CONTROL BOX
- MONITORING WELL
- ELECTRIC METER
- FIRE HYDRANT
- FLAG POLE
- GATE POST
- GUARD RAIL POST
- GUY ANCHOR
- GUY POLE
- LIGHT POLE
- MAIL BOX
- POWER POLE/TELEPHONE POLE
- MANHOLE SANITARY, STORM
- SIGN
- SPIGOT
- SANITARY SEWER CLEAN OUT
- SANITARY SEWER LAMPHOLE
- WATER VALVE
- WATER METER
- TELEPHONE BOX
- TELEPHONE RISER
- GAS METER
- GAS VALVE
- BUSH/HEDGE
- SMALL CONIFEROUS TREE
- LARGE CONIFEROUS TREE
- SMALL DECIDUOUS TREE
- LARGE DECIDUOUS TREE
- Fence Line (All Types)
- OHE - Overhead Electric
- UGE - Underground Electric
- OHT - Overhead Telephone
- UGT - Underground Telephone
- CATV - Underground Cable Television
- G - Natural Gas Line
- FOC - Fiber Optic Cable
- W - Water Line
- Existing Storm Sewer
- Sanitary Sewer Line
- Proposed C.R.L.
- Floodplain Boundary

DRAWING REFERENCE LEGEND

- REFERS TO A PROFILE OR ELEVATION
- PROFILE NUMBER
- SHEET NUMBER ON WHICH IT IS LOCATED
- DETAIL DESCRIPTION
- SCALE: 1"=XX'



DATUM INFORMATION

HORIZONTAL DATUM

VERTICAL DATUM

NOTE:

ALL CONSTRUCTION TO BE IN STRICT ACCORDANCE WITH CURRENT CITY OF TULSA ENGINEERING SERVICES DEPARTMENT, STANDARDS AND SPECIFICATIONS.

THIS PROJECT COMPLIES WITH ALL OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ) REQUIREMENTS.

2009 OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION SHALL GOVERN. CITY OF TULSA ENGINEERING SERVICES DEPARTMENT CURRENT STANDARDS WILL BE USED AS APPLICABLE.

ENTIRE PROJECT IS WITHIN CORPORATE LIMITS OF CITY OF TULSA (COT)

UTILITY COORDINATION BOX

	NUMBER	NOTIFIED
WATER DESIGN	918-596-9580	
WASTEWATER DESIGN	918-596-9564	
TRANSPORTATION DESIGN	918-596-9636	
UTILITY COORDINATION - CHRIS KOVAC	918-596-9649	
STORMWATER DESIGN	918-596-9498	
PSO - ADAM FIELDS	877-250-6257	
ONG - JONATHON MEADOWS	918-831-8215	
AT&T - AL NICHOLS	918-596-4237	
COX COMMUNICATION - BRANDON WADE	918-286-4716	
MTTA - ERIC SMITH	918-830-0024	

CONSTRUCTION PLANS FOR

FEMA FLOOD DAMAGE PROJECT

PROJECT NO. 173120-T021-126335

FEMA PROJECT NO. 126335 2031F00005.STRMSEWER.FLOOD.5618

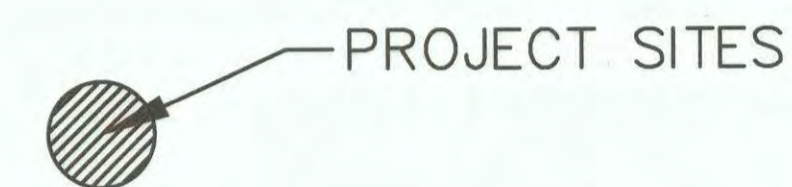
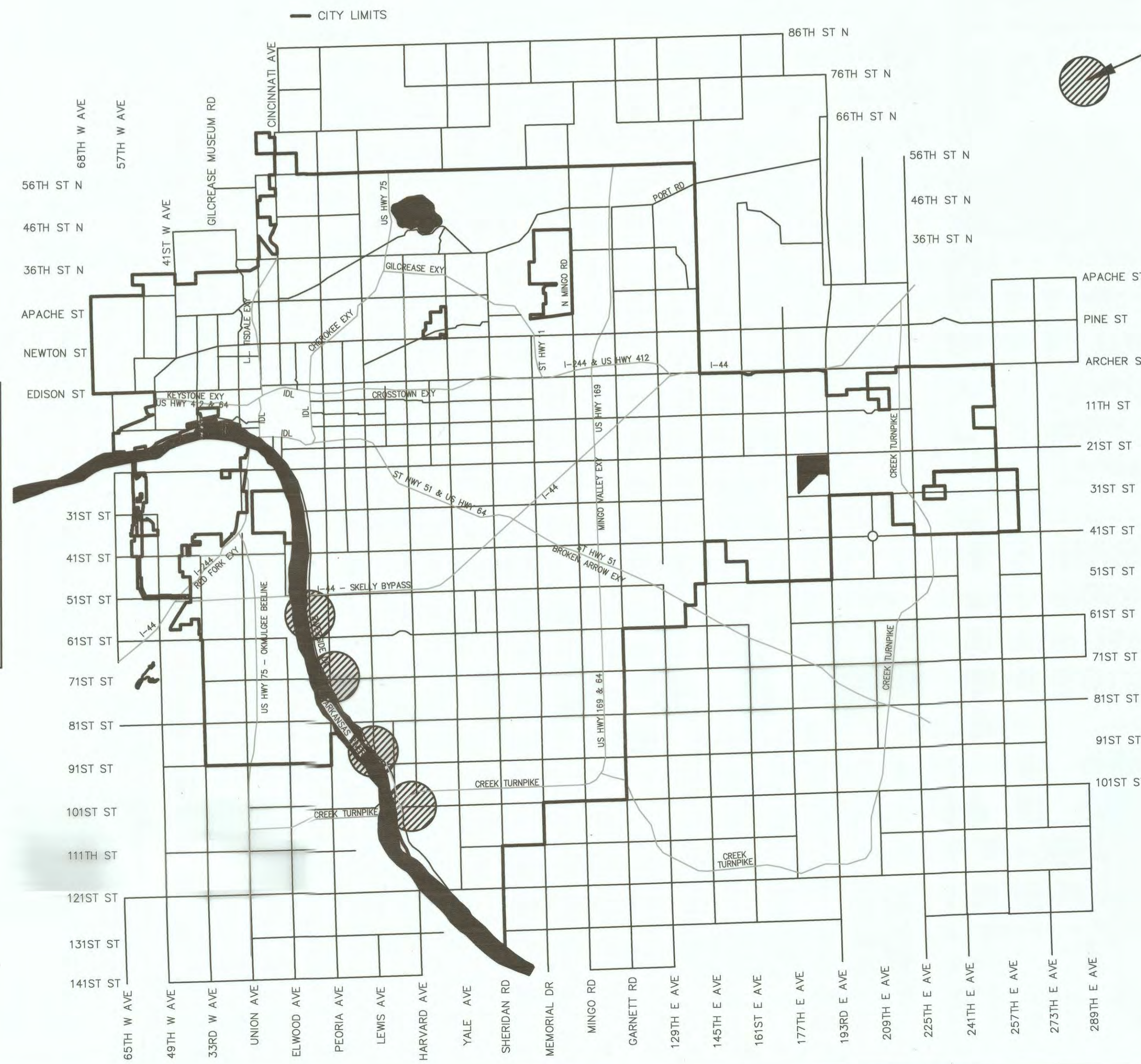
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

DRAWING INDEX

- 1 - COVER SHEET
- 2-3 - PAY ITEMS AND CONSTRUCTION NOTES
- 4 - D# 331099 STORMWATER MANAGEMENT PLAN
- 5 - SITE 168
- 6 - SITE 195
- 7 - SITE 386
- 8 - D# 331101 STORMWATER MANAGEMENT PLAN
- 9 - SITE 170
- 10 - SITE 181
- 11 - D# 331105 STORMWATER MANAGEMENT PLAN
- 12 - SITE 191
- 13 - SITE 192
- 14 - SITE 270
- 15 - D# 331109 STORMWATER MANAGEMENT PLAN
- 16 - SITE 178
- 17 - SITE 190
- 18 - D# 331110 STORMWATER MANAGEMENT PLAN
- 19 - SITE 179
- 20 - SITE 196
- 21 - SITE 390
- 22 - D# 331199 STORMWATER MANAGEMENT PLAN
- 23 - SITE 385
- 24 - SITE 389
- 25 - SITE 393
- 26 - SITE 403

APPLICABLE STANDARDS:
CITY OF TULSA:
SEE SHEET 2

ODOT:
SEE SHEET 2



APPROVED BY

[Signature]
CITY ENGINEER

01-25-21
DATE

ADVERTISEMENT DATE

Prepared By:
MESHEK & ASSOCIATES, L.L.C.

[Signature]
RYAN PIERCE, P.E. #27211
MESHEK & ASSOCIATES, L.L.C.



12/16/2020
DATE



MESHEK & ASSOCIATES, L.L.C.
C.A. 1487 EXPIRES 6/30/21
1437 S. BOULDER AVE, STE. 1550
TULSA, OK 74119
(PH) 918-392-5620
(FAX) 918-392-5621

PRINT DATE: 12/18/2020 M:\City_of_Tulsa\Projects\2017\TO-21_FEMA_Flood_Damage_Working\126335\Damage_331099.dwg

GENERAL (G1 - G10) (11/14/2018)

- G-1: LOCATIONS TO BE DETERMINED IN THE FIELD AND WORK TO BE PERFORMED AT THE DIRECTION OF THE FIELD ENGINEER. QUANTITY IS ESTIMATED AND MAY BE OMITTED IN ITS ENTIRETY.
G-2: MAXIMUM OVERALL DOLLAR AMOUNT AND SCHEDULE OF PAYMENTS SHALL BE IN ACCORDANCE SECTION 641 OF THE OKLAHOMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, CURRENT EDITION. EXCLUDES MOBILIZATION FOR WATERLINE WORK.
G-3: CONSTRUCTION STAKING SHALL INCLUDE SURVEYING AND THE FURNISHING, PLACING, AND MAINTAINING OF THE CONSTRUCTION LAYOUT STAKES NECESSARY FOR THE PROPER COMPLETION AND INSPECTION OF THE ENTIRE PROJECT.
G-4: THE COST TO REPLACE REMOVED OR DAMAGED SECTION CORNERS AND ALL OTHER PERMANENT RIGHT OF WAY MARKERS SHALL BE INCLUDED IN THE PRICE BID FOR THIS ITEM. NO ADDITIONAL PAYMENT WILL BE MADE.
G-5: CONTRACTOR SHALL REPAIR ANY IRRIGATION SYSTEMS DAMAGED OR REQUIRING RELOCATION DURING THE CONSTRUCTION OF THE PROJECT TO THE SATISFACTION OF THE PROPERTY OWNER AND CITY ARBORIST. COST SHALL BE INCLUDED IN THE PRICE BID.

PAY ITEM NOTES (11/14/2018)

EARTHWORK / EROSION CONTROL / SITE PREPARATION (E1 - E11)

- E-2: ALL EXISTING DRAINAGE STRUCTURES SHALL BE CLEANED AND CLEARED OF ALL SEDIMENTATION AND DEBRIS TO THE RIGHT OF WAY. COST OF CLEARING SHALL BE INCLUDED IN THE PRICE BID.
E-3: THE CONTRACTOR SHALL BE PAID FOR UNCLASSIFIED EXCAVATION ON THE BASIS OF PLAN QUANTITY. ANY ADDITIONAL EXCAVATION REQUIRED OR OVERRUN OF PLAN QUANTITY WILL BE PAID FOR ON THE BASIS OF UNIT PRICE BID FOR THE ITEM. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE SURVEY TO VERIFY ANY ADDITIONAL QUANTITIES.
E-4: UNCLASSIFIED EXCAVATION INCLUDES REMOVAL OF AGGREGATE BASE AND MODIFIED SUBGRADE UNDER EXISTING PAVEMENT TO BE REPAIRED.
E-5: THIS QUANTITY INCLUDES AN ADDITIONAL 10% ABOVE PLAN QUANTITY FOR UNDERCUTTING OF UNSUITABLE SUBGRADE MATERIAL OR ADDITIONAL PATCHING AS DIRECTED BY THE ENGINEER.
E-6: THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROL AND MAINTENANCE OF THE STORM WATER DRAINAGE FROM THE CONSTRUCTION SITE. STORM WATER PONDING ON THE CONSTRUCTION SITE THAT IS THE RESULT OF CONSTRUCTION WILL NOT BE ALLOWED. ALL COST ASSOCIATED WITH STORM WATER MANAGEMENT, AS WELL AS REMOVAL OF ALL SILT AND DEBRIS FROM ALL DRAINAGE STRUCTURES, STORM SEWER PIPES AND APPURTENANCES WITHIN THE PROJECT LIMITS AT END OF PROJECT, SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THIS ITEM.
E-7: EROSION PROTECTION SHALL BE PLACED AS FOLLOWS:
A) AROUND INLETS TO PREVENT INFLOW OF ERODED MATERIAL INTO STORM SEWER SYSTEM;
B) IN LOCATIONS THROUGHOUT PROJECT SITE, AS DETERMINED BY THE ENGINEER, TO PREVENT WASH OF ERODED MATERIAL ONTO ADJACENT PROPERTY;
C) FOR ENTIRE DURATION OF PROJECT, WITH MAINTENANCE AND REPLACEMENTS, AS DIRECTED BY THE ENGINEER;
D) WITH PERIODIC REMOVAL OF SEDIMENT IN ACCORDANCE WITH STORMWATER MANAGEMENT PLAN. ALL COST FOR ITEMS A-D ABOVE SHALL BE INCLUDED IN UNIT PRICE BID FOR THIS ITEM.
E-8: PRICE BID SHALL INCLUDE MAINTENANCE, SEDIMENT REMOVAL, DISPOSAL, AND REMOVAL OF FILTERS AT PROJECT COMPLETION.
E-10: ESTIMATED QUANTITY IS BASED ON SODDING OF ALL DISTURBED AREAS OUTSIDE THE FINAL PAVING LIMITS AND WITHIN THE FINAL GRADING LIMITS AS INDICATED BY THE TOP-OF-CUT/TOE-OF-SLOPE LINE ON THE PLANS (EXCLUDING SURFACES OF STRUCTURES, FIXTURES AND APPURTENANCES). SOD SHALL BE OF LIKE-KIND TO EXISTING SOD. PRICE BID INCLUDES PLACEMENT AND COMPACTION OF SUITABLE BACKFILL. ANY EXISTING GRASSED AREAS BEYOND THE ABOVE STATED LIMITS THAT ARE DAMAGED AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE RESODDED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S SOLE EXPENSE.
E-11: COST OF WATERING AND FERTILIZING SHALL BE INCLUDED. FERTILIZERS SHALL BE 10-20-10 AND SHALL BE APPLIED AT THE RATE OF 1.5 LBS PER 10 SQ YDS. FERTILIZER SHALL BE APPLIED PER SECTION 230.04H OF ODOT STANDARD SPECIFICATIONS. WATERING SHALL BE APPLIED AS NECESSARY UNTIL VEGETATION IS ESTABLISHED OR UNTIL THE WORK IS ACCEPTED AS COMPLETE.

SURFACING / STRUCTURES (S1 - S21)

- S-1: TYPE A AGGREGATE BASE WAS ESTIMATED TO BE USED AS THE BASE MATERIAL FOR 90% OF THE PATCHING. QUICK SET FLOWABLE FILL WAS ESTIMATED TO BE USED AS THE BASE MATERIAL FOR 10% OF THE PATCHING. ACTUAL QUANTITIES TO BE DETERMINED BY THE ENGINEER.
S-2: INCLUDES COMPACTION OF AGGREGATE TO 98% AASHTO T180 MODIFIED PROCTOR.
S-3: SEPARATOR FABRIC SHALL BE USED AT ALL PAVEMENT PATCHES AND RECONSTRUCTION SECTIONS. THE SEPARATOR FABRIC SHALL BE CUT AND OVERLAPPED A MINIMUM OF 2 FT AT ALL EDGES OF THE REPAIR.
S-4: FABRIC REINFORCEMENT SHALL BE USED ON OVERLAY AREAS. THE COST OF BITUMINOUS BINDER FOR FABRIC REINFORCEMENT SHALL BE INCLUDED IN THE UNIT COST OF THIS PAY ITEM. THE BITUMINOUS BINDER SHALL MEET ODOT STANDARD SPECIFICATIONS AND THE RECOMMENDATIONS OF THE FABRIC REINFORCEMENT MANUFACTURER.
S-5: THE COST OF TACK COAT, EDGE JOINT SEAL MATERIAL AND SCREENINGS FOR BLOTTING, AND ALL LABOR ASSOCIATED WITH THESE ITEMS, SHALL BE INCLUDED IN ASPHALT CONCRETE.
S-6: ESTIMATED AT 112 LBS PER SQ YD PER 1 INCH THICK.
S-7: ODOT PAY FACTOR FOR AVERAGE LOT DENSITY SHALL NOT BE USED FOR THIS PROJECT. FAILURE TO REACH AVERAGE LOT DENSITY OF 92%-97% WILL RESULT IN REJECTION OF WORK.
S-8: A HIGHER GRADE OF ASPHALT BINDER THAN IS INDICATED ON THE PLANS MAY BE USED, BUT AT NO ADDITIONAL COST TO THE CITY.

Table with columns: BINDER GRADE, MESALS, ADT, NOTES. Includes rows for PG 84-22 OK, PG 70-28 OK, PG 76-28 OK, PG 76-28 E and notes regarding use in high volume areas and design ESALS.

- S-11: CONCRETE PAVEMENT SHALL BE COMPLETE IN PLACE. NO PARTIAL OR FINAL PAYMENT SHALL BE MADE UNTIL PAVEMENT HAS BEEN SAWED AND SEALED. ANY SECTIONS OF PAVEMENT WITH UNAPPROVED DEVIATIONS FROM THE JOINT LAYOUT PROVIDED IN THE PLANS MAY BE REJECTED AT THE DISCRETION OF THE ENGINEER.
S-12: THE USE OF FLY-ASH IN CONCRETE IS PROHIBITED.
S-13: INCLUDES ALL COST OF SAWED JOINTS AND SEALING OF ALL JOINTS INCLUDING LONGITUDINAL JOINTS.

- S-15: THIS ITEM SHALL BE MEASURED AS THE ACTUAL AMOUNT OF CURB AND/OR GUTTER INSTALLED. NO PAYMENT WILL BE MADE FOR CURB AND/OR GUTTER THROUGH DRIVEWAYS AND INLETS.
S-19: STANDARD BEDDING MATERIAL TO BE TYPE A AGGREGATE BASE COMPACTED TO 95% STANDARD PROCTOR DENSITY (AASHTO T-99). TYPE A AGGREGATE BASE IN THE ROADWAY SHALL BE COMPACTED TO 98% MODIFIED PROCTOR (AASHTO T-180).
S-20: QUANTITY SHALL BE MEASURED AND PAID FOR AS FOLLOWS:
A. FOR ANY CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BOX (RCB) LARGER THAN 4' BY 4', USE NEAT LINES THAT ARE 4" BELOW THE BOTTOM OF THE RCB AND 4'-0" BEYOND THE OUTSIDE WALL.
B. UNDER ROADWAY PAY QUANTITY SHALL BE PAID FOR FROM THE BOTTOM OF TRENCH, AS DESCRIBED, TO THE BOTTOM OF ROADWAY AGGREGATE BASE.
S-21: THIS PAY ITEM INCLUDES THE FOLLOWING:
A. SAW CUTTING
B. REMOVAL OF THE EXISTING CONCRETE AND/OR ASPHALTIC CONCRETE ROADWAY (SY)
C. TYPE S4 ASPHALTIC CONCRETE, H.E.S. CONCRETE, AND REINFORCING STEEL COMPLETE AND IN PLACE PER DETAIL
D. SEALING OF EDGES AND TACK COAT

DOES NOT INCLUDE THE FOLLOWING:

- A. UNCLASSIFIED EXCAVATION
B. SUBGRADE METHOD B (SY)
C. SEPARATOR FABRIC (SY)
D. AGGREGATE BASE (TYPE A)
E. ASPHALT CONCRETE LEVELING OR SURFACE COURSE

REMOVAL / ADJUSTMENT (R1 - R6)

- R-1: WASTE MATERIAL TO BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE IN A MANNER APPROVED BY THE ENGINEER.
R-2: ALL SAW CUTTING AND REMOVAL SHALL BE INCLUDED IN THE COST OF THE ITEM TO BE ADJUSTED, REMOVED, REPAIRED, OR REPLACED.
R-3: PAY ITEM INCLUDES REMOVAL OF ALL STRUCTURES AND OBSTRUCTIONS WITHIN PROJECT LIMITS NOT SPECIFIED BY OTHER ITEMS OF WORK.
R-4: INCLUDES SAWING NOT INCLUDED IN OTHER ITEMS OF WORK.
R-5: ITEMS TO BE REMOVED MAY OR MAY NOT BE PRESENT IN ANY SPECIFIED CONDITION.
R-6: SHALL INCLUDE ALL COSTS ASSOCIATED WITH PLUGGING/ PATCHING HOLES IN EXISTING STRUCTURES TO REMAIN.

DRAINAGE (D1 - D15)

- D-1: THIS ITEM SHALL INCLUDE THE COST OF NEW MANHOLE FRAME AND COVER PER CITY OF TULSA STD NOS.752, 753, 754, 761, 762, 769A, 769B AND 775.
D-2: THE TOTAL COST FOR RUBBERIZED ASPHALT AND/OR SILICONE AT MANHOLES, VALVE BOXES, INLETS, AND INLET APRONS, SHALL BE INCLUDED.
D-3: NO MASONRY STRUCTURES SHALL BE CONSTRUCTED WITHIN THE RIGHT OF WAY.
D-7: INCLUDES THE COST REQUIRED TO MAKE CONNECTION AND REMOVAL OF EXISTING INLETS. THE COST OF PC CONCRETE CURB AND GUTTER THROUGH THE INLET, 5' EACH SIDE OF THE INLET, AND THE PC CONCRETE INLET APRON SHALL BE INCLUDED. GRATE AND FLOWLINE ELEVATIONS SHALL MATCH EXISTING CONDITIONS UNLESS OTHERWISE NOTED IN THE PLANS.
D-8: QUICKSET FLOWABLE FILL SHALL BE USED TO BACKFILL AROUND STREET CURB INLETS AND REINFORCED CONCRETE PIPE, AS NEEDED, AT THE DIRECTION OF THE ENGINEER.
D-9: ALL INLETS, COMPLETE IN PLACE, SHALL BE CAST IN PLACE CONCRETE OR PRECAST CONCRETE. THIS PAY ITEM INCLUDES ANY INLET FRAME(S), GRATE(S), HOOD(S) AND CONCRETE REQUIRED FOR COMPLETE INSTALLATION OF STRUCTURE PER THE CONSTRUCTION DOCUMENTS.
D-10: ADDITIONAL DEPTH QUANTITIES SHALL BE MEASURED AND PAID FOR ALL INLETS EXCEEDING STANDARD DEPTH. STANDARD DEPTHS ARE AS FOLLOWS:
A) CAST IRON CURB INLET: 3.71 VF, MEASURED FROM CENTER ELEVATION OF LOWEST CAST IRON CURB TO FLOWLINE OF OUTLET PIPE.
B) RECESSED CURB INLET: 3.00 VF, MEASURED FROM TOP OF SLAB TO FLOWLINE OF OUTLET PIPE.
C) STANDARD DROP INLET: SEE STANDARD DETAILS 770, 771, 772 AND 773 - VARIES BASED ON PIPE SIZE, MEASURED FROM LOWEST ELEVATION OF INFLOW APRON TO FLOWLINE OF OUTLET PIPE.
D-12: REINFORCED CONCRETE PIPE TO BE CLASS III. ALL REINFORCED CONCRETE PIPE AND MANHOLES TO BE SUPPLIED WITH AN OMNI-FLEX JOINT GASKET OR APPROVED EQUAL. MASTIC JOINT SEALANT SHALL NOT BE ALLOWED.
D-13: THIS PAY ITEM SHALL BE COMPLETE IN PLACE AND SHALL INCLUDE ALL PIPE, STANDARD BEDDING MATERIAL AND TRENCH EXCAVATION, JOINT GASKETS AND ALL OTHER INCIDENTALS. NO ADDITIONAL COST WILL BE MADE. PRIOR TO ACCEPTANCE, INTERIOR OF PIPE SHALL BE INSPECTED FOR DEFECTS USING SELF-PROPELLED MOBILE CLOSED-CIRCUIT CAMERA SYSTEM.
D-14: WHERE CORRUGATED POLYPROPYLENE PIPE CONNECTS TO REINFORCED CONCRETE STRUCTURES, CONTRACTOR SHALL ENSURE CONNECTIONS ARE WATER-TIGHT AND FULLY SEALED AGAINST SOIL INFILTRATION.
D-15: WHERE QUICKSET FLOWABLE FILL IS USED TO BACKFILL AROUND CORRUGATED POLYPROPYLENE PIPE, THE CONTRACTOR SHALL UTILIZE AN ANCHORING SYSTEM APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. ALL COSTS FOR LABOR, EQUIPMENT AND MATERIALS REQUIRED TO IMPLEMENT APPROVED ANCHORING SYSTEM INCLUDED IN PRICE BID FOR CORRUGATED POLYPROPYLENE PIPE.

TRAFFIC (T1 - T7)

- T-1: ALL TRAFFIC MATERIALS REMOVED SHALL BE HANDLED PER COT SPECIFICATION 625 REMOVAL OF TRAFFIC ITEMS.
T-2: REFLECTORIZED SHEETING ON SIGNS AND BARRICADES SHALL BE OF A CUBIC PRISMATIC TYPE AND SHALL MEET THE SPECIFICATIONS ESTABLISHED FOR ASTM D 4956-01 TYPE IX RETROREFLECTIVE SHEETING. REFLECTORIZED SHEETING ON D5-01 TYPE III RETROREFLECTIVE SHEET BE OF A HIGH-INTENSITY TYPE AND SHALL MEET THE SPECIFICATIONS ESTABLISHED FOR ASTM D 4956-01.
T-3: ALL PLASTIC PAVEMENT MARKINGS SHALL BE EITHER:
EXTRUDED-APPLIED THERMOPLASTIC (USE ON ASPHALT PAVEMENT). THERMOPLASTIC PAVEMENT MARKING SHALL ONLY BE APPLIED WHEN THE SURFACE TEMPERATURE EXCEEDS 55°F FOR ALL OF THE SIX HOURS PRIOR TO INSTALLATION AND MAXIMUM WIND GUSTS ARE BELOW 15 MPH AT THE TIME OF APPLICATION. PRICE BID TO INCLUDE FLEX TABS OR LIKE KIND FOR POST CONSTRUCTION LANE MARKING/SEPARATION. MECHANICALLY APPLIED PREFORMED PLASTIC TAPE ("COLD TAPE") WILL NOT BE ACCEPTED.
T-7: PRICE BID FOR THIS ITEM INCLUDES INSTALLATION, MAINTENANCE AND SUBSEQUENT REMOVAL OF PROJECT SIGN.

SPECIAL PAY ITEM NOTES:

- 1: THIS PAY ITEM SHALL INCLUDE THE COST OF REMOVAL OF EQUIVALENT PIPE SIZE DIAMETER AND LINEAL FOOT.

APPLICABLE CITY OF TULSA STANDARD DRAWINGS AND DETAILS REFERENCES:

- PAVEMENT CUTS FOR UTILITIES
- STD NO. 713 - STANDARD DETAIL FOR PAVEMENT REMOVAL AND REPLACEMENT
- STD NO. 714 - STANDARD DETAIL FOR PAVEMENT CUTS

- ASPHALT PAVEMENT - DETAILS
- STD NO. 730 - STANDARD ASPHALT PAVEMENT CUT AND REPAIR

- P.C. CONCRETE PAVEMENT - CURB DETAILS
- STD NO. 727 - CONCRETE PAVEMENT STANDARD DETAILS FOR RESIDENTIAL AND COLLECTOR STREETS

- STORM PIPES, DRAINAGE INLETS, GRATES, AND HOODS
- STD NO. 751 - STANDARD PIPE BEDDING DETAIL FOR STORM SEWER
- STD NO. 753 - FRAME AND LID FOR 4' AND 5' I.D. STORMWATER MANHOLE
- STD NO. 754 - FRAME AND LID FOR 6' AND 8' I.D. STORMWATER MANHOLE AND JUNCTION BOXES
- STD NO. 775 - STANDARD PRECAST CONCRETE STORMWATER MANHOLE

APPLICABLE ODOT STANDARDS:

- SMD-3-2 - STANDARD MEDIAN DRAINS

ROADWAY BASE BID table with columns: ITEM NO., SPEC NO., DESCRIPTION, NOTES, UNIT, QUANTITY. Lists items 1 through 22 including borrow, sodding, reinforcement, concrete, and traffic control items.



GENERAL CONSTRUCTION NOTES section containing project information: PROJECT #173120-T021-126335, FEMA PROJECT NO. 126335, CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT, and Meshek & Associates, L.L.C. contact info. Includes a revision table and an approval signature.

PRINT DATE: 12/18/2020 M:\City_of_Tulsa\17TUL03_On_Call_Stormwater_Services_2017\TO_21_FEMA_Flood_Damage_Design_Working\126335\Damage_331099\Damage_331099.dwg

DI# 331099 - SITE 168					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY	37.00
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	23.00
326(B)	0536	GEOGRID REINFORCEMENT		SY	23.00
601(B)	0536	TYPE I-A PLAIN RIPRAP		CY	15.00
613(A)	0491	18" R.C.PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	20.00
613(L)	5726	18" PREFAB. CULVERT END SECTION, ROUND		EA	1.00

DI# 331099 - SITE 195					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
SPECIAL		RESET HEADWALL		EA	1.00

DI# 331099 - SITE 386					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	28.00
613(A)	0492	24" R.C.PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	50.00

DI# 331101 - SITE 170					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY	111.00
601(H)	1395	TYPE IV GROUTED RIPRAP		CY	44.00

DI# 331101 - SITE 181					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY	148.00
509(D)	0325	CLASS C CONCRETE	S-12	CY	2.00

DI# 331105 - SITE 191					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	7.00
613(A)	0494	36" R.C.PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	10.00

DI# 331105 - SITE 192					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806	SOLID SLAB SODDING	E-10, 11	SY	11.00
609	0200	CONCRETE CURB (4" BARRIER- INTEGRAL)	S-15	LF	11.00
613(A)	0491	18" R.C.PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	55.00
619(B)	4791	REMOVAL OF CURB	R-1, 2, 5, 6	LF	11.00
SPECIAL		TYPE I-A P.C PATCH (NON-ARTERIAL)	S-21	SY	13.00

DI# 331105 - SITE 270					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	184	UNCLASSIFIED BORROW		CY	78.00
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	117.00

DI# 331109 - SITE 178					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY	178.00
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	100.00
326(B)	0100	GEOGRID REINFORCEMENT		SY	100.00
601(B)	0536	TYPE I-A PLAIN RIPRAP		CY	26.00
613(A)	0493	30" R.C.PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	12.00

DI# 331109 - SITE 190					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY	111.00
221(I)	0525	REMOVAL OF SEDIMENT	E-7	CY	37.00

DI# 331110 - SITE 179					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY	2.00
601(B)	0536	TYPE I-A PLAIN RIPRAP		CY	30.00
601(H)	1395	TYPE IV GROUTED RIPRAP		CY	4.00
SPECIAL		INTERNAL BAND FOR 54" RCP JOINT SEAL		EA	1.00

DI# 331110 - SITE 196					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY	22.00
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	50.00
326(B)	0100	GEOGRID REINFORCEMENT		SY	50.00
601(B)	0536	TYPE I-A PLAIN RIPRAP		CY	11.00
601(H)	1395	TYPE IV GROUTED RIPRAP		CY	11.00
SPECIAL		RESET RCP END SECTION		EA	1.00

DI# 331110 - SITE 390					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	46.00
613(A)	0492	24" R.C.PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	82.00

DI# 331199 - SITE 385					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
SPECIAL		INTERNAL BAND FOR 54" RCP JOINT SEAL		EA	6.00

DI# 331199 - SITE 389					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	7.00
613(A)	0496	48" R.C.PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	8.00
SPECIAL		RESET RCP END SECTION		EA	1.00

DI# 331199 - SITE 393					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
SPECIAL		EXTERNAL BAND FOR 24" RCP JOINT SEAL		EA	1.00

DI# 331199 - SITE 403					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	20.00
613(A)	0491	18" R.C.PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	40.00

APPLICABLE CITY OF TULSA STANDARD DRAWINGS AND DETAILS REFERENCES:

- PROJECT SIGN
 - STD NO. 102 - PROJECT SIGN
- EROSION CONTROL METHODS
 - STD NO. 126 - SILT FENCE AND CONSTRUCTION ENTRANCE
 - STD NO. 305 - BEDDING MATERIAL SEMI-RIGID PIPE
- PAVEMENT CUTS FOR UTILITIES
 - STD NO. 713 - STANDARD DETAIL FOR PAVEMENT REMOVAL AND REPLACEMENT
 - STD NO. 714 - STANDARD DETAIL FOR PAVEMENT CUTS
 - STD NO. 725 - STANDARD PAVEMENT PATCH AND REPAIR
- ASPHALT PAVEMENT - DETAILS
 - STD NO. 726 - ASPHALT PAVEMENT STANDARD DETAILS
- STORM PIPES, DRAINAGE INLETS, GRATES, AND HOODS
 - STD NO. 751 - STANDARD PIPE BEDDING DETAIL FOR STORM SEWER
 - STD NO. 755 - CONFIGURATIONS OF CAST IRON CURB INLETS
 - STD NO. 764 - STANDARD REINFORCED CONCRETE STORM WATER INLETS
 - STD NO. 765 - STANDARD STORM WATER FRAMES
 - STD NO. 766 - STANDARD STORM WATER GRATES

APPLICABLE ODOT STANDARDS:

- DC-4-0 - PAVED DITCHES AND FLUMES
- SSS-1-0 - SOLID SLAB SODDING
- TSC2-3-0 - TEMPORARY SEDIMENT CONTROLS
- TCS8-1-0 - CONSTRUCTION SIGNS
- TCS9-1-1 - TRAFFIC CONTROL STANDARD CONSTRUCTION SIGNS



**GENERAL CONSTRUCTION NOTES
& PAY ITEMS**
PROJECT #173120-T021-126335
FEMA PROJECT NO. 126335
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			N/A	DESIGNED	RJP	05/20	 CITY ENGINEER
				SURVEY	N/A	N/A	
			PROFILE SCALE:	PROJ. MGR.	05/21		
			HORIZONTAL:	LEAD ENGR.	05/21		
				FIELD MGR.	05/21		
			VERTICAL:	RECOMMENDED	05/21		
				DESIGN MANAGER	05/21		
			FILE:	DRAWING:			DATE: 1-28-21
			ATLAS PAGE NO. 316, 371, 474, 565, 614, 1138, 1141				SHEET 3 OF 26 SHEETS

STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: DAMAGE INVENTORY #331099 SITES ALONG THE EAST SIDE OF THE ARKANSAS RIVER INCLUDING: SITE 168, SITE 195, AND SITE 386. ALL APPROXIMATELY LOCATED IN THE SE/4 OF SECTION 1 OF OK T18N R12E. WITHIN THE CITY LIMITS OF TULSA, OKLAHOMA.

PROJECT DESCRIPTION: _____
SITE 168: EROSION CONTROL, REPLACE PIPE AND CULVERT END SECTION
SITE 195: RESET HEADWALL
SITE 386: REPLACE PIPE

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:
1. TEMPORARY EROSION CONTROL.
2. PERMANENT EROSION CONTROL.

SOIL TYPE: LOAMY FINE SAND, STRATIFIED FINE SAND TO LOAM

TOTAL AREA OF THE CONSTRUCTION SITE: LESS THAN 1 ACRE COMBINED

ESTIMATED AREA TO BE DISTURBED: LESS THAN 1 ACRE COMBINED

OFFSITE AREA TO BE DISTURBED: _____
 (FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: 0.09 ACRES

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: 0.18 ACRES

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: X.X

LATITUDE & LONGITUDE OF CENTER OF PROJECT: N36° 03' 52.6", W95° 58' 47.2"
N36° 04' 02.2", W95° 58' 52.3" N36° 04' 02.7", W95° 58' 52.0"

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: ARKANSAS RIVER

SENSITIVE WATERS OR WATERSHEDS: YES NO

303 IMPAIRED WATERS: YES NO

IF YES, LIST IMPAIRMENT: ENTEROCOCCUS

LOCATED IN A TMDL: YES NO

LAKE THUNDERBIRD TMDL: YES NO

MS4 ENTITY: YES NO

IF YES, LOCATION: TULSA COUNTY

NOTE:
 THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- TEMPORARY SEEDING
- PERMANENT SODDING, SPRIGGING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION BLANKET
- PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

- STABILIZED CONSTRUCTION EXIT
- TEMPORARY SILT FENCE
- TEMPORARY SILT DIKES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ROCK FILTER DAMS
- TEMPORARY SLOPE DRAIN
- PAVED DITCH W/ DITCH LINER PROTECTION
- TEMPORARY DIVERSION CHANNELS
- TEMPORARY SEDIMENT BASINS
- TEMPORARY SEDIMENT TRAPS
- TEMPORARY SEDIMENT FILTERS
- TEMPORARY SEDIMENT REMOVAL
- RIP RAP
- INLET SEDIMENT FILTER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBAG BERMES
- TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGEWAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:

A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEANING UP
- 104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
- 104.13 ENVIRONMENTAL PROTECTION
- 106.08 STORAGE AND HANDLING OF MATERIAL
- 107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
- 107.20 STORM WATER MANAGEMENT
 - 220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
 - 221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:

"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.

STORM WATER MANAGEMENT PLAN

PROJECT #173120-T021-126335

DAMAGE #331099

**CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT**

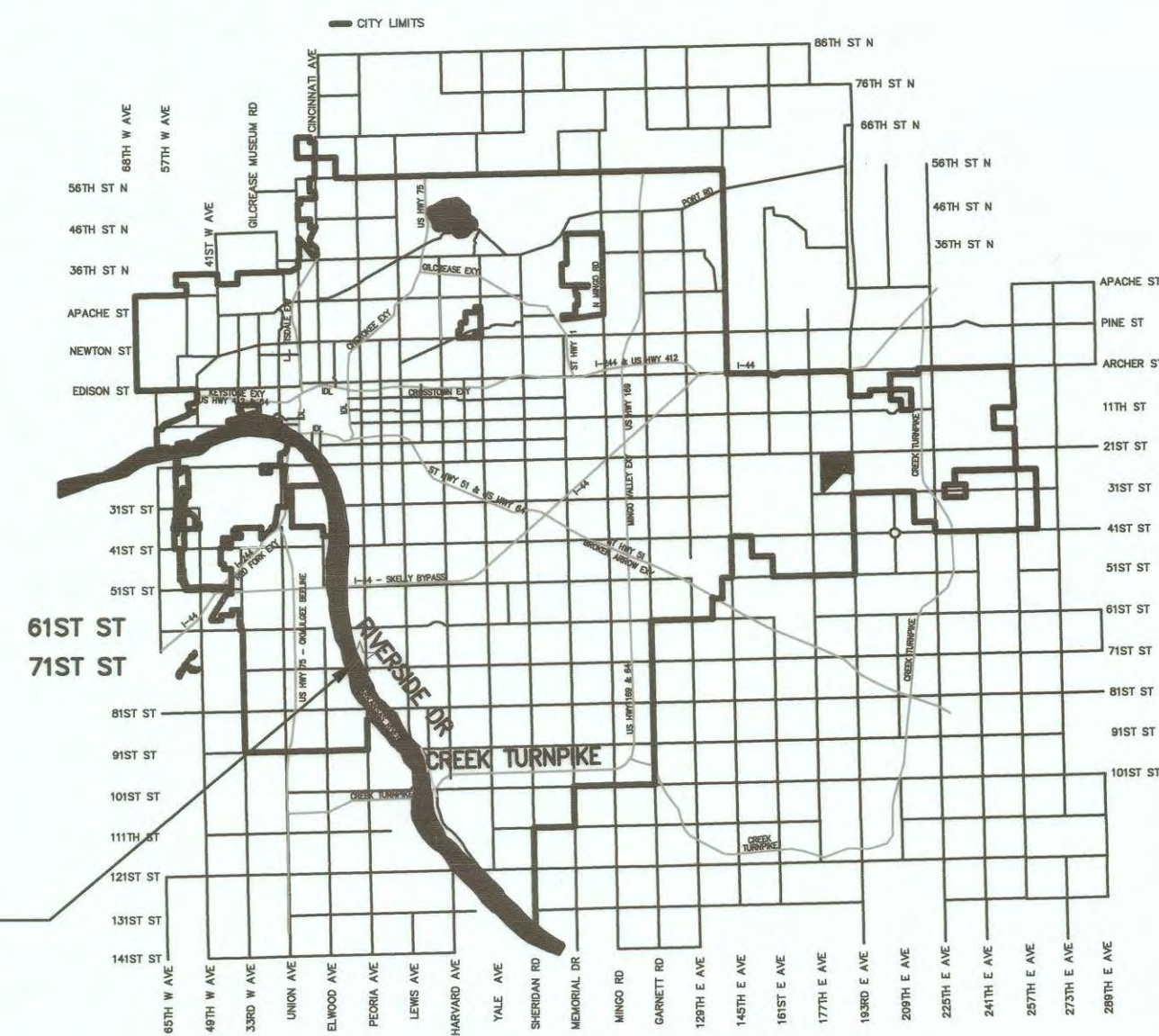
PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620



REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			N/A	DESIGNED	RJP	05/20	 CITY ENGINEER DATE: <u>1.08.21</u> SHEET 4 OF 26 SHEETS
			N/A	SURVEY	N/A	N/A	
			PROFILE SCALE	PROJ. MGR.	CH	1/21	
			HORIZONTAL:	LEAD ENGR.	CH	1/21	
			VERTICAL:	FIELD MGR.	CH	1/21	
			N/A	RECOMMENDED	CH	1/21	
			N/A	DESIGN MANAGER	CH	1/21	
			FILE:	DRAWING:			
			ATLAS PAGE NO. 565				

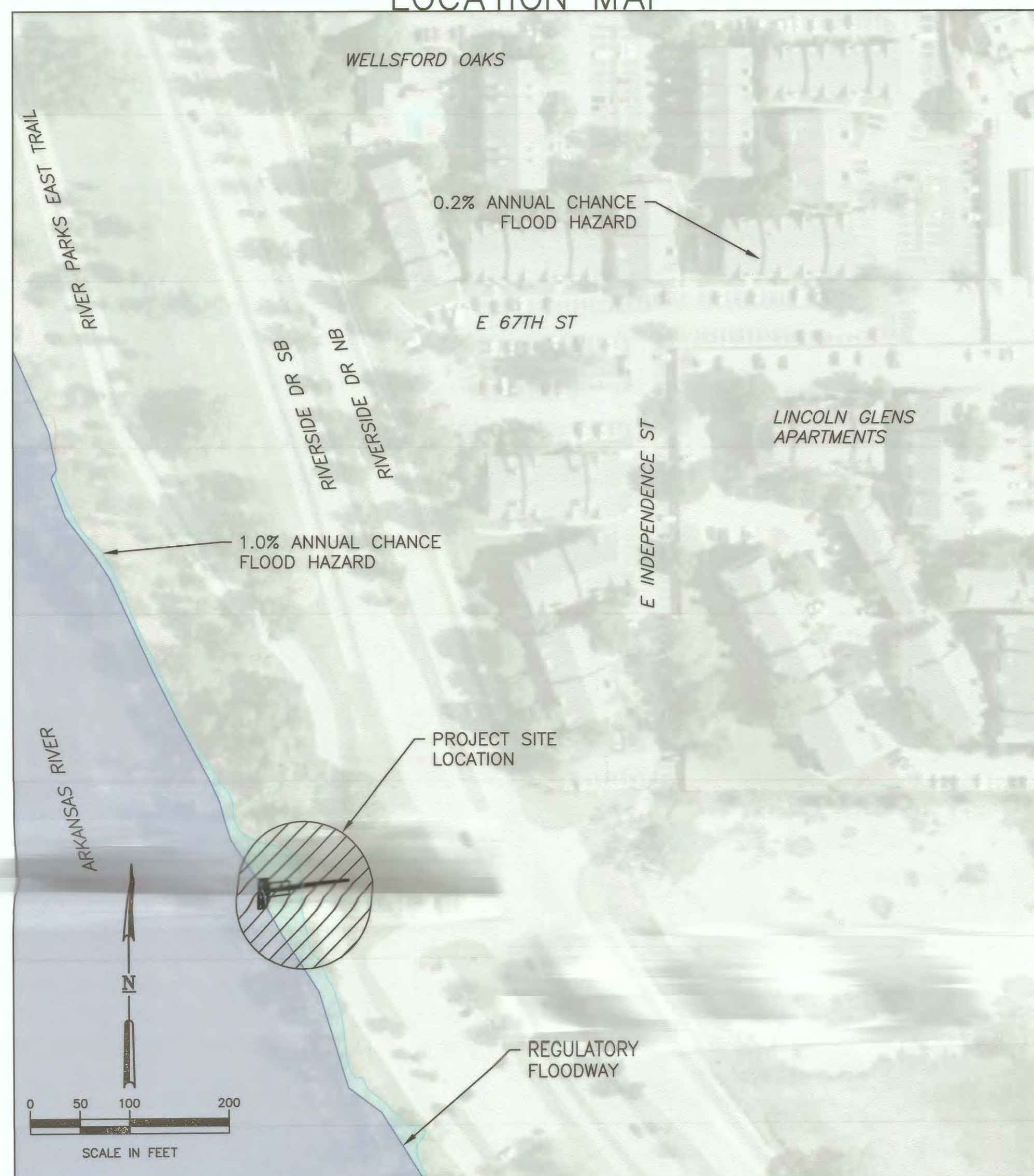
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CITY OF TULSA, OKLAHOMA



★ SITE LOCATION
SITE 168

LOCATION MAP



SITE 168 - (36.06460, -95.97980)

- * BACKFILL - 37 CY OF UNCLASSIFIED FILL, 20 FT LONG X 10 FT WIDE X 5 FT DEEP, SURFACE WATER FLOODING ERODED SOIL.
- * STORM DRAIN, RCP - 20 FT LONG X 18 IN IN DIAMETER, SURFACE WATER FLOODING CAUSED PIPE SEPARATIONS.
- * STORM DRAIN, RCP END SECTION - 6 FT LONG X 18 IN IN DIAMETER, SURFACE WATER FLOODING CAUSED SECTION DETACHMENT
- * STONE - 15 CY OF RIP-RAP, 20 FT LONG X 10 FT WIDE X 2 FT DEEP, SURFACE WATER FLOODING DISPLACED STONE.
- * LANDSCAPING FABRIC - 200 SF OF GEOTEXTILE FABRIC, 20 FT LONG X 10 FT WIDE, SURFACE WATER FLOODING RIPPED COMPONENT.

DI# 331099 - SITE 168					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY	37.00
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	23.00
326(B)	0536	GEOGRID REINFORCEMENT		SY	23.00
601(B)	0536	TYPE I-A PLAIN RIPRAP		CY	15.00
613(A)	0491	18" R.C. PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	20.00
613(L)	5726	18" PREFAB. CULVERT END SECTION, ROUND		EA	1.00

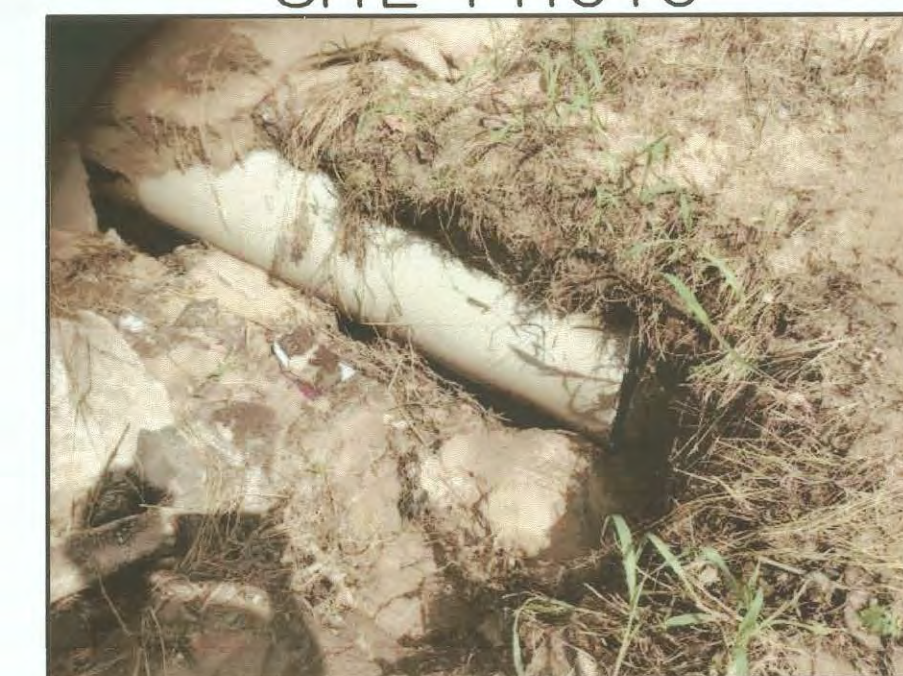
SITE 168



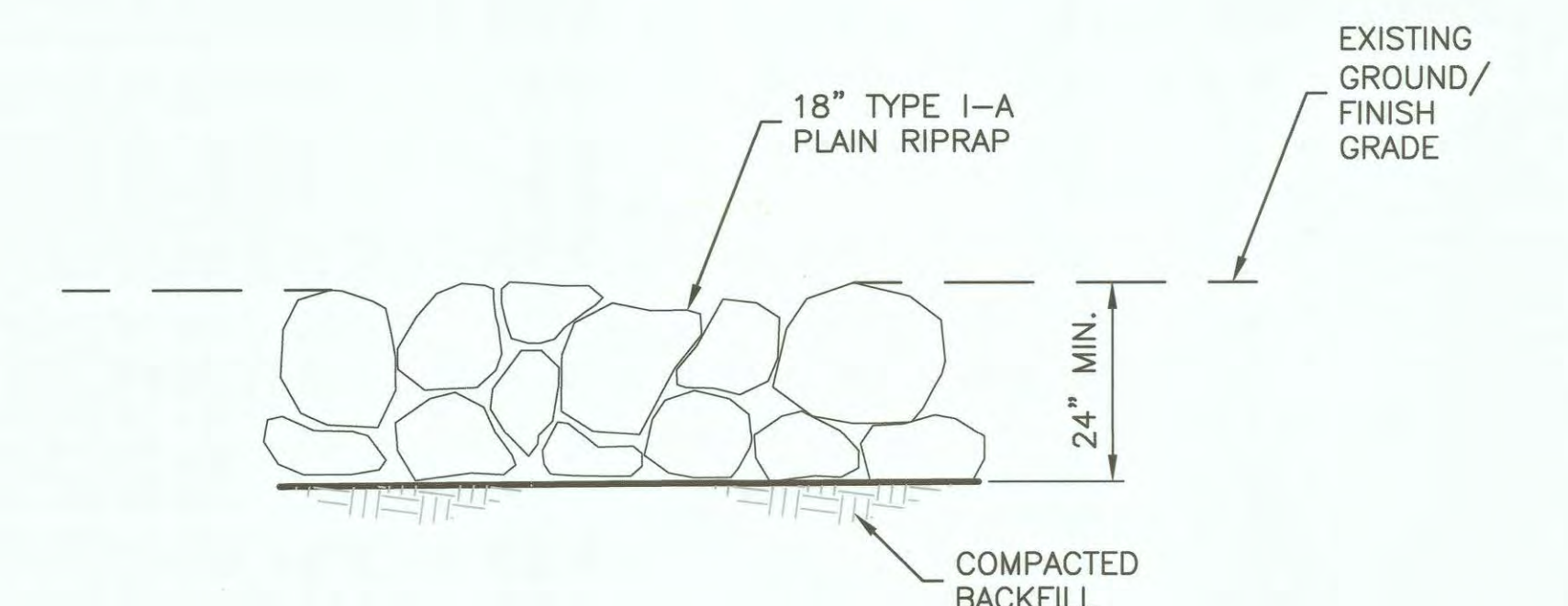
PROJECT NOTES:

1. SITE ESTIMATES FOR WORK TO BE COMPLETED WERE GENERATED USING RS MEANS.
2. ALL BORROW OR FILL MATERIAL MUST COME FROM PRE-EXISTING STOCKPILES, MATERIAL RECLAIMED FROM MAINTAINED ROADSIDE DITCHES (PROVIDED THE DESIGNED WIDTH OR DEPTH OF THE DITCH IS NOT INCREASED), OR COMMERCIALLY PROCURED MATERIAL FROM A SOURCE EXISTING PRIOR TO THE EVENT. FOR ANY FEMA-FUNDED PROJECT REQUIRING THE USE OF A NON-COMMERCIAL SOURCE OR A COMMERCIAL SOURCE THAT WAS NOT PERMITTED TO OPERATE PRIOR TO THE EVENT (E.G. A NEW PIT, AGRICULTURAL FIELDS, ROAD ROWS, ETC.) IN WHOLE OR IN PART, REGARDLESS OF COST, THE APPLICANT MUST NOTIFY FEMA AND THE RECIPIENT PRIOR TO EXTRACTING MATERIAL. FEMA MUST REVIEW THE SOURCE FOR PRESERVATION LAWS AND EXECUTIVE ORDERS PRIOR TO A SUBRECIPIENT OR THEIR CONTRACTOR COMMENCING BORROW EXTRACTION. CONSULTATION AND REGULATORY PERMITTING MAY BE REQUIRED. NONCOMPLIANCE WITH THIS REQUIREMENT MAY JEOPARDIZE RECEIPT OF FEDERAL FUNDING. DOCUMENTATION OF BORROW SOURCES UTILIZED IS REQUIRED AT CLOSEOUT.
3. ALL EXCAVATION DIMENSIONS ARE SHOWN IN THE DDD.

SITE PHOTO



SITE PHOTO

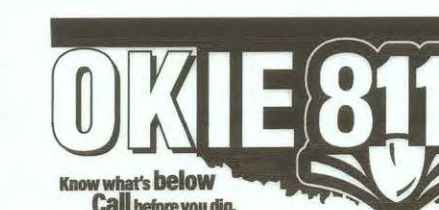


① RIPRAP INSTALLATION
SCALE: NONE



LEGEND

FEMA SITE AREA



FEMA SITE 168

PROJECT #173120-T021-126335

DAMAGE #331099

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

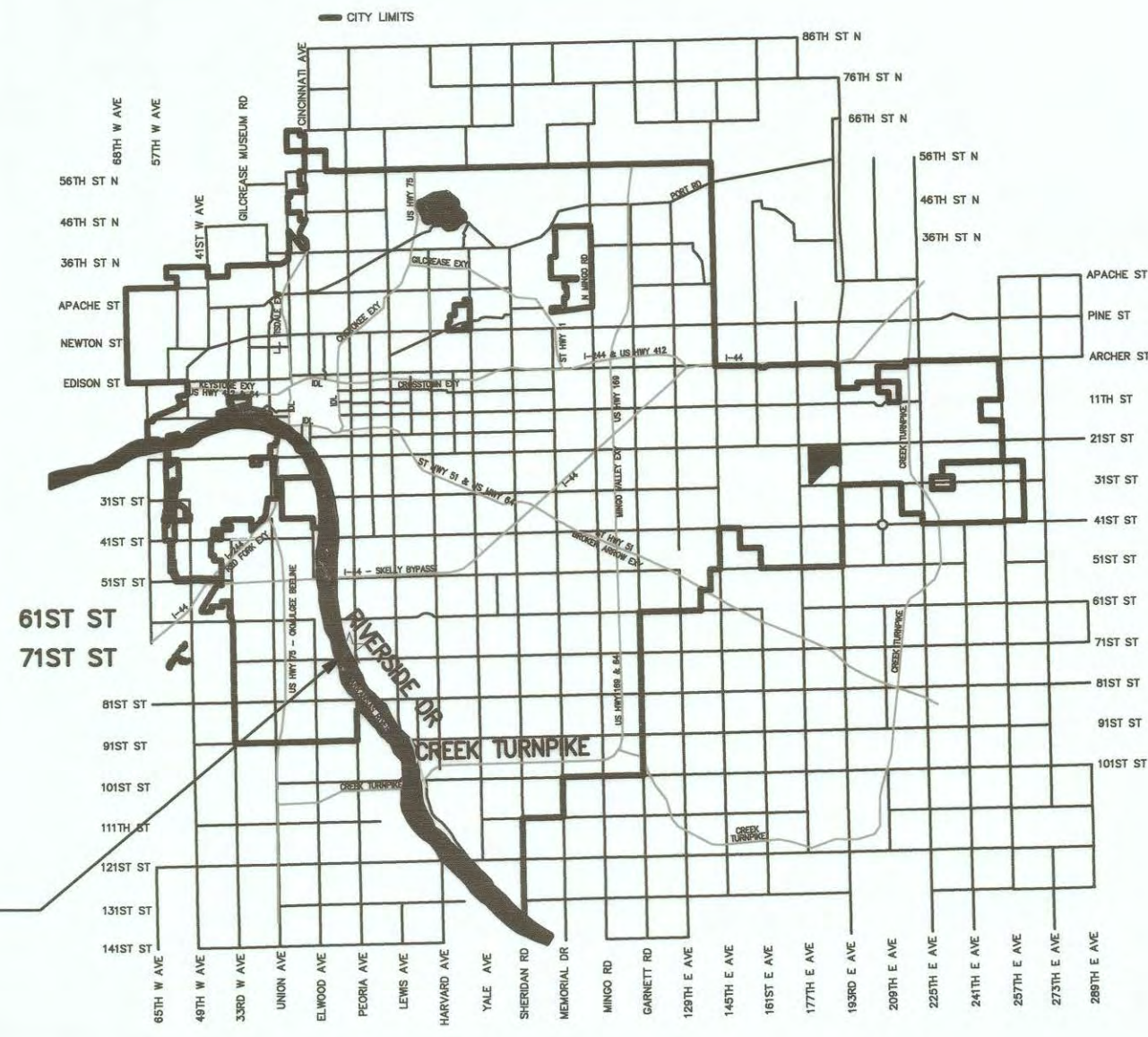
REVISION	BY	DATE	APPROVED:

PLAN SCALE	DRAWN	KRP	05/20
1" = 10'	DESIGNED	RJP	05/20
	SURVEY	N/A	N/A
PROFILE SCALE	PROJ. MGR.	026	1/21
HORIZONTAL: N/A	LEAD ENGR.	026	1/21
VERTICAL: N/A	FIELD MGR.	026	1/21
	RECOMMENDED	026	1/21
FILE:	DESIGN MANAGER	026	1/21
ATLAS PAGE NO. 565	DRAWING:		

DATE: 1-20-21
SHEET 5 OF 26 SHEETS

PRINT DATE: 12/18/2020 MA: City of Tulsa\17TUL03_03_On_Call_Stormwater_Services_2017\10_21_FEMA_Flood_Damage_Design_Working\126335\Damage_351099\Damage_351099.dwg

CITY OF TULSA, OKLAHOMA



★ SITE LOCATION
SITE 195

SITE 195 - (36.06720, -95.98120)

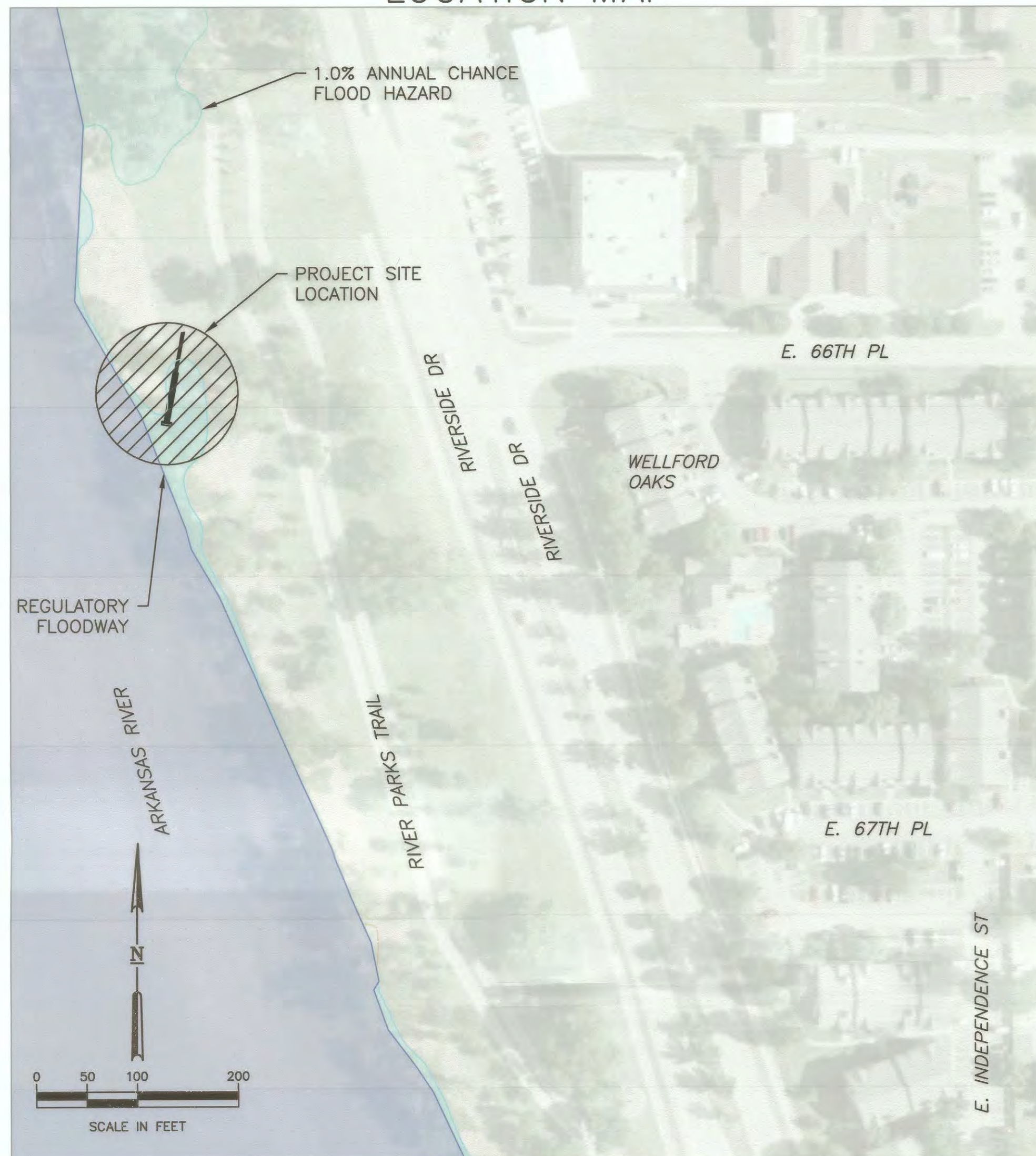
- * HEADWALL - 1 EACH OF CONCRETE HEADWALL (RESET), 6FT LONG X 4 FT HIGH X 6 IN THICK, SURFACE WATER FLOODING SEPARATED HEADWALL FROM PIPE.

DI# 331099 - SITE 195				
ITEM	ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
SPECIAL	RESET HEADWALL		EA	1.00

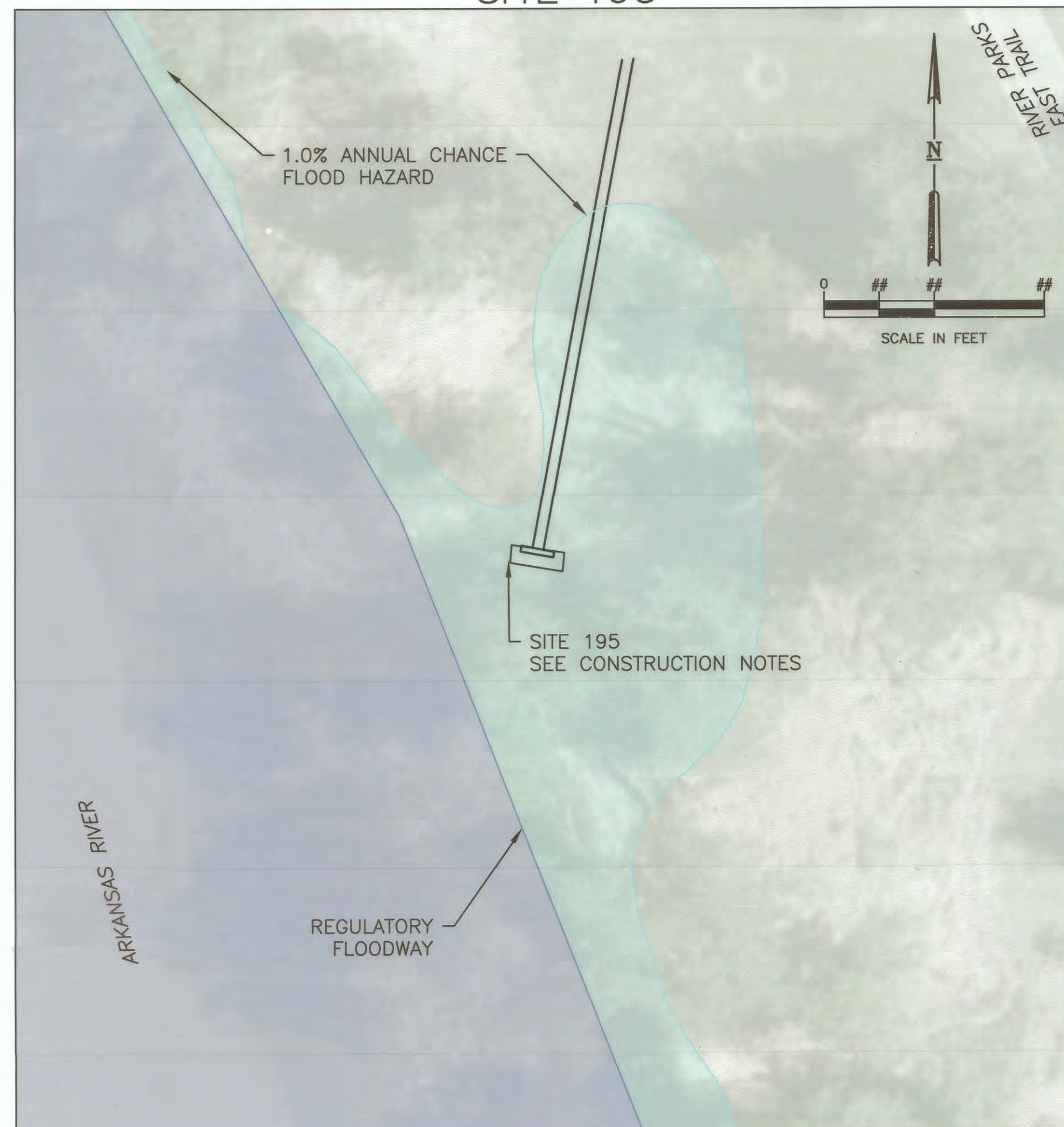
PROJECT NOTES:

1. SITE ESTIMATES FOR WORK TO BE COMPLETED WERE GENERATED USING RS MEANS.
2. ALL BORROW OR FILL MATERIAL MUST COME FROM PRE-EXISTING STOCKPILES, MATERIAL RECLAIMED FROM MAINTAINED ROADSIDE DITCHES (PROVIDED THE DESIGNED WIDTH OR DEPTH OF THE DITCH IS NOT INCREASED), OR COMMERCIALY PROCURED MATERIAL FROM A SOURCE EXISTING PRIOR TO THE EVENT. FOR ANY FEMA-FUNDED PROJECT REQUIRING THE USE OF A NON-COMMERCIAL SOURCE OR A COMMERCIAL SOURCE THAT WAS NOT PERMITTED TO OPERATE PRIOR TO THE EVENT (E.G. A NEW PIT, AGRICULTURAL FIELDS, ROAD ROWS, ETC.) IN WHOLE OR IN PART, REGARDLESS OF COST, THE APPLICANT MUST NOTIFY FEMA AND THE RECIPIENT PRIOR TO EXTRACTING MATERIAL. FEMA MUST REVIEW THE SOURCE FOR PRESERVATION LAWS AND EXECUTIVE ORDERS PRIOR TO A SUBRECIPIENT OR THEIR CONTRACTOR COMMENCING BORROW EXTRACTION. CONSULTATION AND REGULATORY PERMITTING MAY BE REQUIRED. NON-COMPLIANCE WITH THIS REQUIREMENT MAY JEOPARDIZE RECEIPT OF FEDERAL FUNDING. DOCUMENTATION OF BORROW SOURCES UTILIZED IS REQUIRED AT CLOSEOUT.
3. ALL EXCAVATION DIMENSIONS ARE SHOWN IN THE DDD.

LOCATION MAP



SITE 195

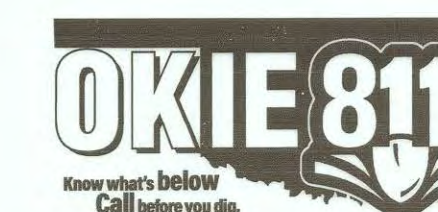


SITE PHOTO



LEGEND

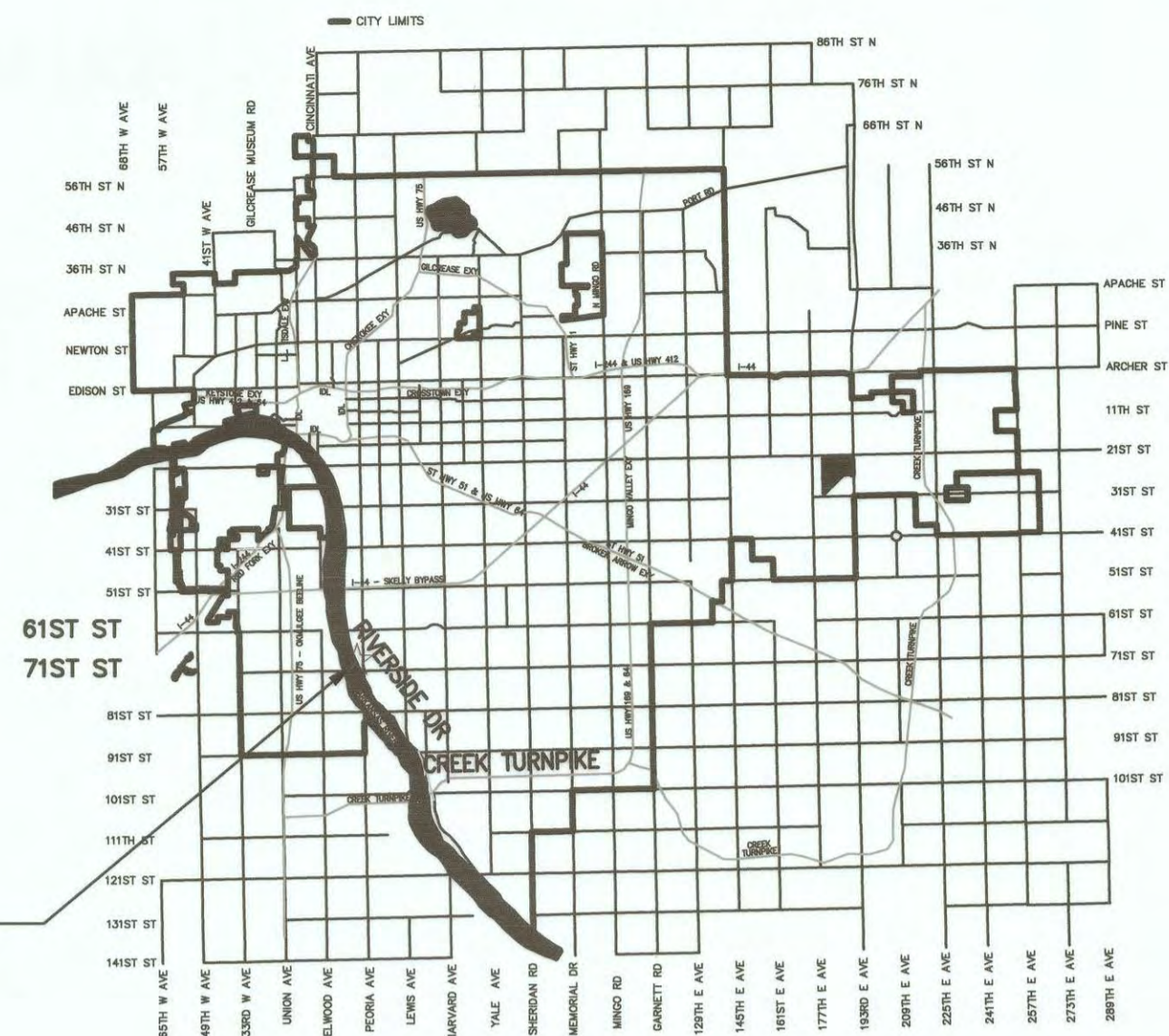
FEMA SITE AREA



FEMA SITE 195			
PROJECT #173120-T021-126335			
DAMAGE #331099			
CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT			
PLANS AND ESTIMATES PREPARED BY: Meshek & Associates, L.L.C. 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620			
PLAN SCALE	DRAWN	KRP	05/20
DESIGNED	RJP		05/20
SURVEY	N/A		N/A
PROFILE SCALE	PROJ. MGR.	CRG	1/21
HORIZONTAL:	LEAD ENGR.	CRG	1/21
N/A	FIELD MGR.	CRG	1/21
VERTICAL:	RECOMMENDED	CRG	1/21
N/A	DESIGN MANAGER	CRG	1/21
FILE:	DRAWING:		
ATLAS PAGE NO. 565			
APPROVED:			
CITY ENGINEER			DATE: 1-06-21
SHEET 6 OF 26 SHEETS			

PRINT DATE: 12/18/2020 M:\City of Tulsa\17TUL03_0n_Call_Stormwater_Services_2017\TO_21_FEMA_Flood_Damage_Design_Working\126335\Damage_331099\Damage_331099.dwg

CITY OF TULSA, OKLAHOMA



★ SITE LOCATION
SITE 386

SITE 386 - (36.06740, -95.98110)

* STORM DRAIN, RCP - 50 FT LONG X 24 IN DIAMETER, SURFACE WATER FLOODING CAUSED PIPE SEPARATIONS.

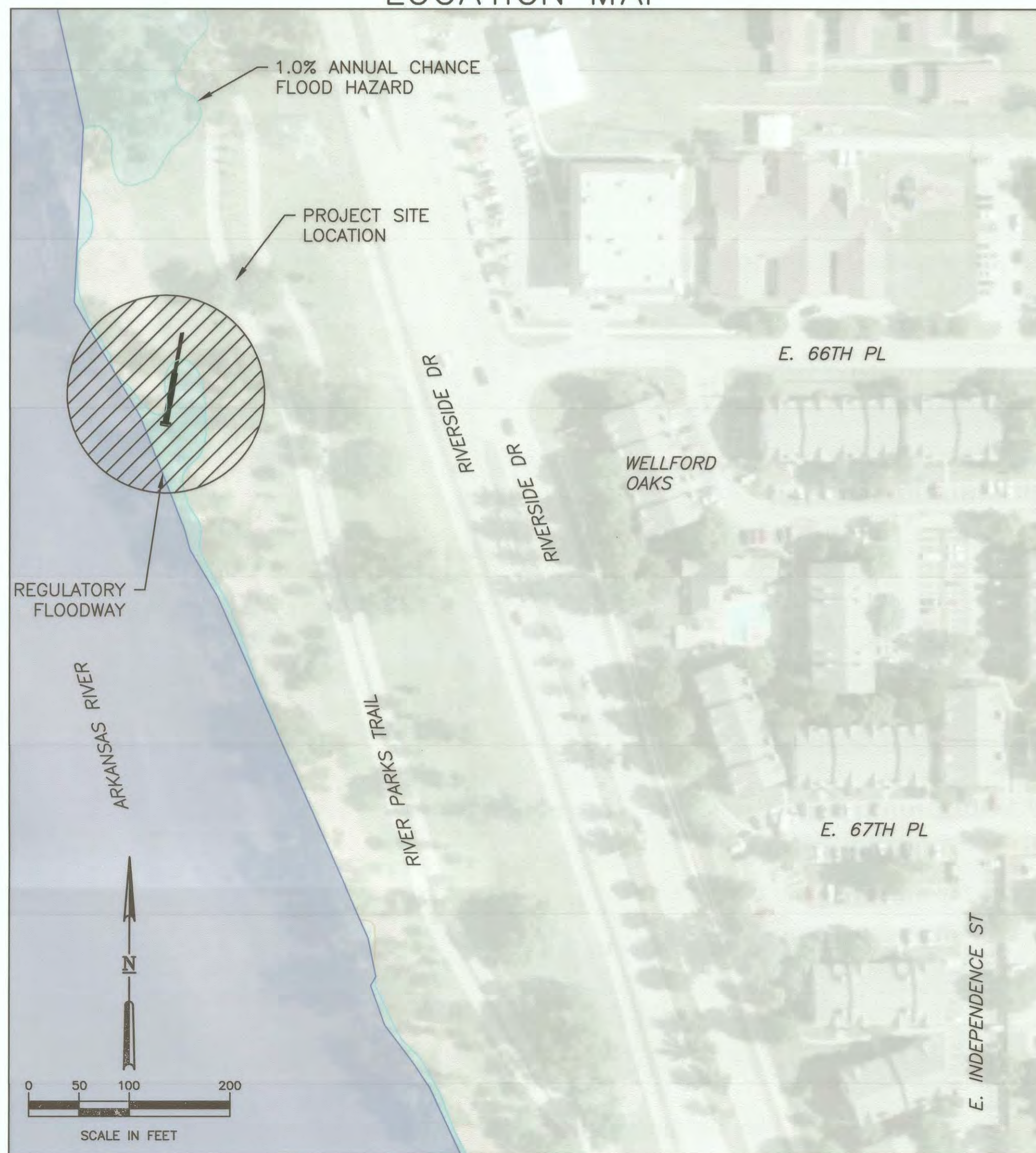
DI# 331099 - SITE 386

ITEM	ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806 SOLID SLAB SODDING	E-10,11	SY	28.00
613(A)	0492 24" R.C. PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	50.00

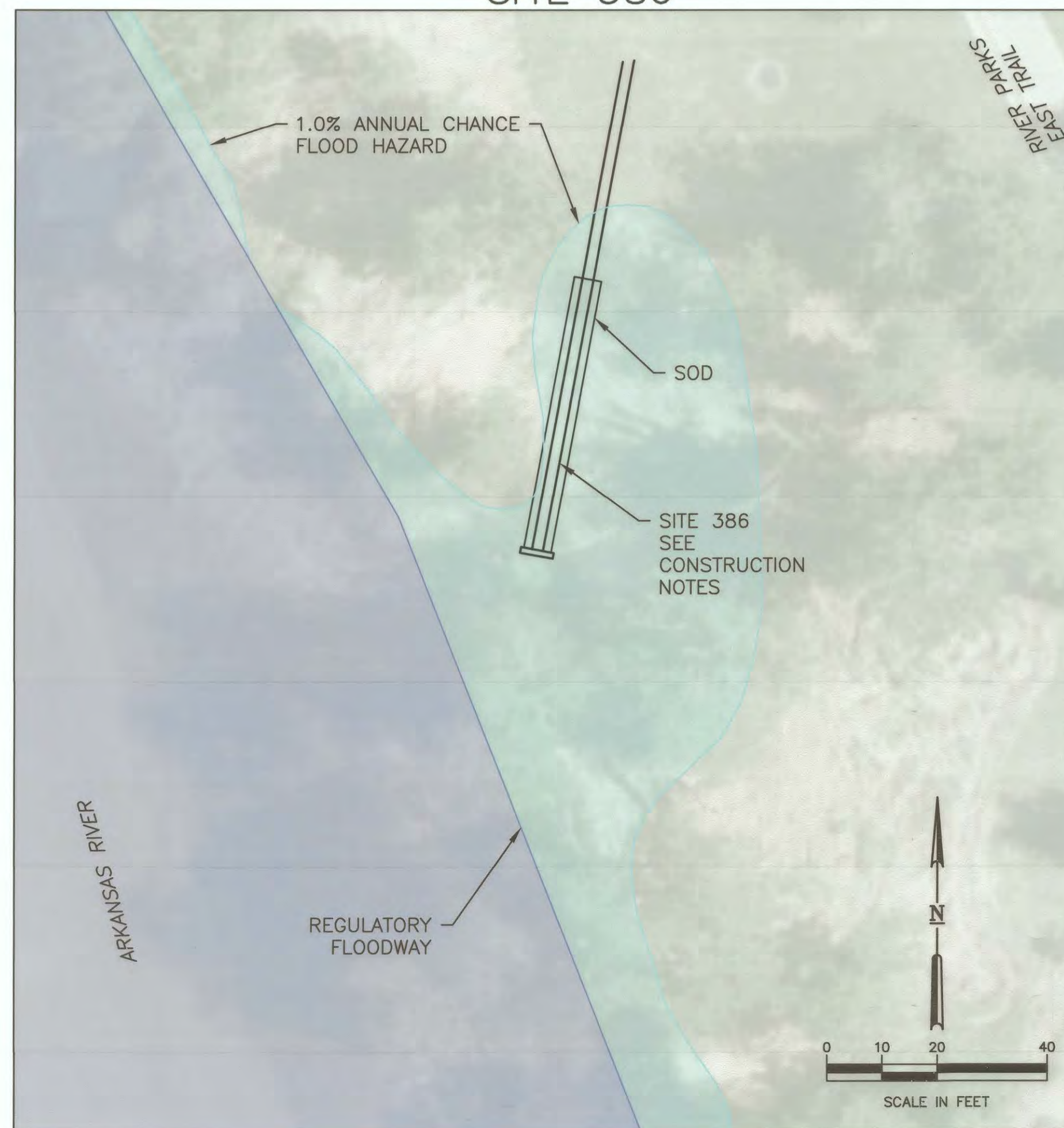
PROJECT NOTES:

1. SITE ESTIMATES FOR WORK TO BE COMPLETED WERE GENERATED USING RS MEANS.
2. ALL BORROW OR FILL MATERIAL MUST COME FROM PRE-EXISTING STOCKPILES, MATERIAL RECLAIMED FROM MAINTAINED ROADSIDE DITCHES (PROVIDED THE DESIGNED WIDTH OR DEPTH OF THE DITCH IS NOT INCREASED), OR COMMERCIALLY PROCURED MATERIAL FROM A SOURCE EXISTING PRIOR TO THE EVENT. FOR ANY FEMA-FUNDED PROJECT REQUIRING THE USE OF A NON-COMMERCIAL SOURCE OR A COMMERCIAL SOURCE THAT WAS NOT PERMITTED TO OPERATE PRIOR TO THE EVENT (E.G. A NEW PIT, AGRICULTURAL FIELDS, ROAD ROWS, ETC.) IN WHOLE OR IN PART, REGARDLESS OF COST, THE APPLICANT MUST NOTIFY FEMA AND THE RECIPIENT PRIOR TO EXTRACTING MATERIAL. FEMA MUST REVIEW THE SOURCE FOR PRESERVATION LAWS AND EXECUTIVE ORDERS PRIOR TO A SUBRECIPIENT OR THEIR CONTRACTOR COMMENCING BORROW EXTRACTION. CONSULTATION AND REGULATORY PERMITTING MAY BE REQUIRED. NONCOMPLIANCE WITH THIS REQUIREMENT MAY JEOPARDIZE RECEIPT OF FEDERAL FUNDING. DOCUMENTATION OF BORROW SOURCES UTILIZED IS REQUIRED AT CLOSEOUT.
3. ALL EXCAVATION DIMENSIONS ARE SHOWN IN THE DDD.

LOCATION MAP



SITE 386



SITE PHOTO



LEGEND

FEMA SITE AREA



FEMA SITE 386

PROJECT #173120-T021-126335

DAMAGE #331099

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
1" = ##	DESIGNED	RJP	05/20	SURVEY	N/A	N/A	 CITY ENGINEER DATE: 1-08-21 SHEET 7 OF 26 SHEETS
HORIZONTAL:	PROJ. MGR.	LAG	1/21	LEAD ENGR.	BN	1/21	
VERTICAL:	FIELD MGR.	BN	1/21	RECOMMENDED	LAG	1-21	
N/A	DESIGN MANAGER						
FILE:	DRAWING:						

ATLAS PAGE NO. 565

STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: DAMAGE INVENTORY #331101 SITES ALONG THE EAST SIDE OF THE ARKANSAS RIVER INCLUDING: SITE 170 AND SITE 181. ALL APPROXIMATELY LOCATED IN THE NE/4 OF SECTION 12 OF OK T18N R12E. WITHIN THE CITY LIMITS OF TULSA, OKLAHOMA.

PROJECT DESCRIPTION:
SITE 170: EROSION CONTROL
SITE 181: EROSION CONTROL AND REPLACE CONCRETE APRON

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:
1. TEMPORARY EROSION CONTROL.
2. PERMANENT EROSION CONTROL.

SOIL TYPE: VERY FINE SANDY LOAM, STRATIFIED LOAMY VERY FINE SAND TO SILTY CLAY LOAM

TOTAL AREA OF THE CONSTRUCTION SITE: LESS THAN 1 ACRE COMBINED

ESTIMATED AREA TO BE DISTURBED: LESS THAN 1 ACRE COMBINED

OFFSITE AREA TO BE DISTURBED: (FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: 0.09 ACRES

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: 0.18 ACRES

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: X.X

LATITUDE & LONGITUDE OF CENTER OF PROJECT: N36° 03' 22.0", W95° 58' 52.3" N36° 03' 37.8", W95° 58' 35.4"

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: ARKANSAS RIVER

SENSITIVE WATERS OR WATERSHEDS: YES NO

303 IMPAIRED WATERS: YES NO

IF YES, LIST IMPAIRMENT: ENTEROCOCCUS

LOCATED IN A TMDL: YES NO

LAKE THUNDERBIRD TMDL: YES NO

MS4 ENTITY: YES NO

IF YES, LOCATION: TULSA COUNTY

NOTE:
 THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- TEMPORARY SEEDING
- PERMANENT SODDING, SPRIGGING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION BLANKET
- PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

- STABILIZED CONSTRUCTION EXIT
- TEMPORARY SILT FENCE
- TEMPORARY SILT DIKES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ROCK FILTER DAMS
- TEMPORARY SLOPE DRAIN
- PAVED DITCH W/ DITCH LINER PROTECTION
- TEMPORARY DIVERSION CHANNELS
- TEMPORARY SEDIMENT BASINS
- TEMPORARY SEDIMENT TRAPS
- TEMPORARY SEDIMENT FILTERS
- TEMPORARY SEDIMENT REMOVAL
- RIP RAP
- INLET SEDIMENT FILTER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBAG BERMS
- TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGEWAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:

A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEANING UP
- 104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
- 104.13 ENVIRONMENTAL PROTECTION
- 106.08 STORAGE AND HANDLING OF MATERIAL
- 107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
- 107.20 STORM WATER MANAGEMENT
- 220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
- 221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:

"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.

STORM WATER MANAGEMENT PLAN
PROJECT #173120-T021-126335
DAMAGE #331101

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

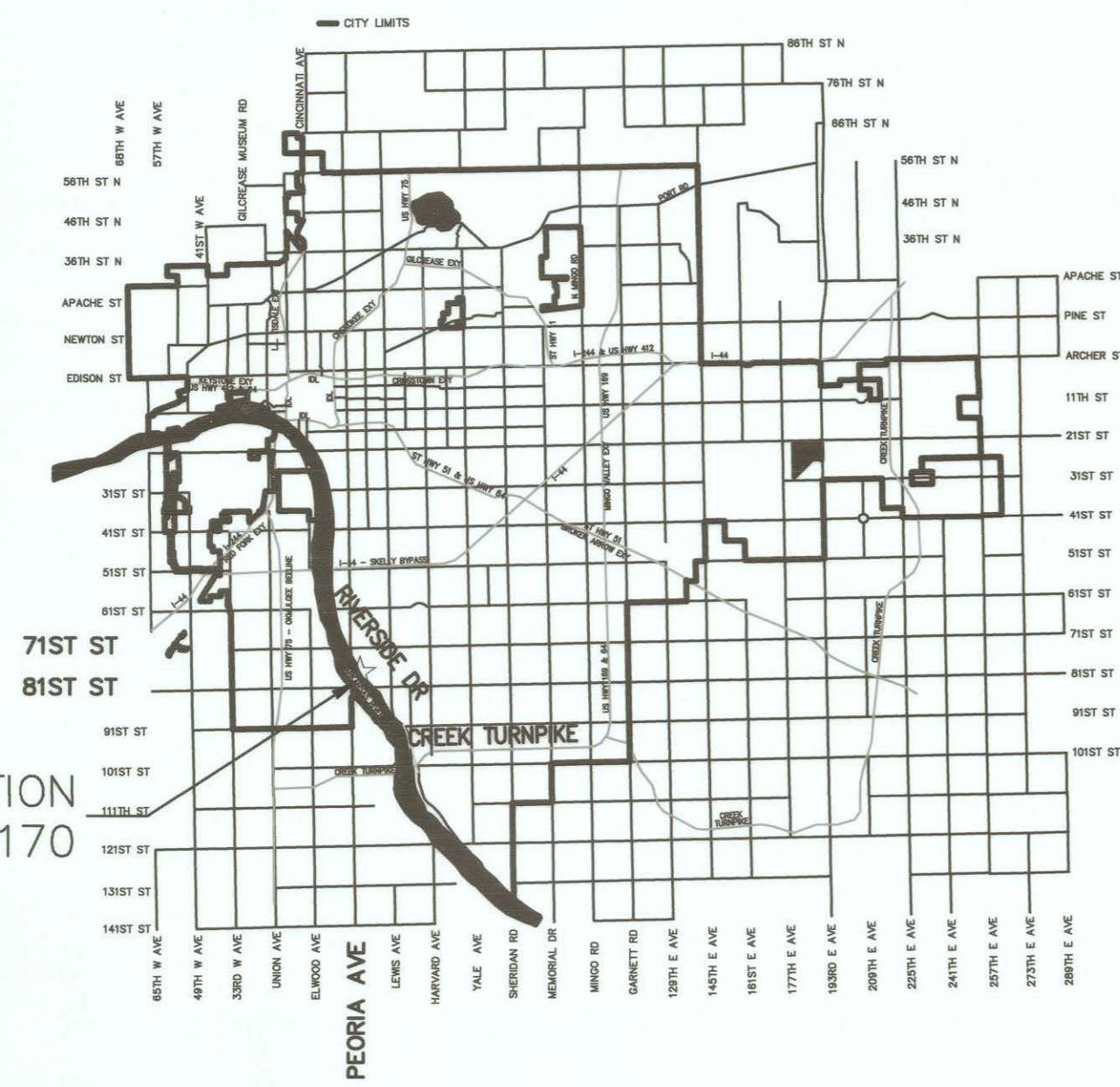


REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			N/A	DESIGNED	RJP	05/20	CITY ENGINEER DATE: <u>1-08-21</u> SHEET 8 OF 26 SHEETS
			N/A	SURVEY	N/A	N/A	
			PROFILE SCALE	PROJ. MGR.	<u>LAH</u>	<u>1/21</u>	
			HORIZONTAL:	LEAD ENGR.	<u>BOE</u>	<u>1/21</u>	
			N/A	FIELD MGR.	<u>BOE</u>	<u>1/21</u>	
			VERTICAL:	RECOMMENDED	<u>HAS</u>	<u>1-21</u>	
			N/A	DESIGN MANAGER			
			FILE:	DRAWING:			
			ATLAS PAGE NO. <u>66H</u>				

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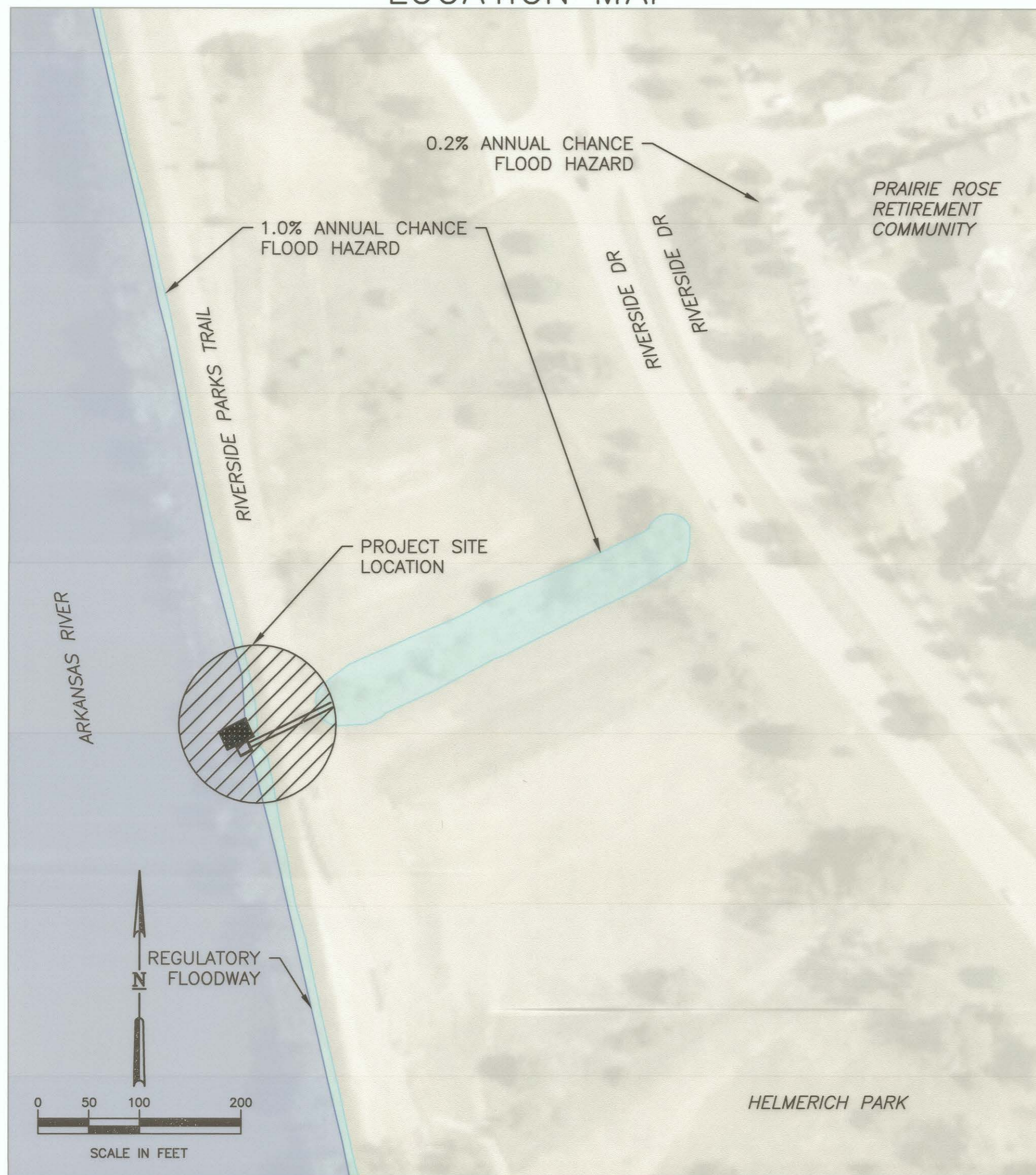
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CITY OF TULSA, OKLAHOMA



☆ SITE LOCATION
SITE 170

LOCATION MAP



SITE 170 - (36.05610, -95.97650)

CONSTRUCTION NOTES:

- * BACKFILL - 111 CY OF UNCLASSIFIED FILL, 20 FT LONG X 30 FT WIDE X 5 FT DEEP, SURFACE WATER FLOODING ERODED SOIL.
- * STONE - 44 CY OF GROUDED RIP-RAP, 20 FT LONG X 30 FT WIDE X 2 FT DEEP, SURFACE WATER FLOODING UNDERMINED STONE RESULTING IN DETACHMENT.

D# 331101 - SITE 170				
ITEM	ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184 UNCLASSIFIED BORROW		CY	111.00
601(H)	1395 TYPE IV GROUDED RIPRAP		CY	44.00

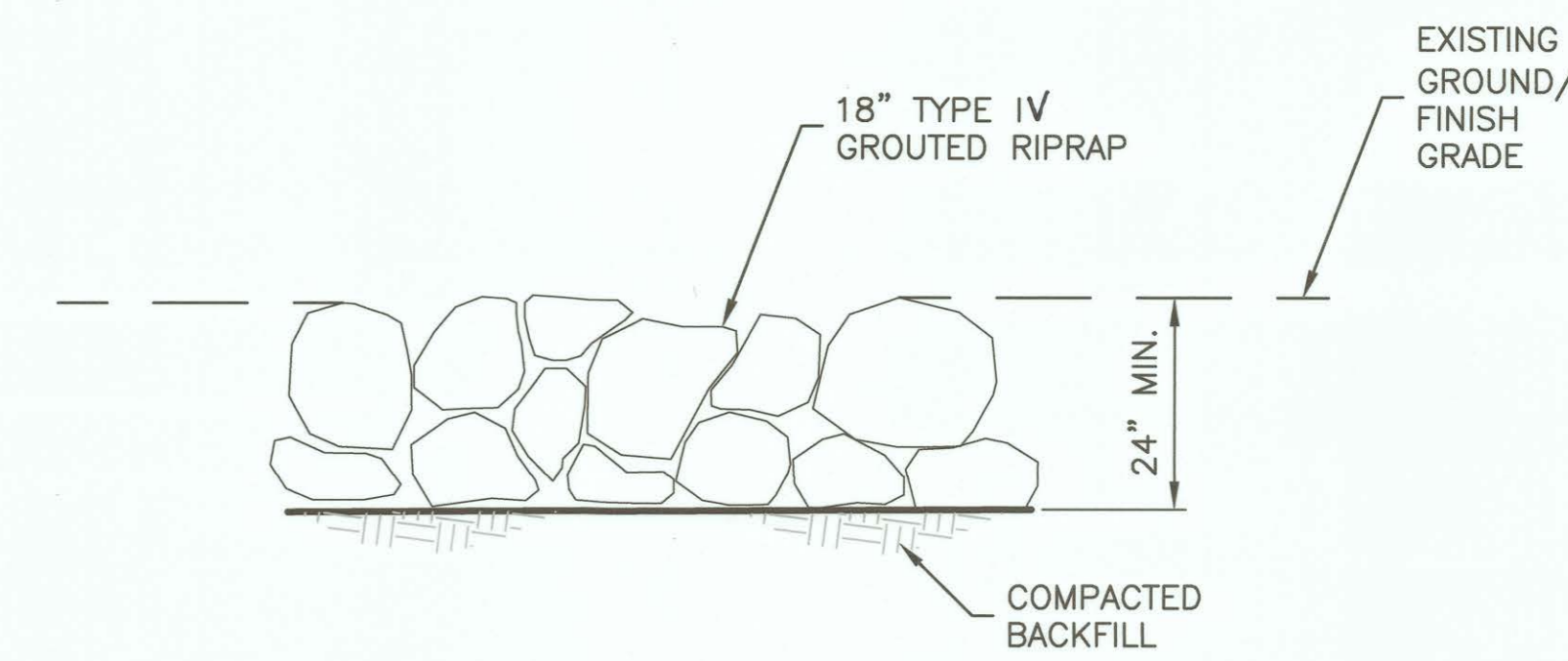
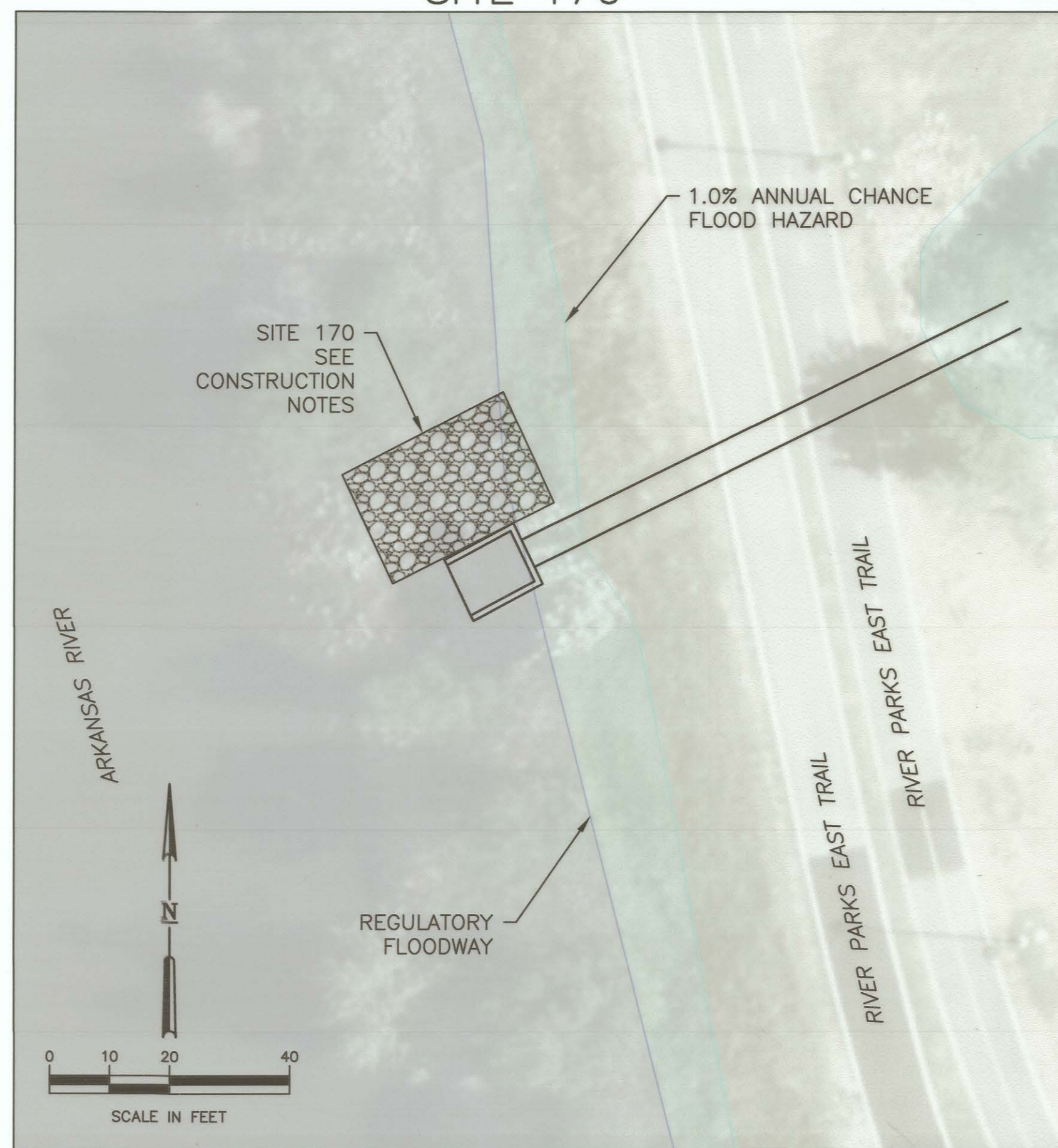
SITE PHOTO



SITE PHOTO



SITE 170



1 RIPRAP INSTALLATION
SCALE: NONE



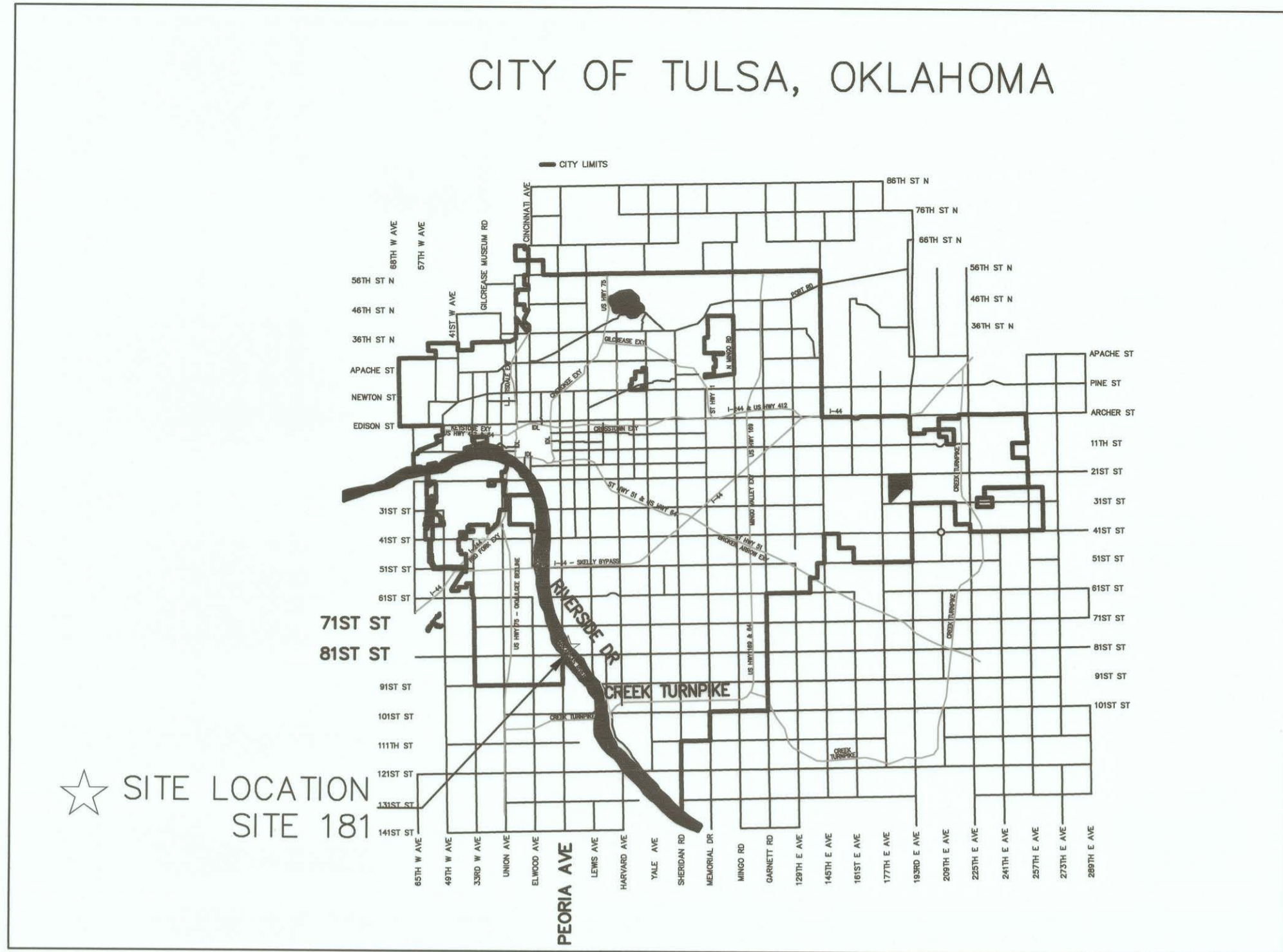
12/16/2020

LEGEND



FEMA SITE 170																																																														
PROJECT #173120-T021-126333																																																														
DAMAGE #331101																																																														
CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT																																																														
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SITE 181 - (36.06050, -95.97760)

CONSTRUCTION NOTES:

- * BACKFILL - 148 CY OF UNCLASSIFIED FILL, 50 FT LONG X 10 FT WIDE X 8 FT DEEP, SURFACE WATER FLOODING ERODED SOIL.
- * DITCH - 1 EACH OF CONCRETE DITCH APRON, 50 FT LONG X 2 FT WIDE X 6 IN THICK, SURFACE WATER FLOODING UNDERMINED A SECTION OF APRON RESULTING IN CRACKING/COLLAPSE.

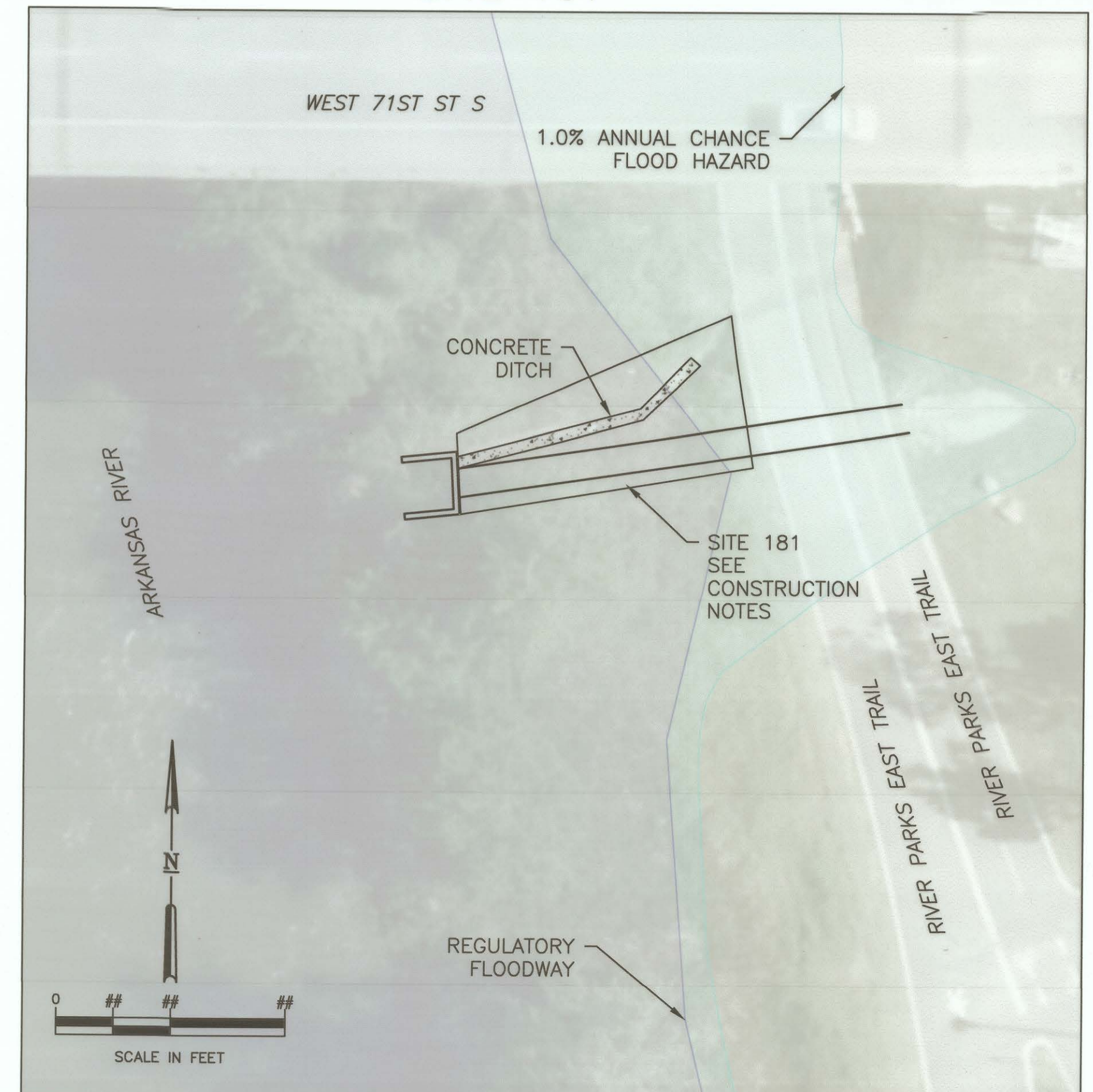


DI# 331101 - SITE 181					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY	148.00
509(D)	0325	CLASS C CONCRETE	S-12	CY	2.00

LOCATION MAP



SITE 181



LEGEND

FEMA SITE AREA

RYAN PIERCE
 27211
 OKLAHOMA
 12/16/2020



FEMA SITE 181																																																																																								
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STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: DAMAGE INVENTORY #331105 SITES ALONG THE EAST SIDE OF THE ARKANSAS RIVER INCLUDING: SITE 191, SITE 192, AND SITE 270. ALL APPROXIMATELY LOCATED IN THE NE/4 OF SECTION 36 OF OK T19N R12E. WITHIN THE CITY LIMITS OF TULSA, OKLAHOMA.

PROJECT DESCRIPTION:
 SITE 191: REPLACE PIPE
 SITE 192: EROSION CONTROL, PATCH PAVEMENT, REPLACE PIPE
 SITE 270: EROSION CONTROL

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:
 1. TEMPORARY EROSION CONTROL.
 2. PERMANENT EROSION CONTROL.

SOIL TYPE: LOAMY FINE SAND, STRATIFIED FINE SAND TO LOAM

TOTAL AREA OF THE CONSTRUCTION SITE: LESS THAN 1 ACRE COMBINED

ESTIMATED AREA TO BE DISTURBED: LESS THAN 1 ACRE COMBINED

OFFSITE AREA TO BE DISTURBED: (FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: 0.09 ACRES

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: 0.18 ACRES

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: X.X

LATITUDE & LONGITUDE OF CENTER OF PROJECT: N36° 04' 58.4", W95° 59' 05.6" N36° 04' 40.1", W95° 59' 03.1" N36° 04' 44.4", W95° 59' 04.6"

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: ARKANSAS RIVER

SENSITIVE WATERS OR WATERSHEDS: YES NO

303 IMPAIRED WATERS: YES NO

IF YES, LIST IMPARMENT: ENTEROCOCCUS, TURBIDITY

LOCATED IN A TMDL: YES NO

LAKE THUNDERBIRD TMDL: YES NO

MS4 ENTITY: YES NO

IF YES, LOCATION: TULSA COUNTY

NOTE: THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- TEMPORARY SEEDING
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- INLET SEDIMENT FILTER
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- SANDBAG BERMS
- TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- EXCESS DIRT ON ROAD REMOVED DAILY

NOTE:

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

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GENERAL NOTES:

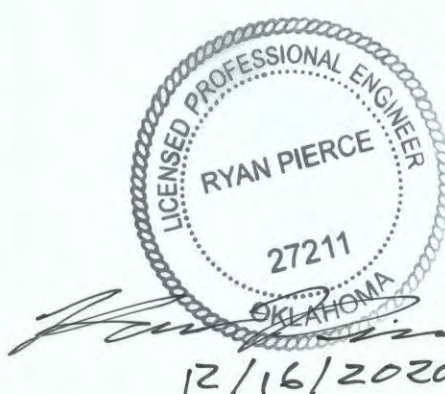
A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEANING UP
- 104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
- 104.13 ENVIRONMENTAL PROTECTION
- 106.08 STORAGE AND HANDLING OF MATERIAL
- 107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
- 107.20 STORM WATER MANAGEMENT
- 220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
- 221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:

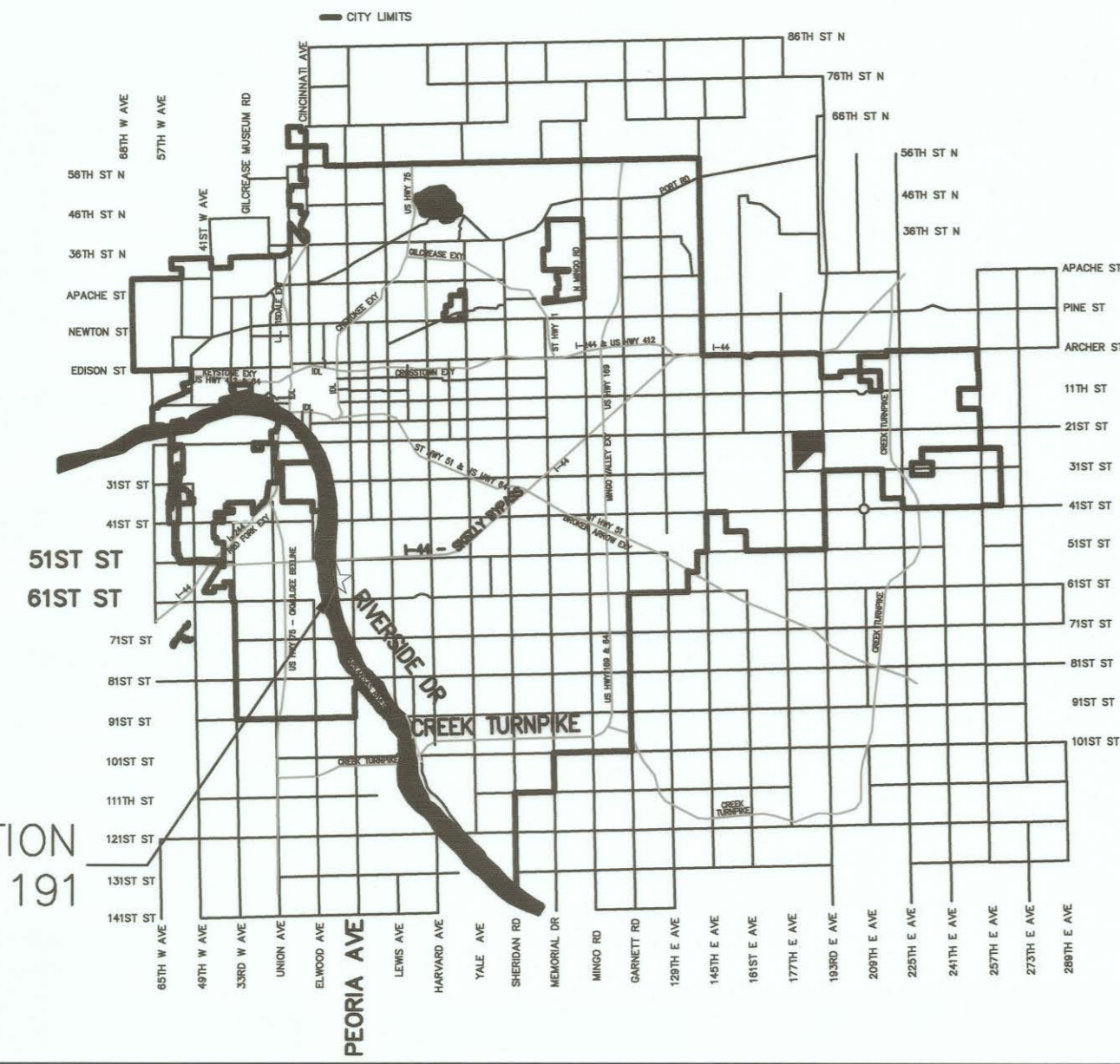
"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.



STORM WATER MANAGEMENT PLAN			
PROJECT #173120-T021-126335			
DAMAGE #331105			
CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT			
PLANS AND ESTIMATES PREPARED BY: Meshek & Associates, L.L.C. 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620			
REVISION	BY	DATE	APPROVED:
N/A			
PLAN SCALE	DRAWN	KRP	
	DESIGNED	RJP	05/20
	SURVEY	N/A	N/A
PROFILE SCALE	PROJ. MGR.	1/16	1/21
	LEAD ENGR.	1/16	1/21
HORIZONTAL:	FIELD MGR.	1/16	1/21
N/A	RECOMMENDED	1/16	1/21
VERTICAL:	DESIGN MANAGER	1/16	1/21
N/A	FILE:	DRAWING:	DATE: 1.08.21
	ATLAS PAGE NO. 316,391		SHEET 11 OF 28 SHEETS

PRINT DATE: 12/18/2020 M:\City of Tulsa\17TUL03_On-Call_Stormwater_Services_2017\TO_21_FEMA_Flood_Damage_Design\Working\126335\Damage_331105\Damage_331105.dwg

CITY OF TULSA, OKLAHOMA



☆ SITE LOCATION
SITE 191

LOCATION MAP



SITE 191 - (36.08290, -95.98490)

CONSTRUCTION NOTES:

- * STORM DRAIN, RCP - 10 FT LONG X 36 IN IN DIAMETER, SURFACE WATER FLOODING CAUSED PIPE SEPARATION.

DI# 331105 - SITE 191

ITEM	ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806 SOLID SLAB SODDING	E-10,11	SY	7.00
613(A)	0494 36" R.C. PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	10.00

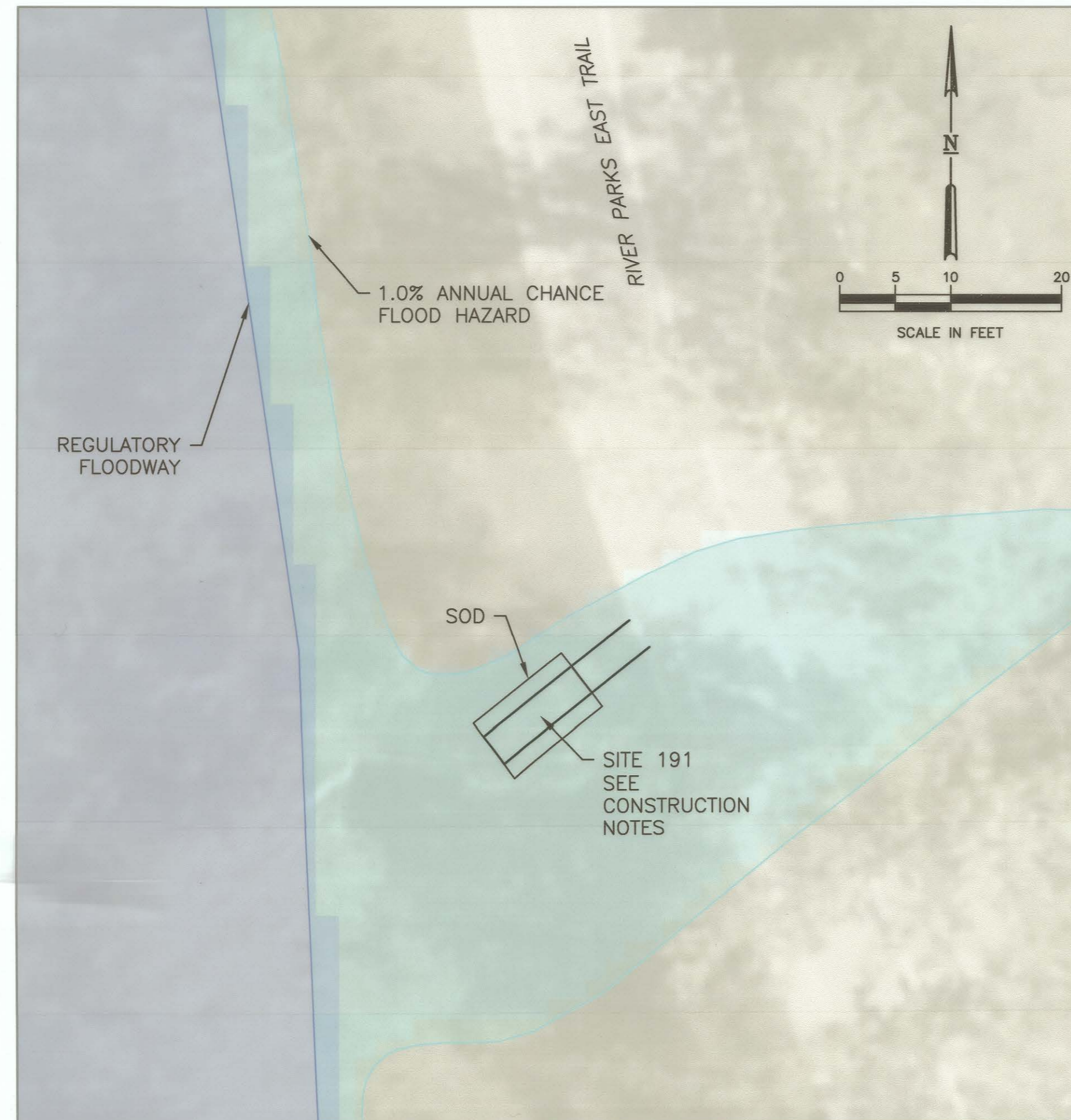
SITE PHOTO



SITE PHOTO



SITE 191



LEGEND

FEMA SITE AREA



FEMA SITE 191

PROJECT #173120-T021-126335

DAMAGE #331105

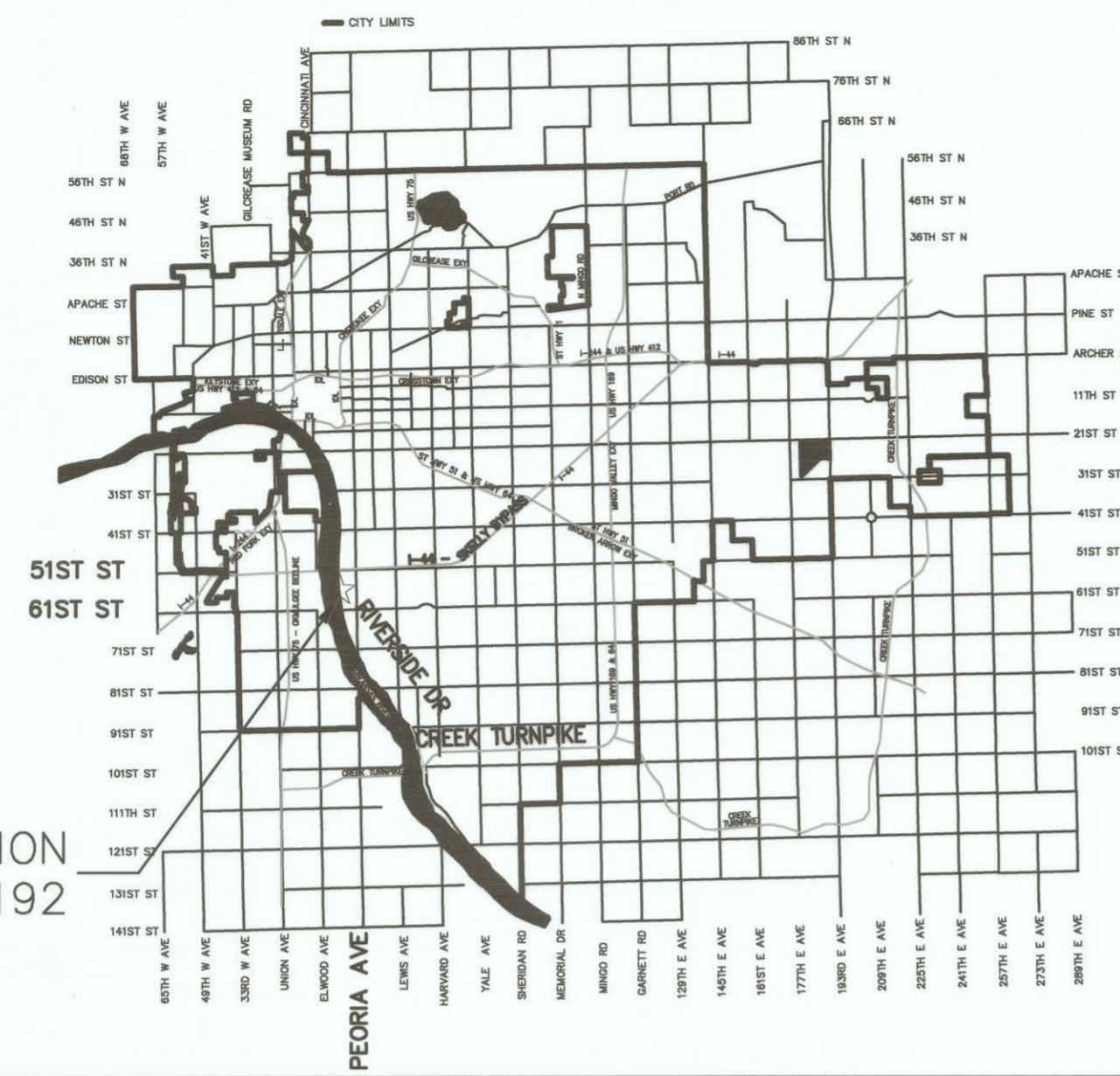
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			1" = ##'	DESIGNED	RJP	05/20	 CITY ENGINEER DATE: 1-08-21 SHEET 12 OF 26 SHEETS
			PROFILE SCALE	PROJ. MGR.	CTG	1/21	
			HORIZONTAL:	LEAD ENGR.	BOG	1/21	
			VERTICAL:	FIELD MGR.	BOG	1/21	
				RECOMMENDED	HAL	1-21	
			FILE:	DESIGN MANAGER			
			ATLAS PAGE NO. 316				

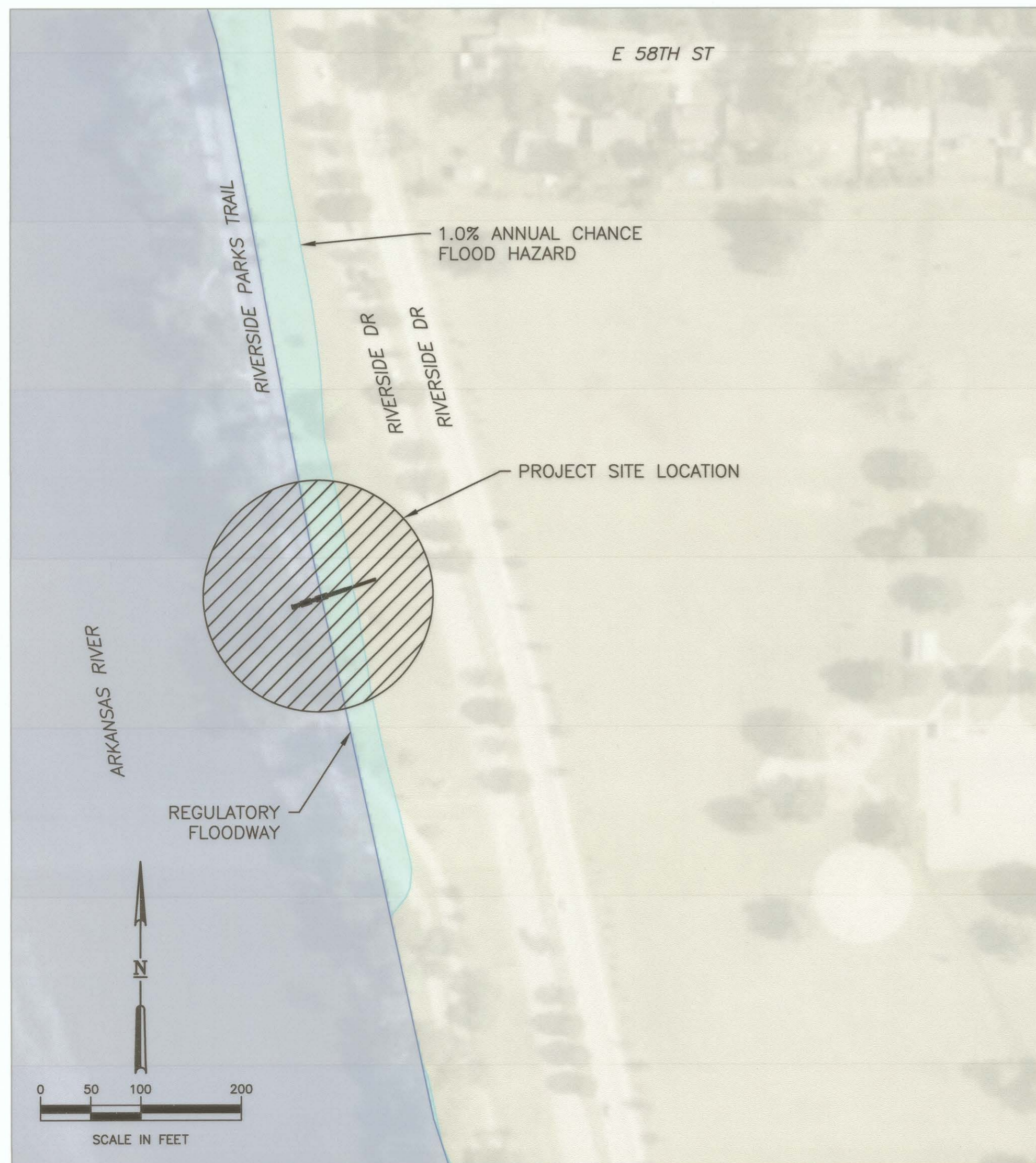
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CITY OF TULSA, OKLAHOMA



★ SITE LOCATION
SITE 192

LOCATION MAP



SITE 192 - (36.07780, -95.98420)

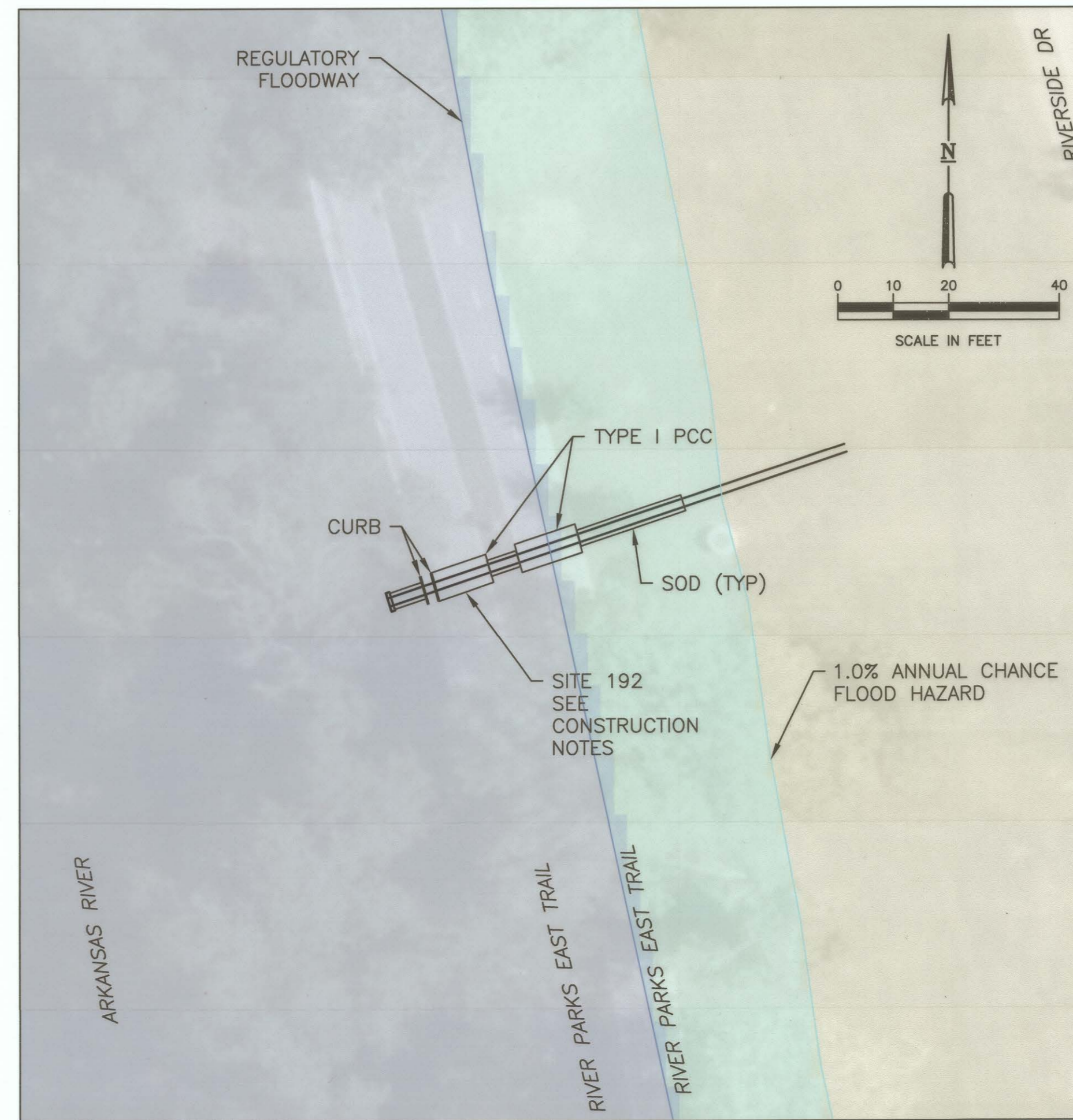
CONSTRUCTION NOTES:

* STORM DRAIN, RCP - 55FT LONG X 18 FT DIAMETER, SURFACE WATER FLOODING CAUSED PIPE SEPARATIONS.

D# 331105 - SITE 192					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806	SOLID SLAB SODDING	E-10, 11	SY	11.00
609	0200	CONCRETE CURB (4" BARRIER- INTEGRAL)	S-15	LF	11.00
613(A)	0491	18" R.C. PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	55.00
619(B)	4791	REMOVAL OF CURB	R-1, 2, 5, 6	LF	11.00
SPECIAL		TYPE I APC PATCH (NON-ARTERIAL)	S-21	SY	13.00



SITE 192



SITE PHOTO



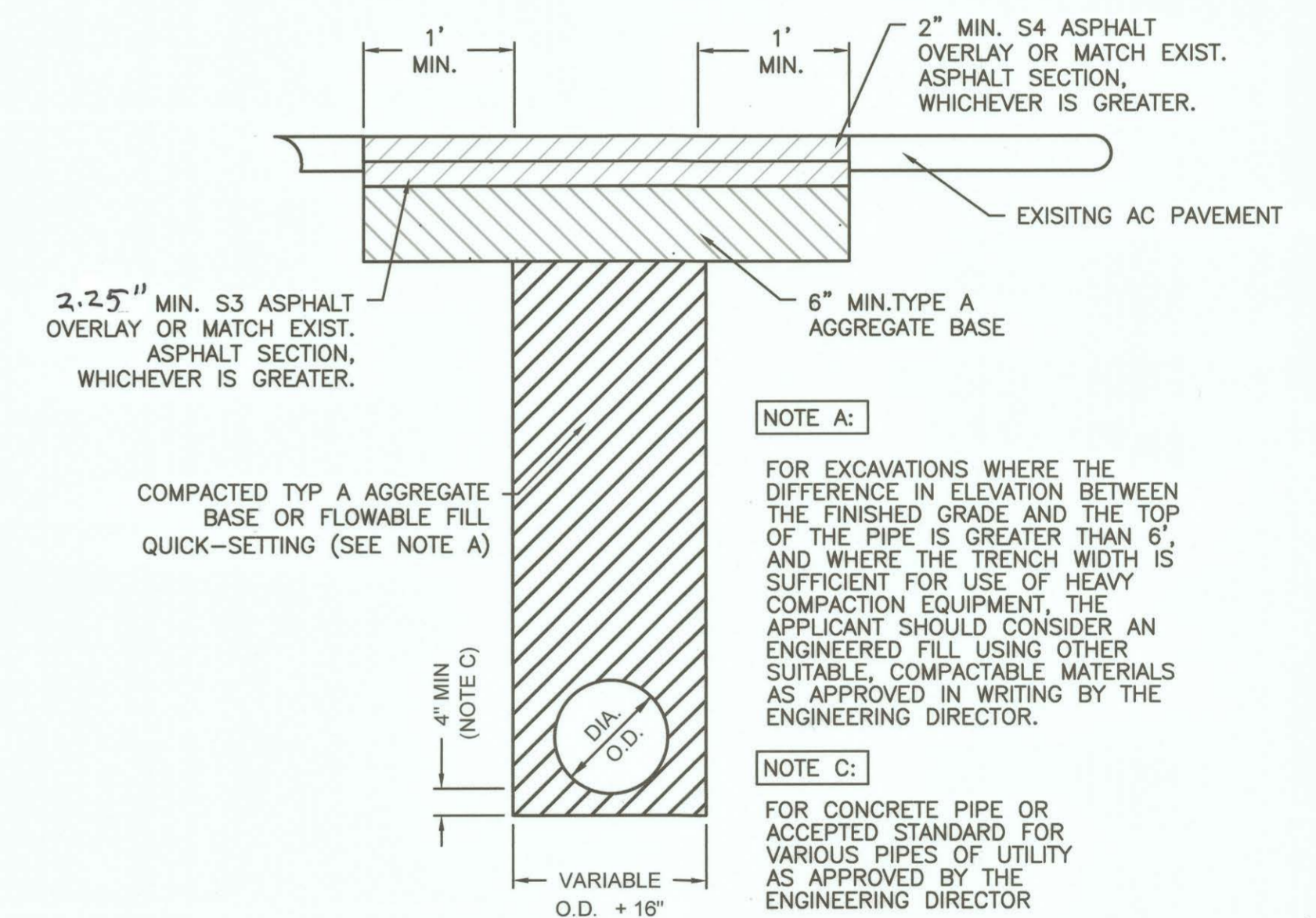
SITE PHOTO



SITE PHOTO

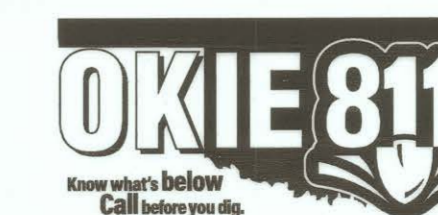


SITE PHOTO



1 TYPE I APC CUT AND REPAIR (NON-ARTERIAL)
SCALE: NONE

LEGEND
 FEMA SITE AREA



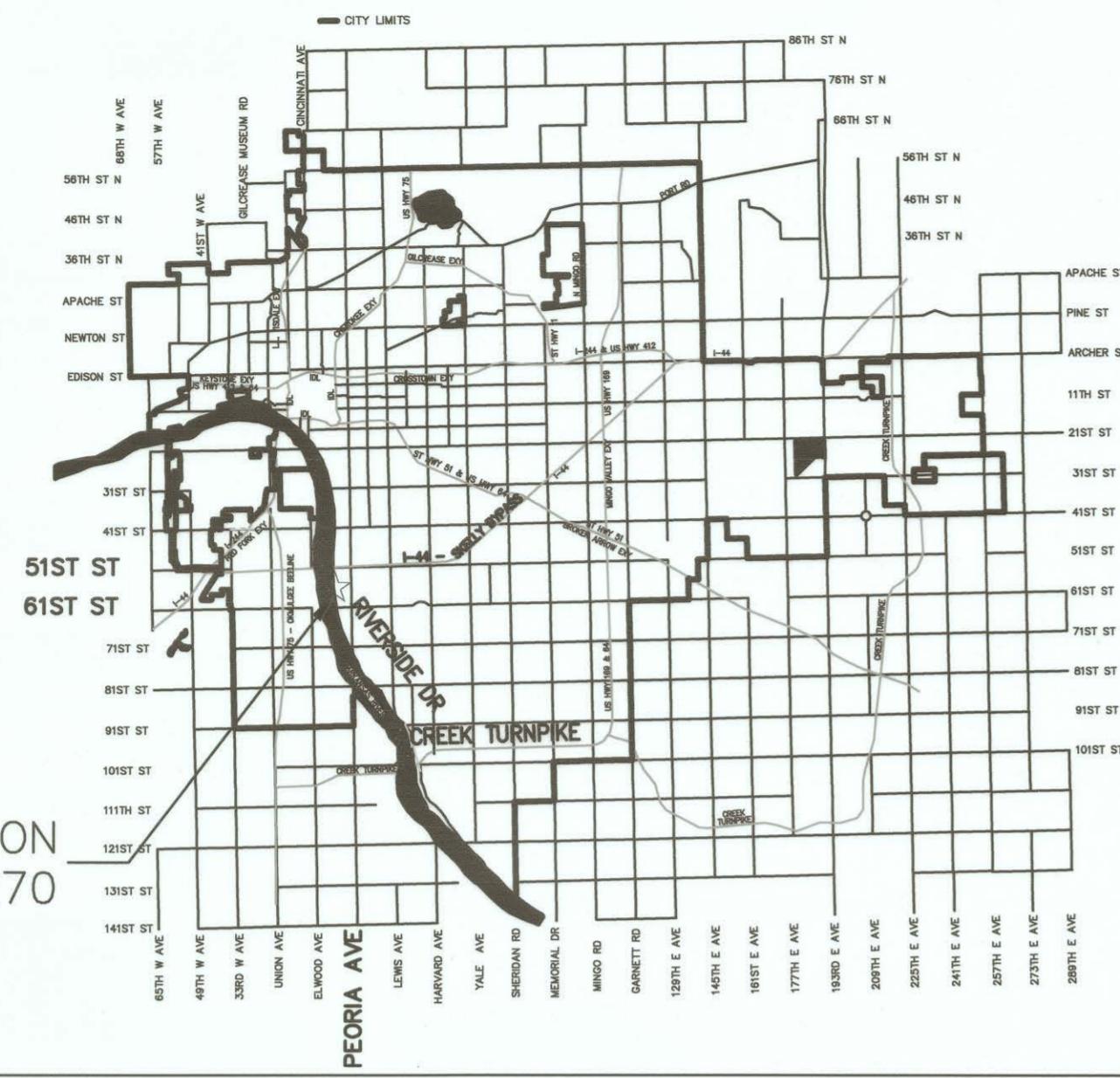
FEMA SITE 192
 PROJECT #173120-T021-126335
 DAMAGE #331105
 CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT
 PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
1" = #"	DESIGNED	RJP	05/20				
	SURVEY	N/A	N/A				
PROFILE SCALE	PROJ. MGR.	1/16	1/11				
HORIZONTAL:	LEAD ENGR.	1/16	1/11				
N/A	FIELD MGR.	1/16	1/11				
VERTICAL:	RECOMMENDED	1/16	1/11				
N/A	DESIGN MANAGER	1/16	1/11				
FILE:	DRAWING:						
ATLAS PAGE NO. 391							

CITY ENGINEER
 DATE: 1.08.21
 SHEET 13 OF 26 SHEETS

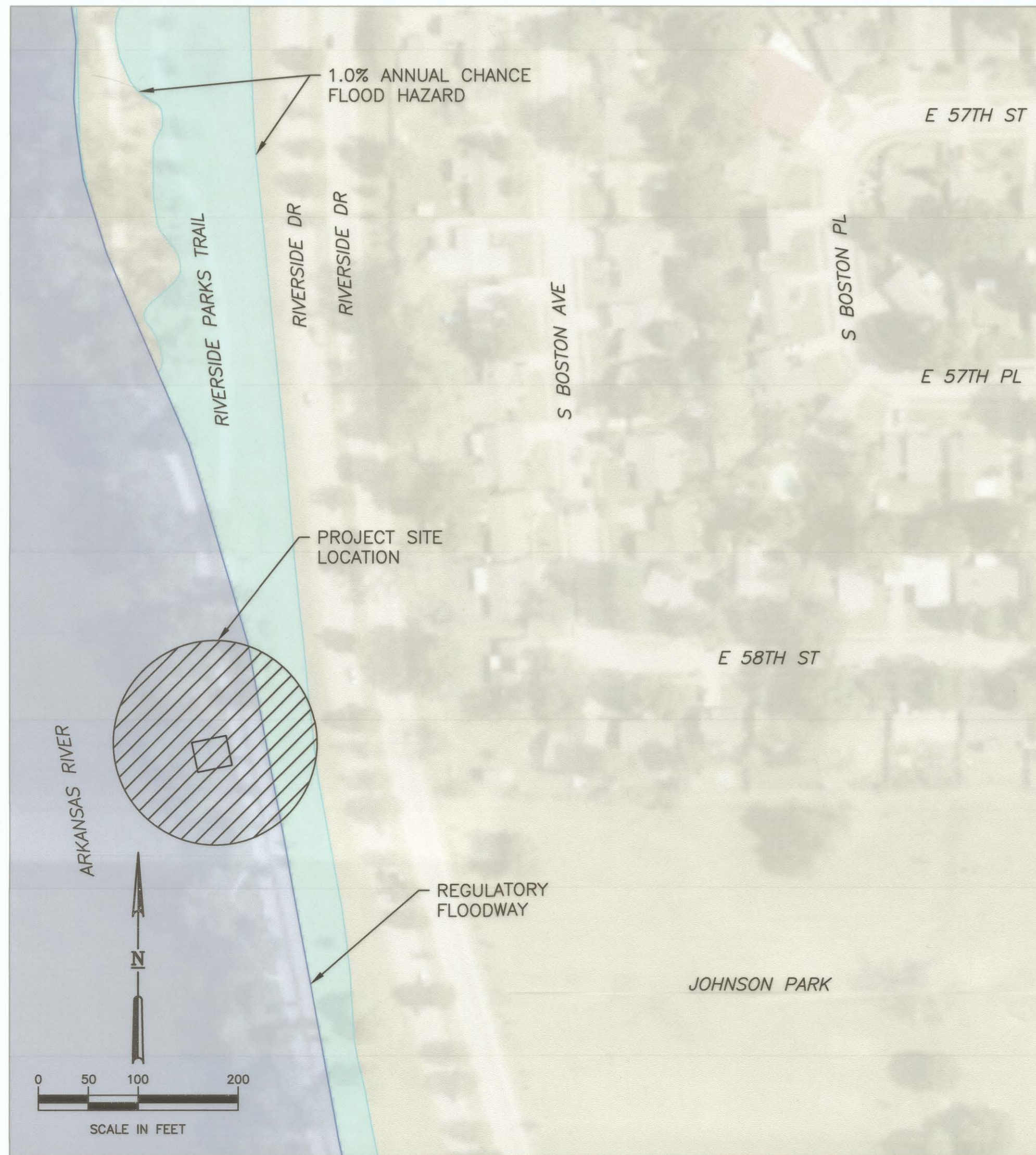
PRINT DATE: 12/18/2020 M:\City of Tulsa\171UL03_On-Call_Stormwater_Services_2017\TO_21_FEMA_Flood_Damage_Design\Working\126335\Damage_331105\Damage_331105.dwg

CITY OF TULSA, OKLAHOMA



★ SITE LOCATION
SITE 270

LOCATION MAP



SITE 270 - (36.07900, -95.98460)

CONSTRUCTION NOTES:

- * BACKFILL - 78 CY OF UNCLASSIFIED FILL, 35 FT LONG X 30 FT WIDE X 2 FT DEEP, SURFACE WATER FLOODING ERODED SOIL.

DI# 331105 - SITE 270

ITEM	ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	184 UNCLASSIFIED BORROW		CY	78.00
230(A)	2806 SOLID SLAB SODDING	E-10,11	SY	117.00

SITE PHOTO



SITE 270



RYAN PIERCE
 27211
 OKLAHOMA
 12/16/2020

LEGEND

FEMA SITE AREA



FEMA SITE 270

PROJECT #173120-T021-126335

DAMAGE #331105

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			1" = ##'	DESIGNED	RJP	05/20	 CITY ENGINEER DATE: 1.08.21 SHEET 14 OF 26 SHEETS
				SURVEY	N/A	N/A	
			PROFILE SCALE	PROJ. MGR.	2/16/21	1/21	
			HORIZONTAL:	LEAD ENGR.	2/16/21	1/21	
			VERTICAL:	RECOMMENDED	2/16/21	1/21	
				DESIGN MANAGER	HAS	1-21	
			FILE:	DRAWING:			
			ATLAS PAGE NO. 391				

STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: DAMAGE INVENTORY #331109 SITES ALONG THE EAST SIDE OF THE ARKANSAS RIVER INCLUDING: SITE 178 AND SITE 190. ALL APPROXIMATELY LOCATED IN THE NE/4 OF SECTION 36 OF OK T19N R12E. WITHIN THE CITY LIMITS OF TULSA, OKLAHOMA.

PROJECT DESCRIPTION: _____
SITE 178: EROSION CONTROL AND REPLACE PIPE
SITE 190: EROSION CONTROL AND REMOVAL OF SEDIMENT

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:
1. TEMPORARY EROSION CONTROL.
2. PERMANENT EROSION CONTROL.

SOIL TYPE: VERY FINE SANDY LOAM, STRATIFIED LOAMY
VERY FINE SAND TO SILTY CLAY LOAM

TOTAL AREA OF THE CONSTRUCTION SITE: LESS THAN 1 ACRE COMBINED

ESTIMATED AREA TO BE DISTURBED: LESS THAN 1 ACRE COMBINED

OFFSITE AREA TO BE DISTURBED: _____
 (FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: 0.09 ACRES

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: 0.18 ACRES

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: X.X

LATITUDE & LONGITUDE OF CENTER OF PROJECT: N36° 05' 11.0", W95° 59'06.0" N36° 05' 09.2", W95° 59' 06.0"

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: ARKANSAS RIVER

SENSITIVE WATERS OR WATERSHEDS: YES NO

303 IMPAIRED WATERS: YES NO

IF YES, LIST IMPAIRMENT: ENTEROCOCCUS, TURBIDITY

LOCATED IN A TMDL: YES NO

LAKE THUNDERBIRD TMDL: YES NO

MS4 ENTITY YES NO

IF YES, LOCATION: TULSA COUNTY

NOTE:
 THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- TEMPORARY SEEDING
- PERMANENT SODDING, SPRIGGING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION BLANKET
- PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

- STABILIZED CONSTRUCTION EXIT
- TEMPORARY SILT FENCE
- TEMPORARY SILT DIKES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ROCK FILTER DAMS
- TEMPORARY SLOPE DRAIN
- PAVED DITCH W/ DITCH LINER PROTECTION
- TEMPORARY DIVERSION CHANNELS
- TEMPORARY SEDIMENT BASINS
- TEMPORARY SEDIMENT TRAPS
- TEMPORARY SEDIMENT FILTERS
- TEMPORARY SEDIMENT REMOVAL
- RIP RAP
- INLET SEDIMENT FILTER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBAG BERMS
- TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGEWAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:

A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEANING UP
- 104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
- 104.13 ENVIRONMENTAL PROTECTION
- 106.08 STORAGE AND HANDLING OF MATERIAL
- 107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
- 107.20 STORM WATER MANAGEMENT
 - 220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
 - 221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:

"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.



Ryan Pierce
 12/16/2020

STORM WATER MANAGEMENT PLAN

PROJECT #173120-T021-126335

DAMAGE #331109

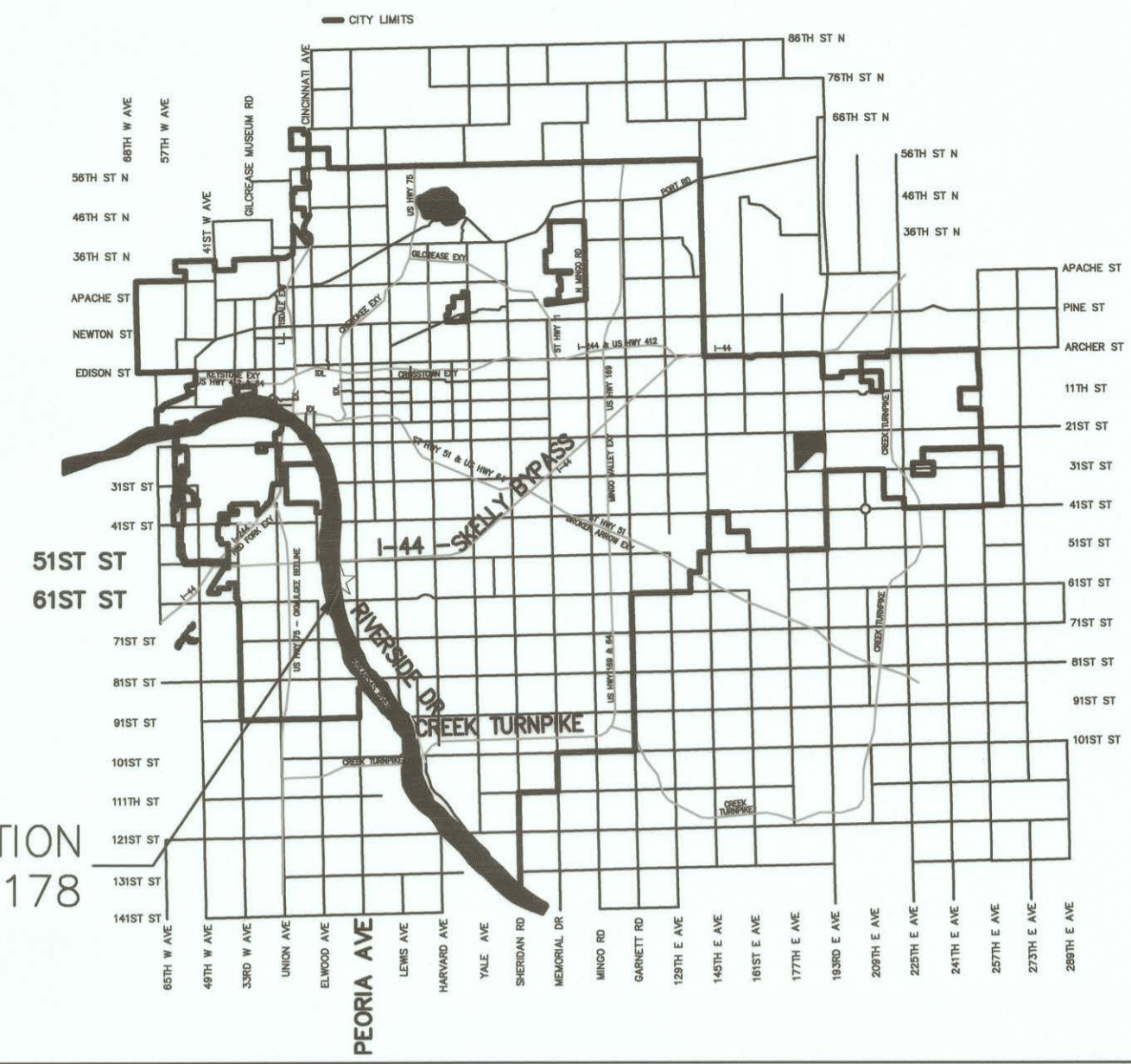
**CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT**

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			N/A	DESIGNED	RJP	05/20	 CITY ENGINEER
				SURVEY	N/A	N/A	
			PROFILE SCALE	PROJ. MGR.	HAS	1/21	
			HORIZONTAL:	LEAD ENGR.	HAS	1/21	
			N/A	FIELD MGR.	HAS	1/21	
			VERTICAL:	RECOMMENDED	HAS	1/21	
			N/A	DESIGN MANAGER	HAS	1/21	
			FILE:	DRAWING:			DATE: 12/16/20
			ATLAS PAGE NO. 316				SHEET 15 OF 28 SHEETS

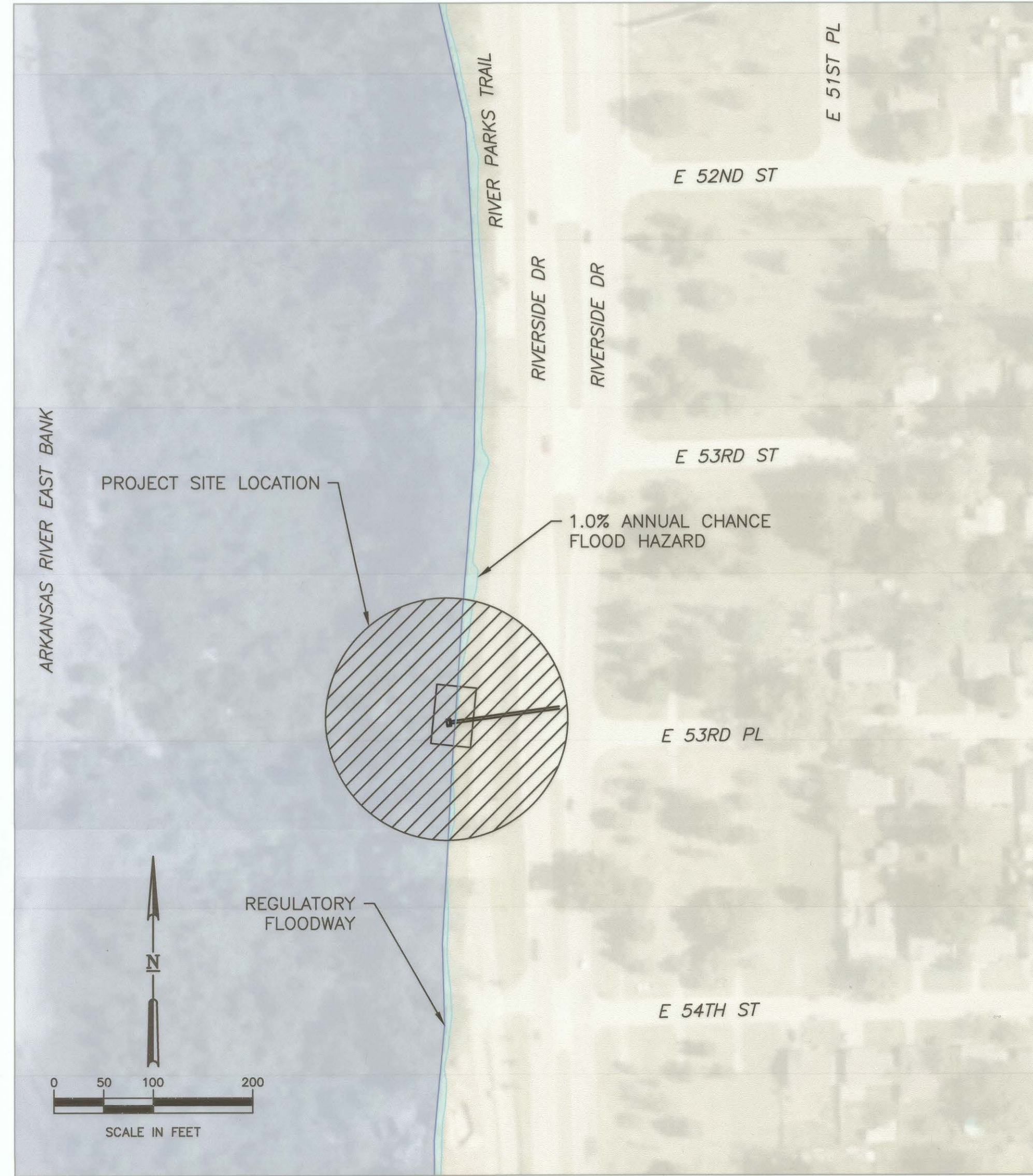
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CITY OF TULSA, OKLAHOMA



☆ SITE LOCATION
SITE 178

LOCATION MAP



SITE 178 - (36.08640, -95.98500)

CONSTRUCTION NOTES:

- * BACKFILL - 178 CY OF UNCLASSIFIED FILL, 60 FT LONG X 40 FT WIDE X 2 FT DEEP, SURFACE WATER FLOODING ERODED SOIL.
- * STORM DRAIN, RCP - 12 FT LONG X 30 IN IN DIAMETER, SURFACE WATER FLOODING CAUSED PIPE SEPARATIONS.

DI# 331109 - SITE 178					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY	178.00
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	100.00
326(B)	0100	GEOGRID REINFORCEMENT		SY	100.00
601(B)	0536	TYPE I-A PLAIN RIPRAP		CY	26.00
613(A)	0493	30" R.C.PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	12.00

SITE 178 - (36.08640, -95.98500)

HAZARD MITIGATION PROPOSAL (HMP) SCOPE OF WORK:

- * ADDING 25.42 CY RIP RAP TO OTHERWISE UNPROTECTED AREAS TO MITIGATE DAMAGE FROM RAPIDLY FLOWING FLOOD WATERS.
- * ADDING 100 SY GEOSYNTHETIC FABRIC TO OTHERWISE UNPROTECTED AREAS TO PREVENT EROSION CAUSED BY RAPIDLY FLOWING FLOOD WATERS.

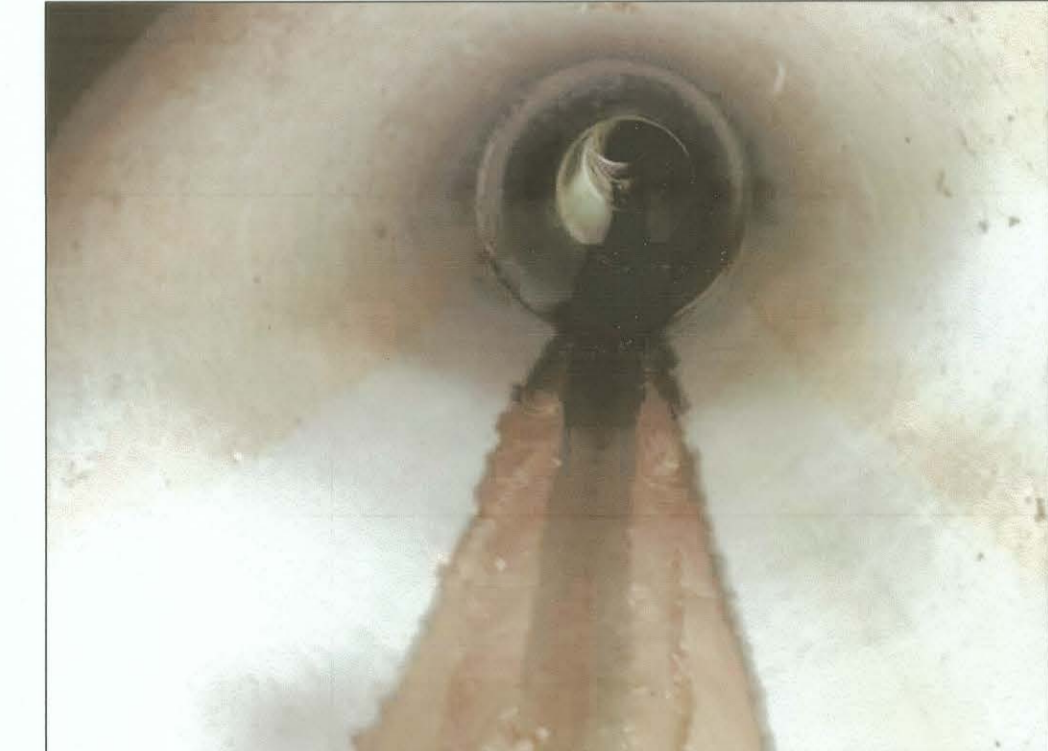
HMP SCOPE NOTE:

1. THE MITIGATION PROPOSAL ESTIMATES WERE GENERATED USING RS MEANS.

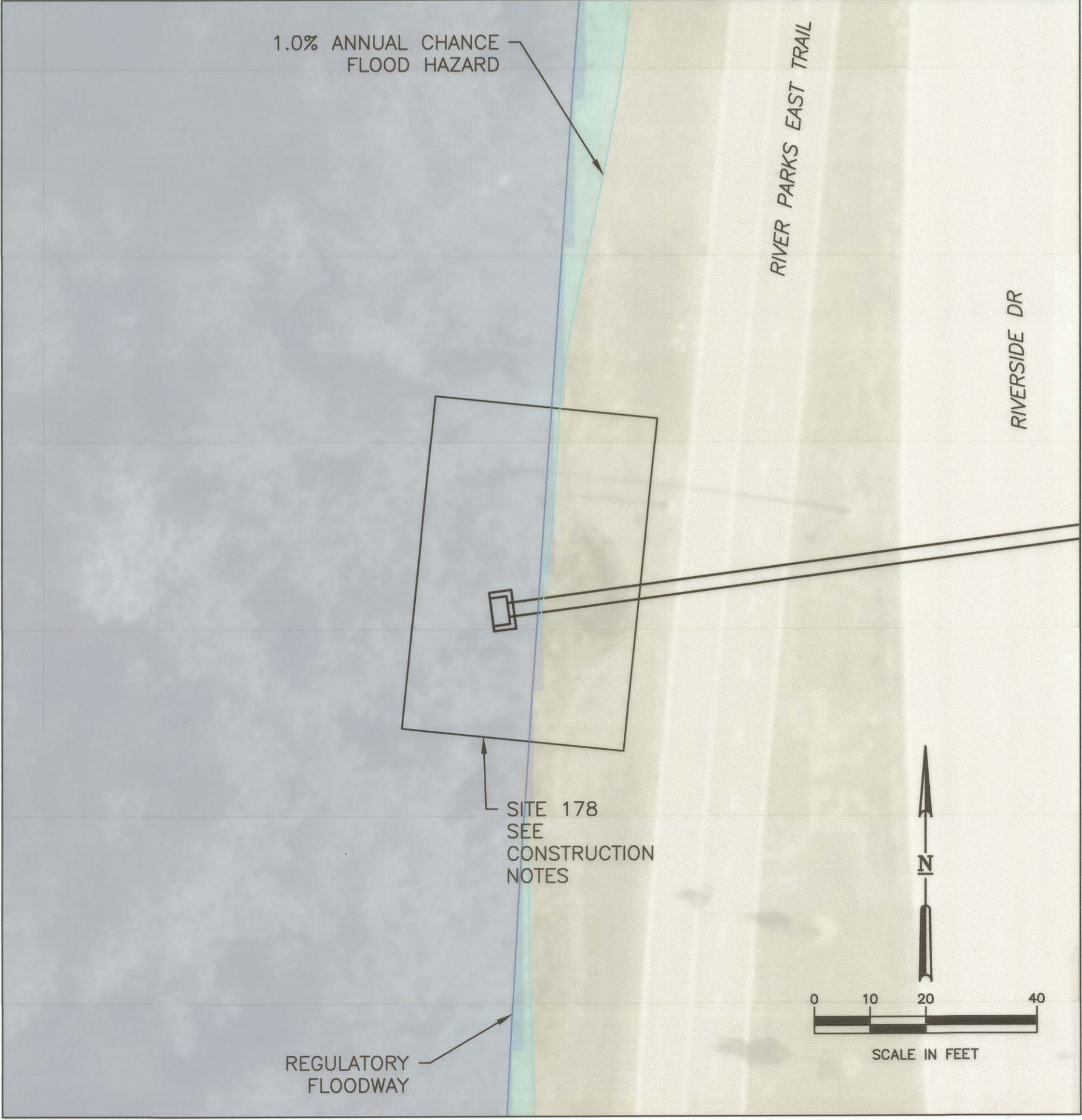
SITE PHOTO



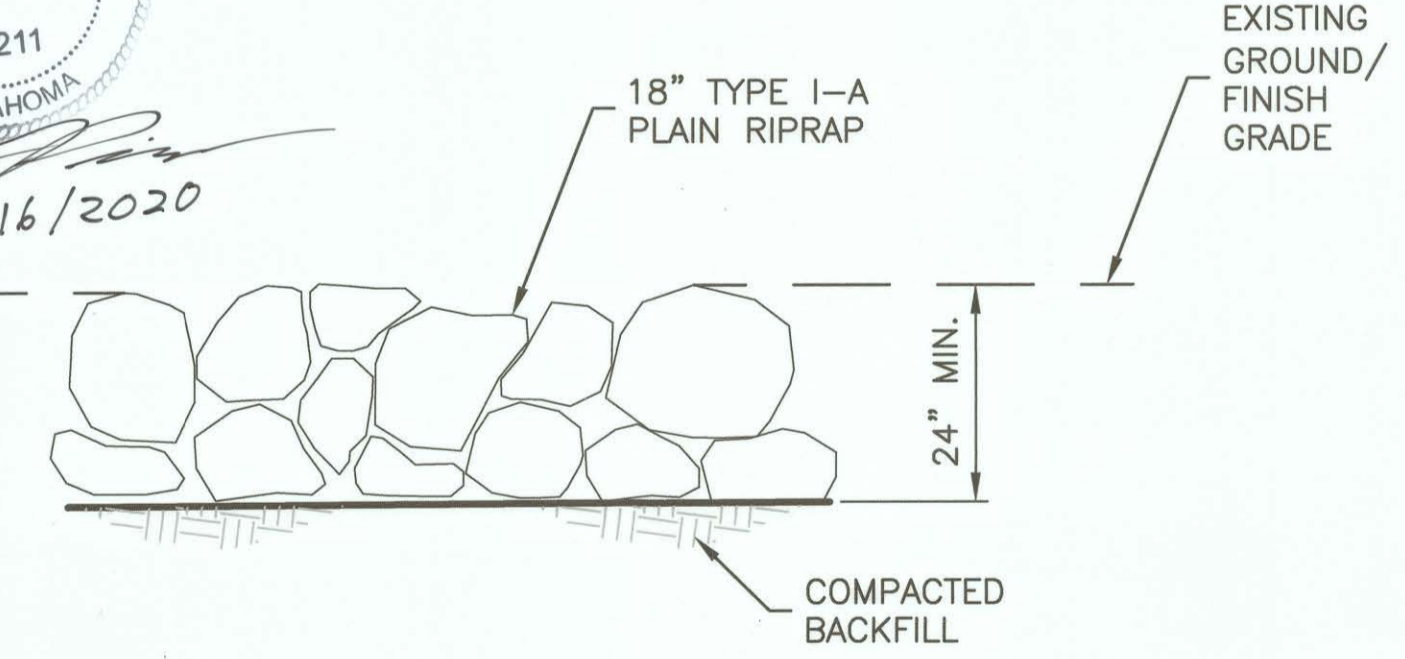
SITE PHOTO



SITE 178



Ryan Pierce
12/16/2020



1 RIPRAP INSTALLATION
SCALE: NONE

LEGEND

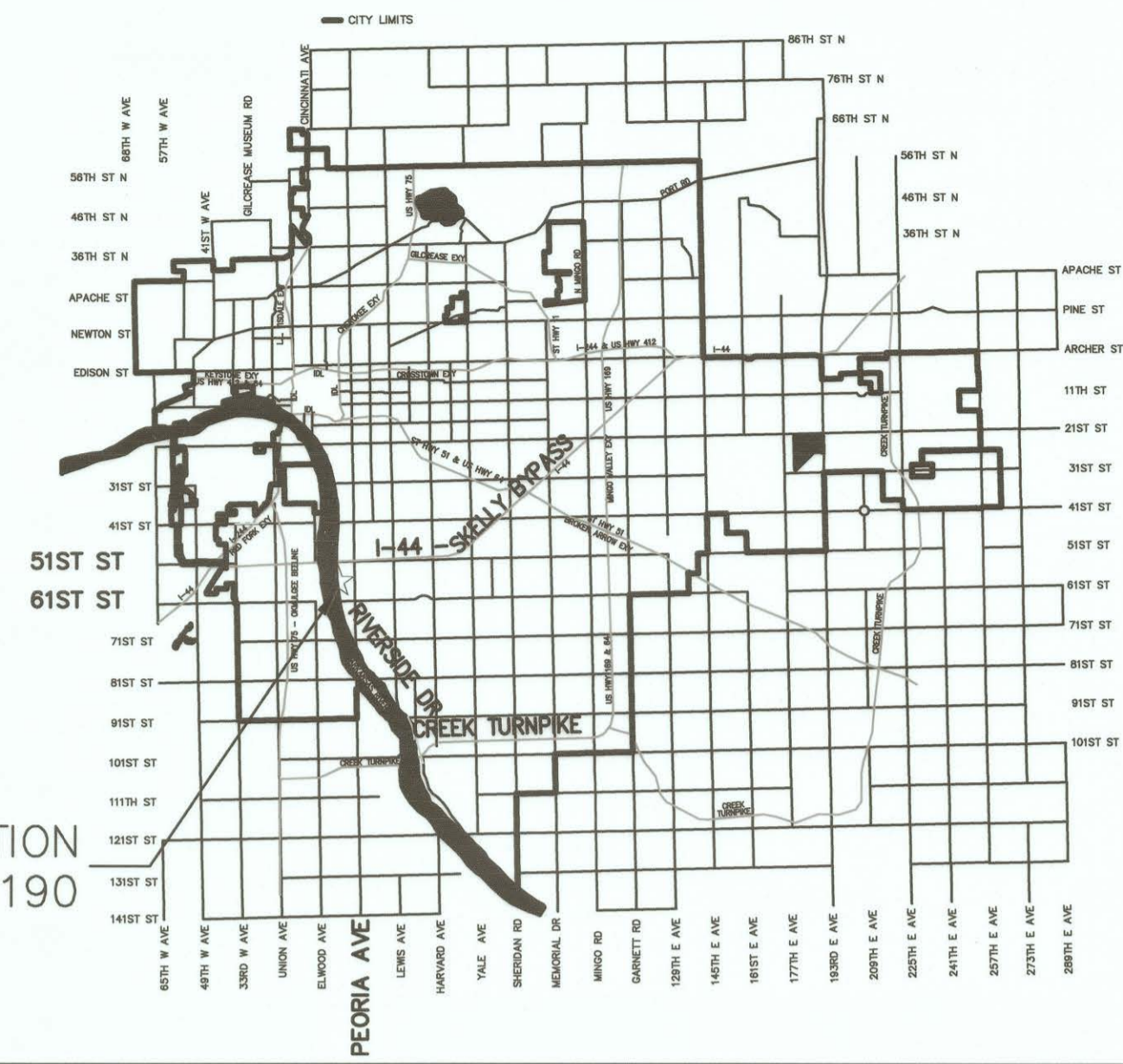
FEMA SITE AREA



FEMA SITE 178							
PROJECT #173120-T021-126335							
DAMAGE #331109							
CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT							
PLANS AND ESTIMATES PREPARED BY: Meshek & Associates, L.L.C. 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620							
REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			1" = 8'	DESIGNED	RJP	05/20	 DATE: 1-26-21 SHEET 16 OF 26 SHEETS
				SURVEY	N/A	N/A	
			PROFILE SCALE	PROJ. MGR.	HG	1/21	
			HORIZONTAL:	LEAD ENGR.	BOG	1/21	
			VERTICAL:	FIELD MGR.	BOG	1/21	
				RECOMMENDED	HAS	1-21	
				DESIGN MANAGER			
			FILE:	DRAWING:			
			ATLAS PAGE NO. 316				

PRINT DATE: 12/18/2020 M:\City of Tulsa\17TU.03_On_Call_Stormwater_Services_2017_TO_21_FEMA_Flood_Damage_Design_Working\126335\Damage_331109.dwg

CITY OF TULSA, OKLAHOMA



☆ SITE LOCATION
SITE 190

SITE 190 - (36.08590, -95.98500)

- * BACKFILL - 111 CY OF UNCLASSIFIED FILL, 60 FT LONG X 25 FT WIDE X 2 FT DEEP, SURFACE WATER FLOODING ERODED SOIL.
- * VEGETATIVE DEBRIS - 37 CY OF VEGETATIVE DEBRIS 10FT LONG X 10 FT WIDE X 2 FT DEEP, SURFACE WATER FLOODING DEPOSITED DEBRIS ON THE RIVER BANK.

SCOPE NOTE:

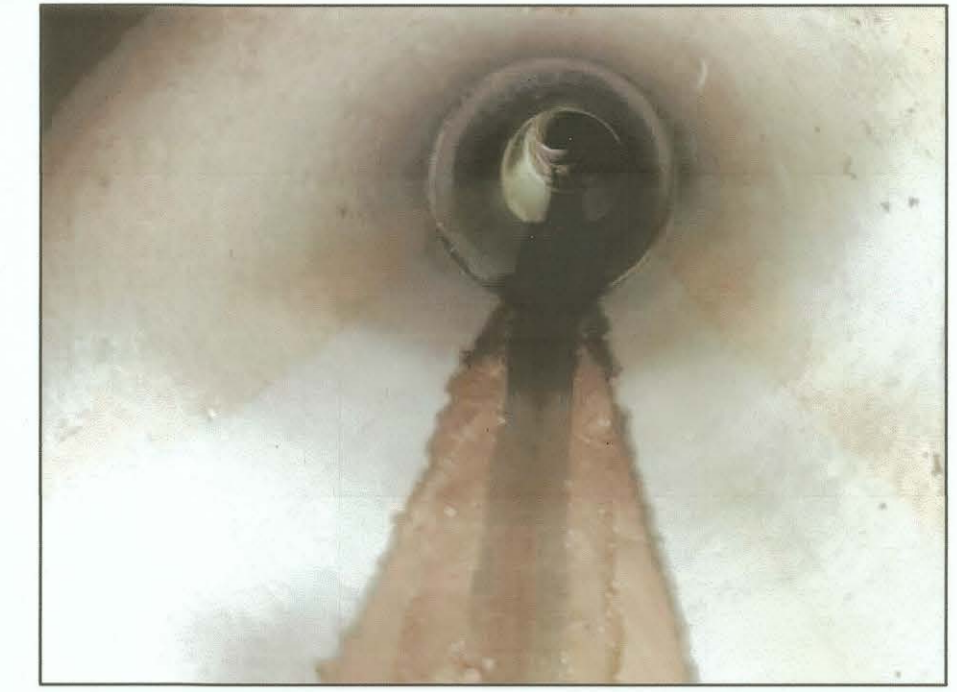
1. EXTRACTED SILT THAT CANNOT BE REUSED ON SITE WILL BE DISPOSED AT THE C & D LANDFILL LOCATED AT 13012 OK HWY 266, TULSA, OK 74146, WITH THE GPS COORDINATE 36.219536, -95.830182 (SOLID WASTE PERMIT NO. 3572042). IF THE SILT DESTINATION CHANGES, THE APPLICANT MUST NOTIFY FEMA AND THE RECIPIENT PRIOR TO DELIVERING TO THE NEW LOCATION.

DI# 331109 - SITE 190				
ITEM		ITEM DESCRIPTION	NOTES	UNIT QUANTITY
202(D)	0184	UNCLASSIFIED BORROW		CY 111.00
221(I)	0525	REMOVAL OF SEDIMENT	E-7	CY 37.00

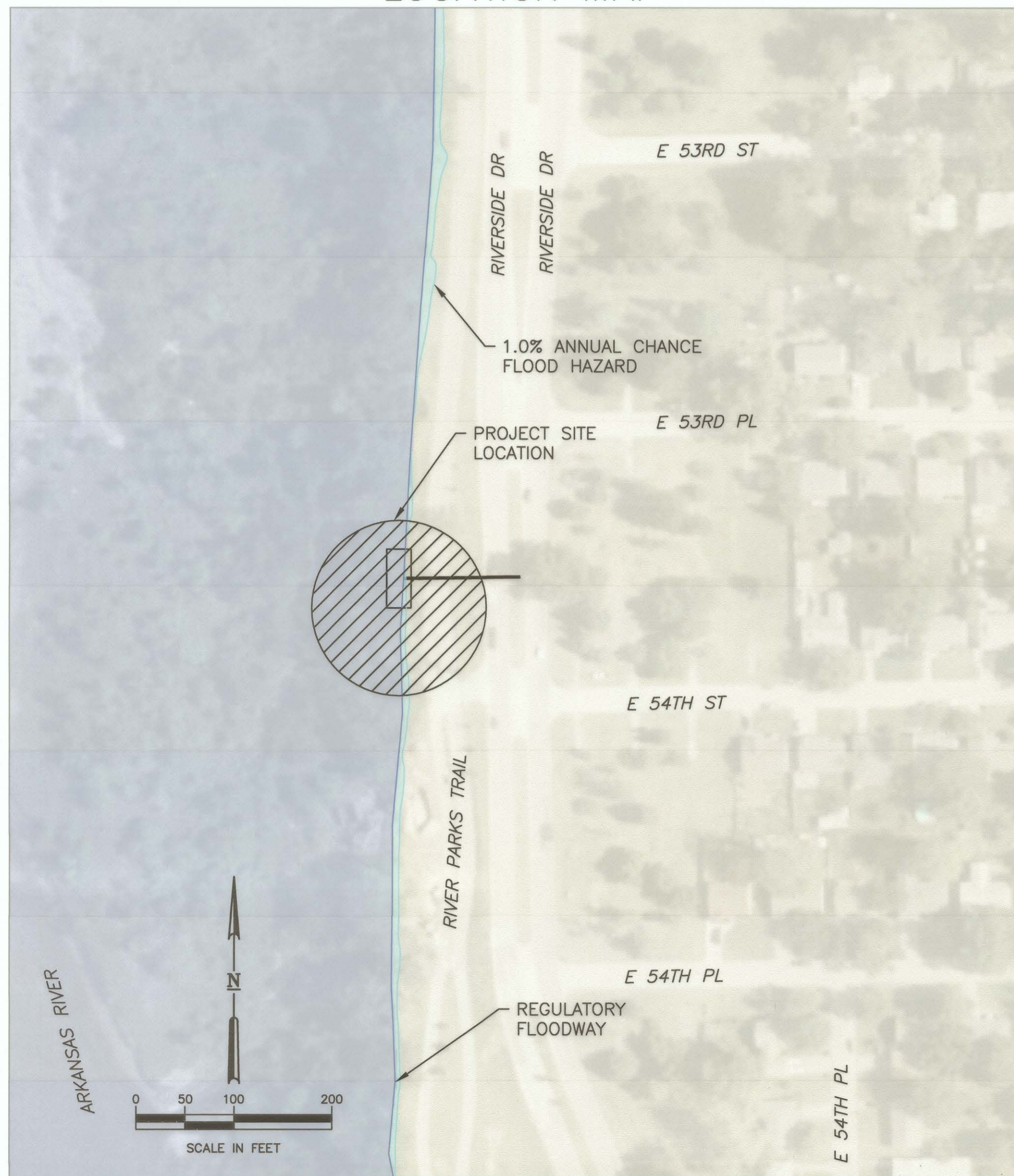
SITE PHOTO



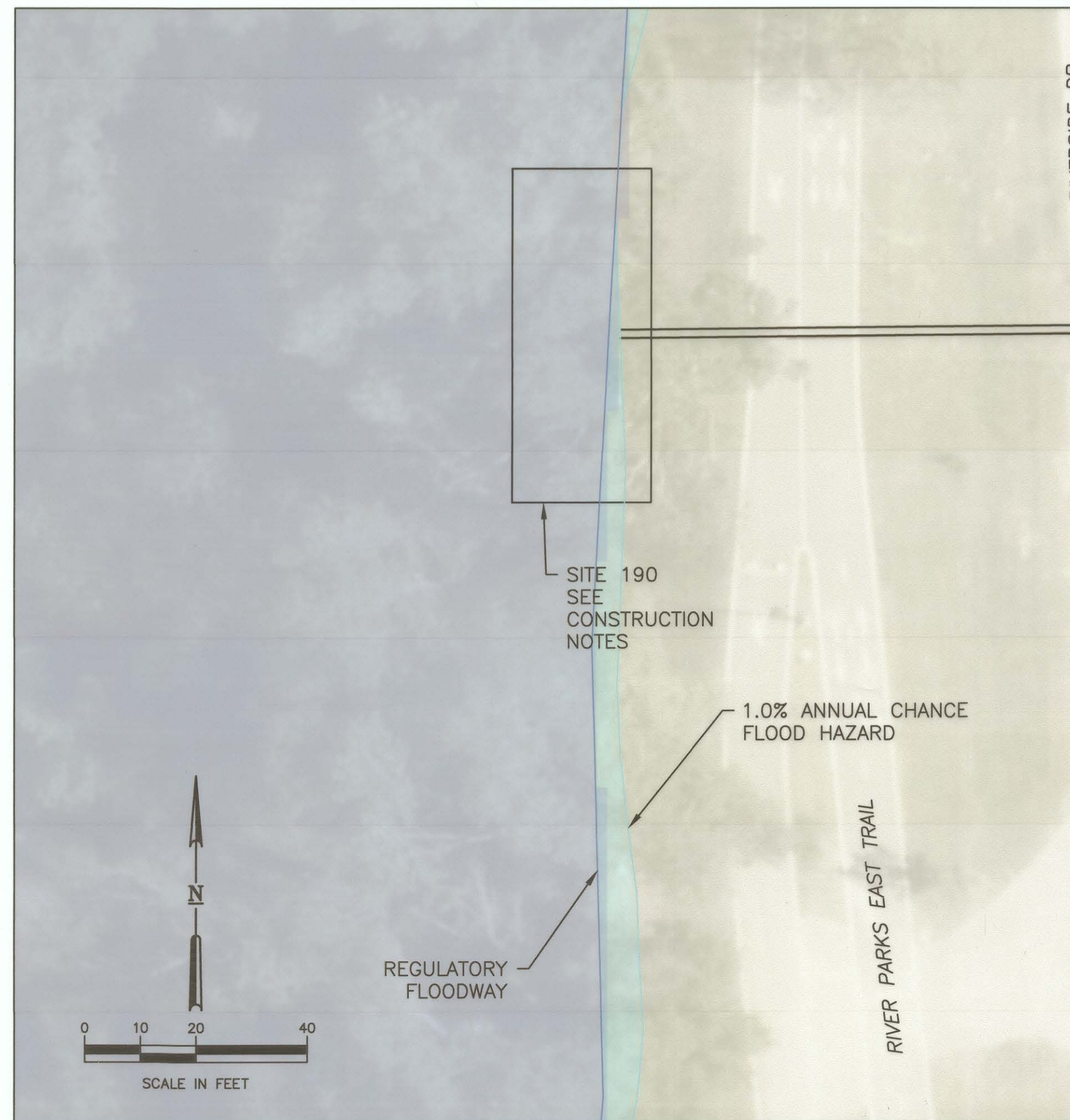
SITE PHOTO



LOCATION MAP



SITE 190



Ryan Pierce
12/16/2020

LEGEND

FEMA SITE AREA



FEMA SITE 190

PROJECT #173120-T021-126335

DAMAGE #331109

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
1" = #"	DESIGNED	RJP	05/20	SURVEY	N/A	N/A	 DATE: 1.08.21 SHEET 17 OF 26 SHEETS
PROFILE SCALE	PROJ. MGR.	CAG	1/21	LEAD ENGR.	RJP	1/21	
HORIZONTAL:	FIELD MGR.	RJP	1/21	RECOMMENDED	RJP	1/21	
VERTICAL:	DESIGN MANAGER	RJP	1/21				
FILE:	DRAWING:						

STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: DAMAGE INVENTORY #331110 SITES ALONG THE EAST SIDE OF THE ARKANSAS RIVER INCLUDING: SITE 390, SITE 179 AND SITE 196. ALL APPROXIMATELY LOCATED IN THE NE/4 OF SECTION 36 OF OK T19N R12E. WITHIN THE CITY LIMITS OF TULSA, OKLAHOMA.

PROJECT DESCRIPTION: _____
 SITE 390: REPLACE PIPE
 SITE 179: EROSION CONTROL AND INTERNAL BAND JOINT SEAL
 SITE 196: EROSION CONTROL AND REPLACE PIPE

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:

1. TEMPORARY EROSION CONTROL.
2. PERMANENT EROSION CONTROL.

SOIL TYPE: LOAMY FINE SAND, STRATIFIED FINE SAND TO LOAM

TOTAL AREA OF THE CONSTRUCTION SITE: LESS THAN 1 ACRE COMBINED

ESTIMATED AREA TO BE DISTURBED: LESS THAN 1 ACRE COMBINED

OFFSITE AREA TO BE DISTURBED: _____
 (FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: 0.09 ACRES

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: 0.18 ACRES

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: X.X

LATITUDE & LONGITUDE OF CENTER OF PROJECT: N36° 04' 09.1", W95° 58' 54.1" N36° 04' 19.6", W95° 58' 57.7" N36° 04' 03.0", W95° 58' 53.0"

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: ARKANSAS RIVER

SENSITIVE WATERS OR WATERSHEDS: YES NO

303 IMPAIRED WATERS: YES NO

IF YES, LIST IMPAIRMENT: ENTEROCOCCUS, TURBIDITY

LOCATED IN A TMDL: YES NO

LAKE THUNDERBIRD TMDL: YES NO

MS4 ENTITY YES NO

IF YES, LOCATION: TULSA COUNTY

NOTE:
 THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- TEMPORARY SEEDING
- PERMANENT SODDING, SPRIGGING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION BLANKET
- PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

- STABILIZED CONSTRUCTION EXIT
- TEMPORARY SILT FENCE
- TEMPORARY SILT DIKES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ROCK FILTER DAMS
- TEMPORARY SLOPE DRAIN
- PAVED DITCH W/ DITCH LINER PROTECTION
- TEMPORARY DIVERSION CHANNELS
- TEMPORARY SEDIMENT BASINS
- TEMPORARY SEDIMENT TRAPS
- TEMPORARY SEDIMENT FILTERS
- TEMPORARY SEDIMENT REMOVAL
- RIP RAP
- INLET SEDIMENT FILTER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBAG BERMS
- TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGEWAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:

A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEANING UP
- 104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
- 104.13 ENVIRONMENTAL PROTECTION
- 106.08 STORAGE AND HANDLING OF MATERIAL
- 107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
- 107.20 STORM WATER MANAGEMENT
- 220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
- 221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:

"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.



[Signature]
 12/16/2020

STORM WATER MANAGEMENT PLAN

PROJECT #173120-T021-126335

DAMAGE #331110

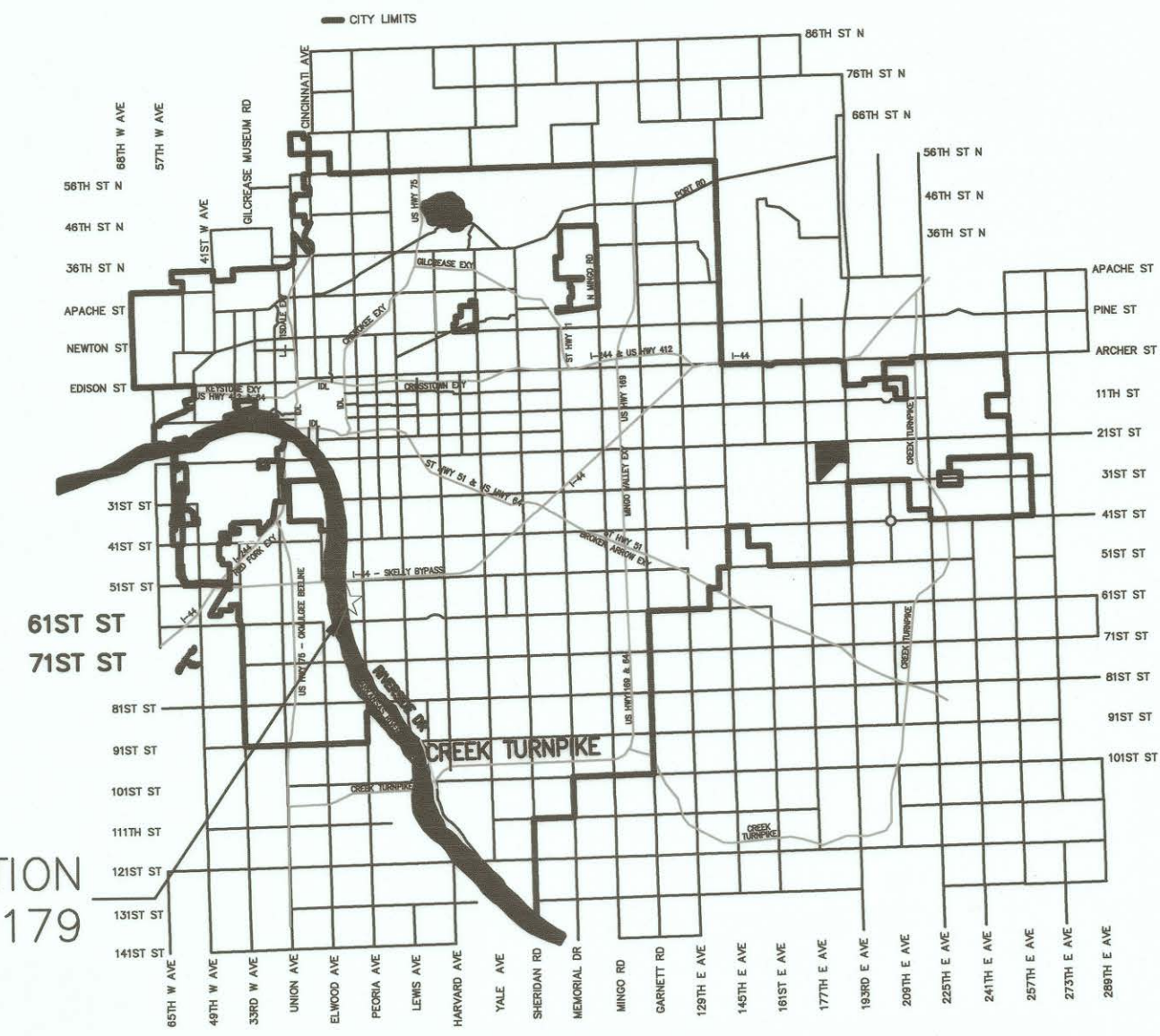
**CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT**

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	DATE	APPROVED:
			N/A	DESIGNED	RJP	05/20	 CITY ENGINEER DATE: <u>1.08.21</u>
			N/A	SURVEY	N/A	N/A	
			PROFILE SCALE	PROJ. MGR.	<u>LAG</u>	<u>1/21</u>	
			HORIZONTAL:	LEAD ENGR.	<u>BOV</u>	<u>1/21</u>	
			N/A	FIELD MGR.	<u>BOV</u>	<u>1/21</u>	
			VERTICAL:	RECOMMENDED	<u>HAS</u>	<u>1-21</u>	
			N/A	DESIGN MANAGER			
			FILE:	DRAWING:			
			ATLAS PAGE NO.	<u>474</u>			

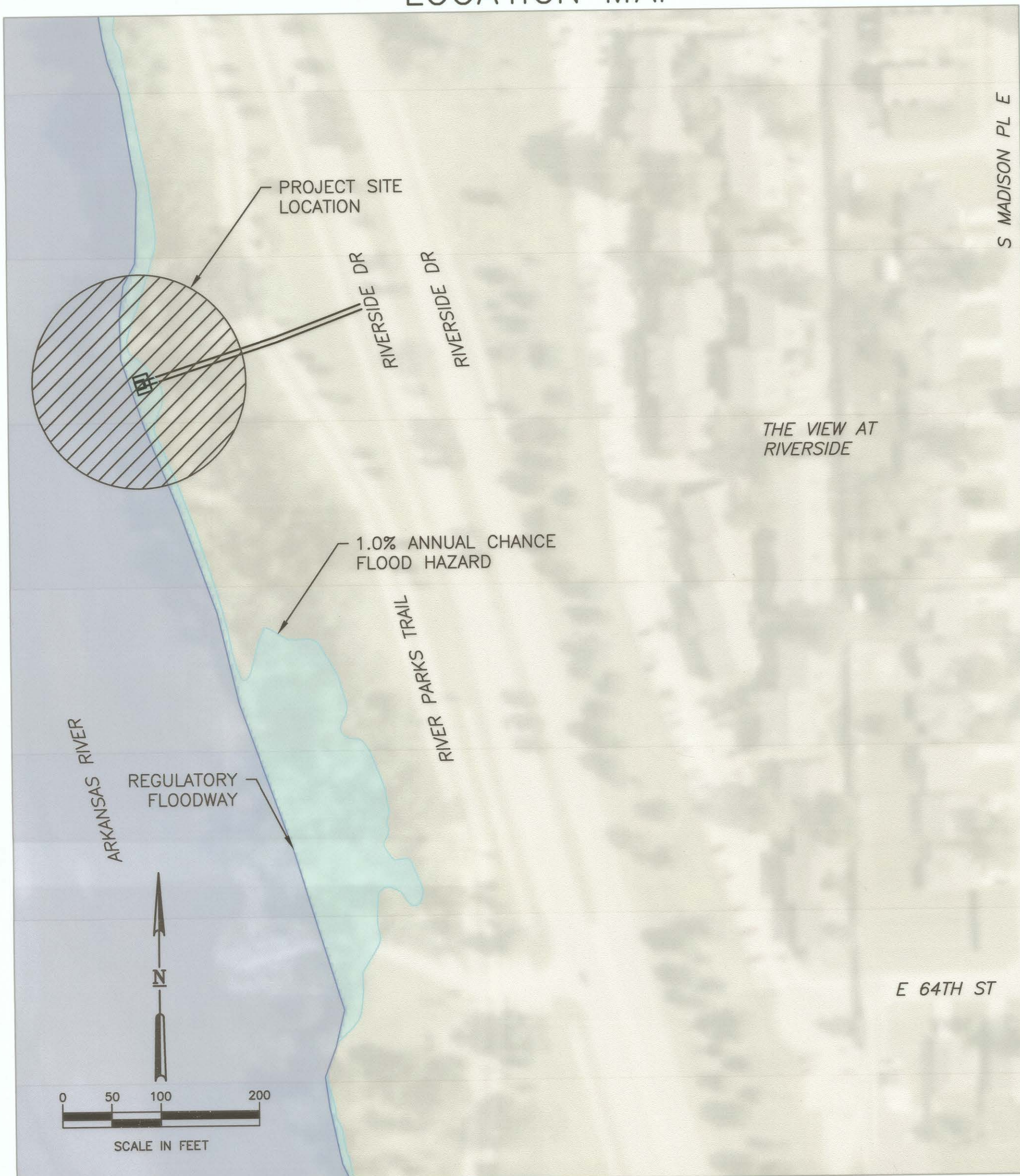
PRINT DATE: 12/18/2020 MA City of Tulsa \1710\03_On-Call_Stormwater_Services_2017\TO_21_FEMA_Flood_Damage_Design\Working\1263335\Damage_331110\Damage_331110.dwg

CITY OF TULSA, OKLAHOMA



★ SITE LOCATION
SITE 179

LOCATION MAP

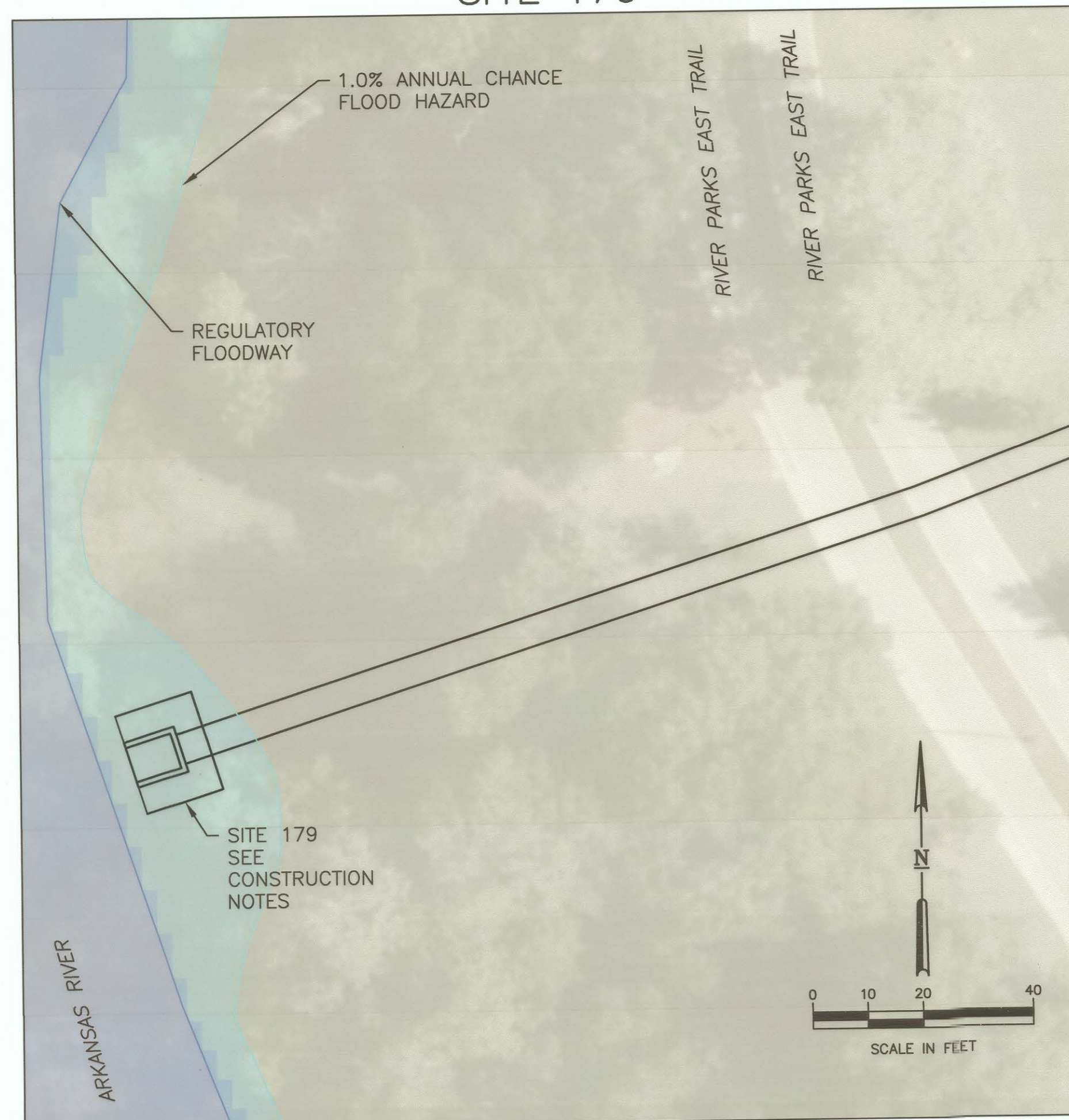


SITE 179 - (36.07210, -95.98270)

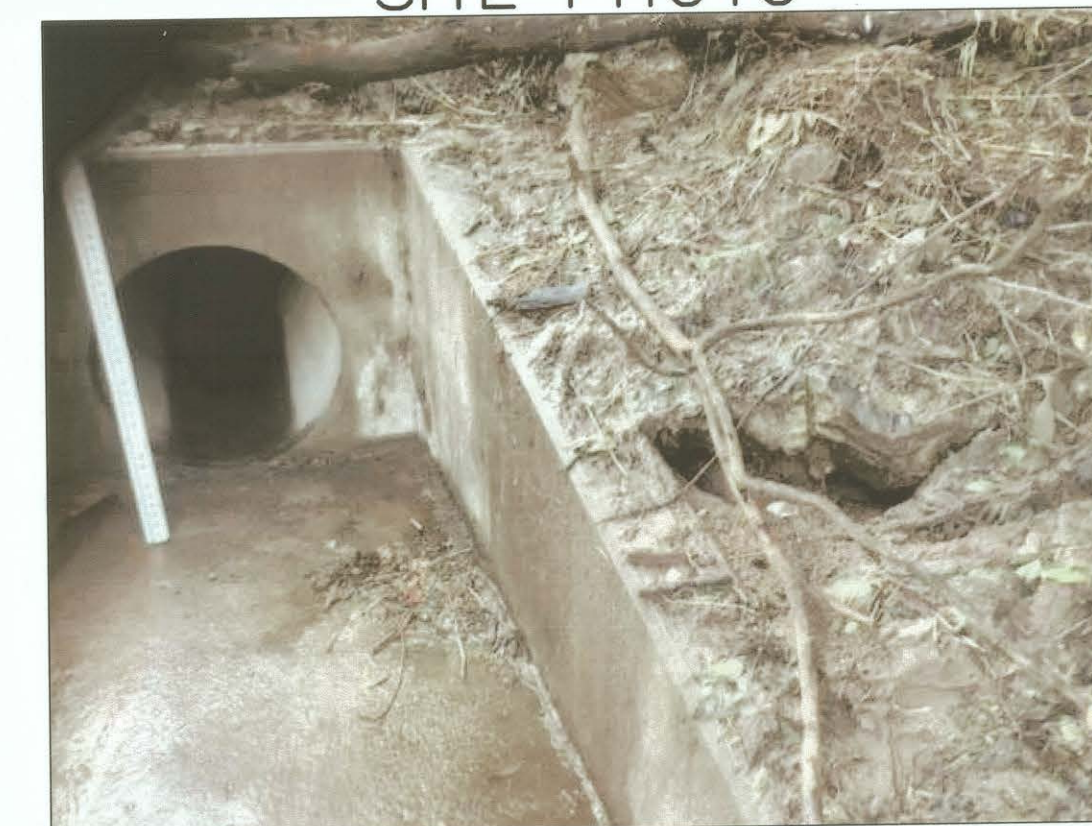
- * BACKFILL - 2 CY OF UNCLASSIFIED FILL, 10 FT LONG X 3 FT WIDE X 2 FT DEEP, SURFACE WATER FLOODING ERODED SOIL.
- * STORM DRAIN, RCP - 1 EACH OF RCP - 1 FT LONG X 54 IN IN DIAMETER, SURFACE WATER FLOODING CAUSED PIPE SEPARATIONS.
- * STONE - 4 CY OF GROUDED RIP-RAP, 20 FT LONG X 20 FT WIDE X 3 IN DEEP, SURFACE WATER FLOODING CAUSED PIPE SEPARATION.
- * STONE - 30 CY OF RIP-RAP, 20 FT LONG X 20 FT WIDE X 2 FT DEEP, SURFACE WATER FLOODING ERODED/DISPLACED STONE.

ITEM	ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184 UNCLASSIFIED BORROW		CY	2.00
601(B)	0536 TYPE I-A PLAIN RIPRAP		CY	30.00
601(H)	1395 TYPE IV GROUDED RIPRAP		CY	4.00
SPECIAL	INTERNAL BAND FOR 54" RCP JOINT SEAL		EA	1.00

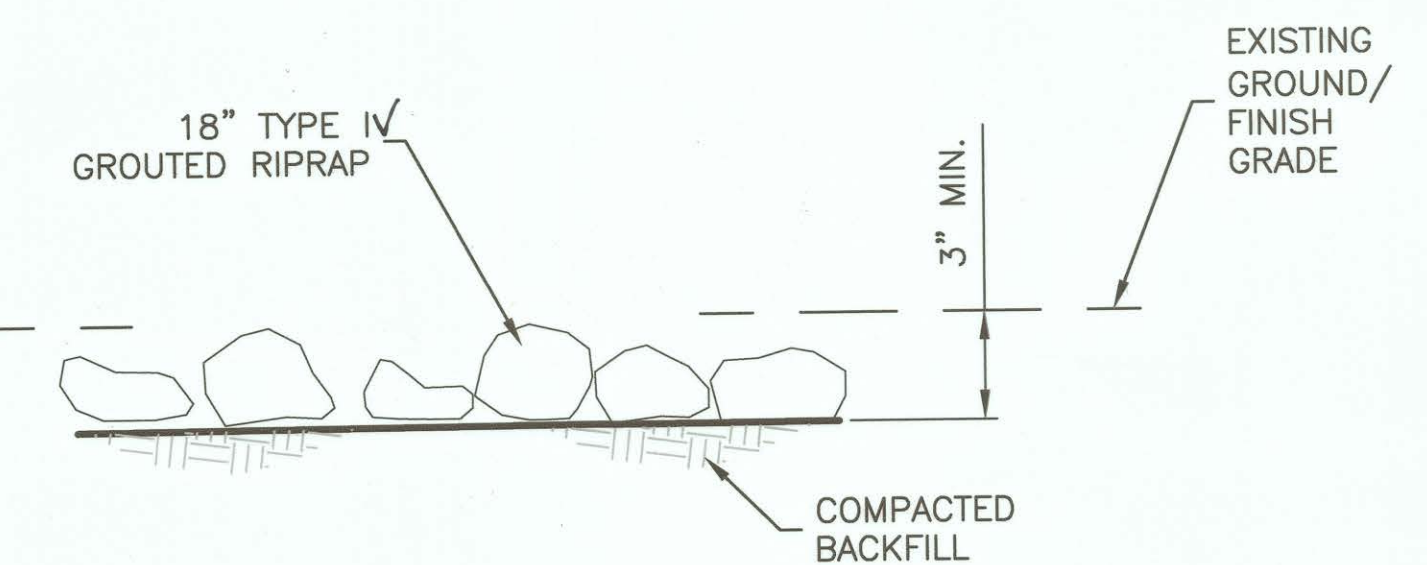
SITE 179



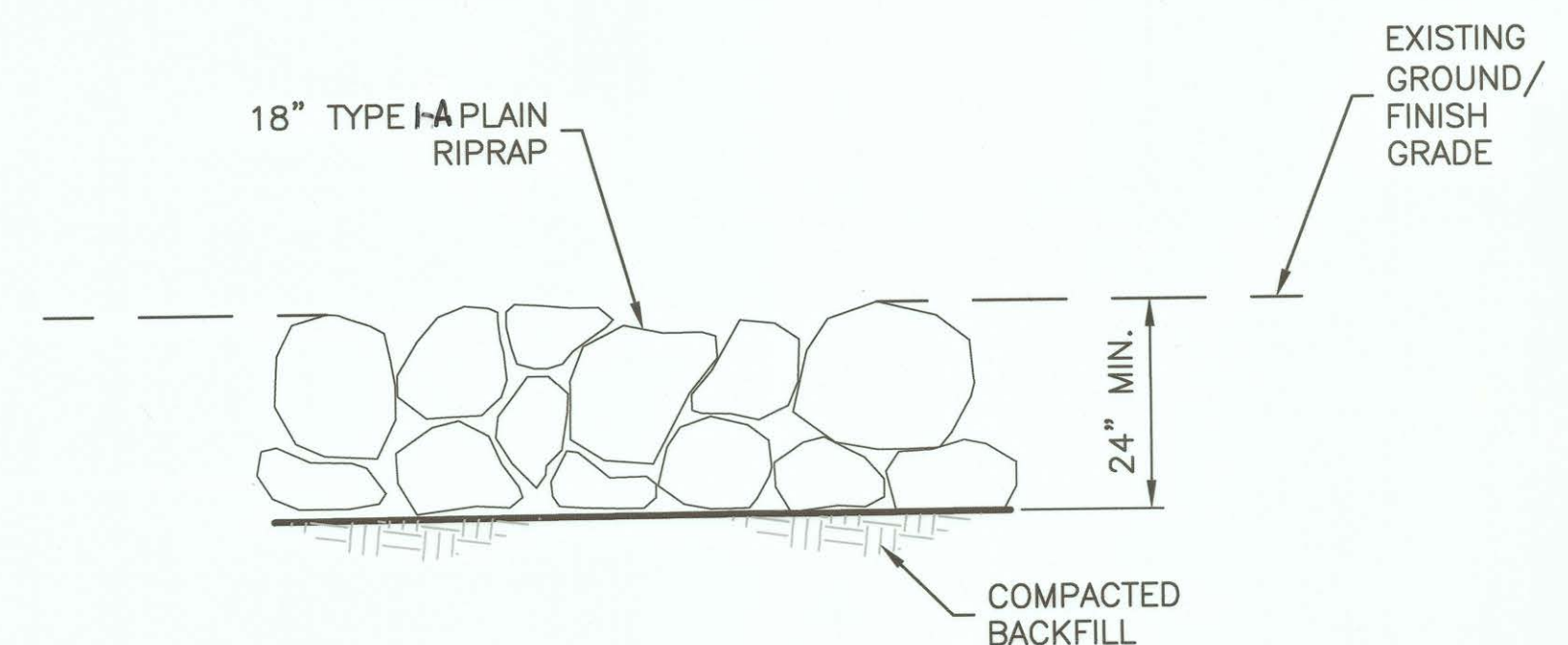
SITE PHOTO



SITE PHOTO



1 RIPRAP INSTALLATION
SCALE: NONE



2 RIPRAP INSTALLATION
SCALE: NONE

LEGEND

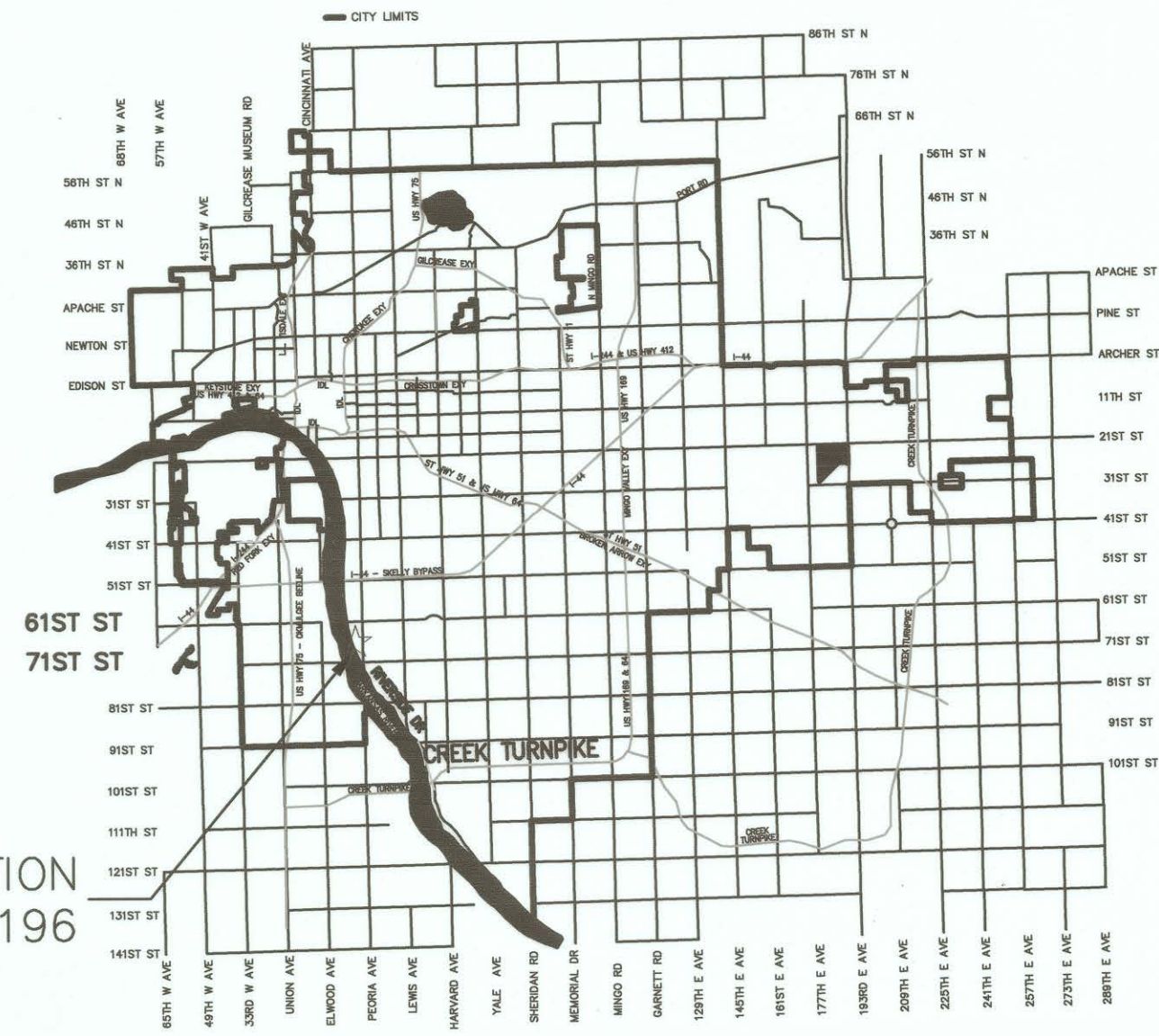
FEMA SITE AREA



FEMA SITE 179			
PROJECT #173120-T021-126335			
DAMAGE #331110			
CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT			
PLANS AND ESTIMATES PREPARED BY: Meshek & Associates, L.L.C. 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620			
PLAN SCALE	DRAWN	KRP	05/20
DESIGNED	RJP		05/20
SURVEY	N/A		N/A
PROFILE SCALE	PROJ. MGR.	CH	1/21
HORIZONTAL:	LEAD ENGR.	BZ	1/21
N/A	FIELD MGR.	BZ	1/21
VERTICAL:	RECOMMENDED		
N/A	DESIGN MANAGER		
FILE:	DRAWING:		
ATLAS PAGE NO. 474			
APPROVED:			
DATE:			1-08-21
SHEET			19 OF 26 SHEETS

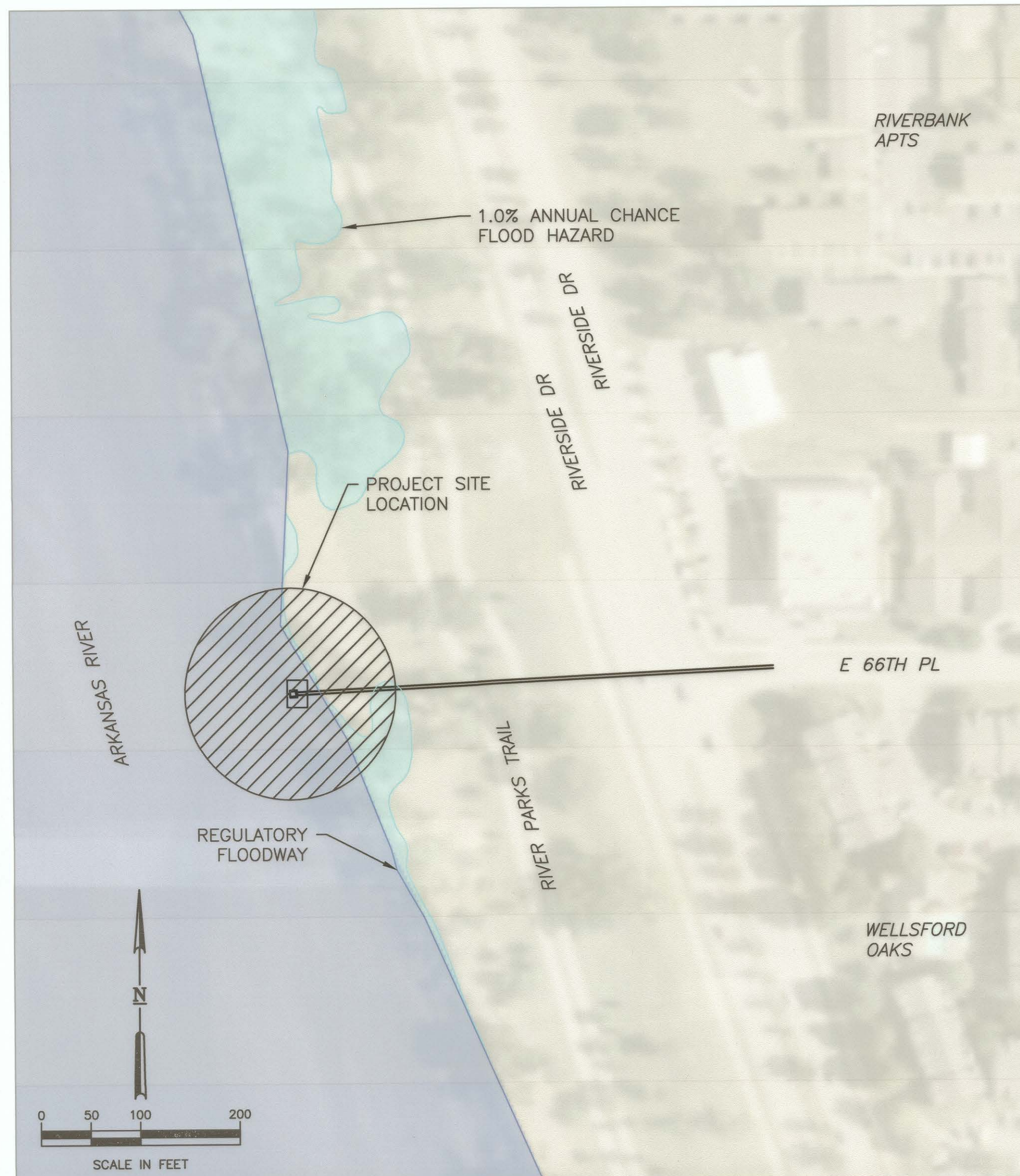
PRINT DATE: 12/18/2020 MA: City of Tulsa \1710\03_0n_Call_Stormwater_Services_2017\TO_21_FEMA_Flood_Damage_Design\126335\Damage_331110\Damage_331110.dwg

CITY OF TULSA, OKLAHOMA



☆ SITE LOCATION
SITE 196

LOCATION MAP



SITE 196 - (36.06750, -95.98140)

CONSTRUCTION NOTES:

- * BACKFILL - 22 CY OF UNCLASSIFIED FILL, 15 FT LONG X 10 FT WIDE X 4 FT DEEP, SURFACE WATER FLOODING ERODED SOIL.
- * STORM DRAIN, 1 EACH OF RCP END SECTION (RESET) - 6 FT LONG X 36 IN IN DIAMETER, SURFACE WATER FLOODING CAUSED JOINT SEPARATIONS.
- * STONE - 11 CY OF GROUTED RIP-RAP, 15 FT LONG X 10 FT WIDE X 2 FT DEEP, SURFACE WATER CAUSED CRACKING/GAPS/UNDERMINING.

D# 331110 - SITE 196

ITEM	ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
202(D)	0184 UNCLASSIFIED BORROW		CY	22.00
230(A)	2806 SOLID SLAB SODDING	E-10,11	SY	50.00
326(B)	0100 GEOGRID REINFORCEMENT		SY	50.00
601(B)	0536 TYPE I-A PLAIN RIPRAP		CY	11.00
601(H)	1395 TYPE IV GROUTED RIPRAP		CY	11.00
SPECIAL	RESET RCP END SECTION		EA	1.00

SITE 196 - (36.06750, -95.98140)

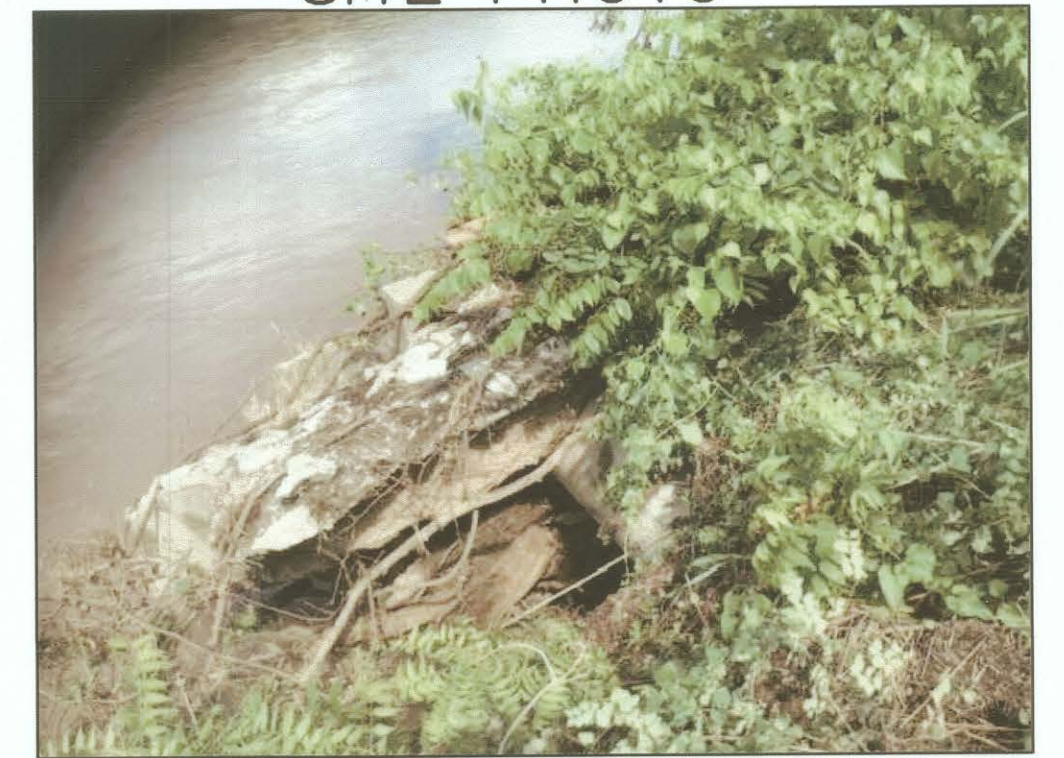
HAZARD MITIGATION PROPOSAL (HMP) SCOPE OF WORK:

- * ADDING 10.59 CY RIP RAP TO MITIGATE DAMAGE FROM RAPIDLY FLOWING FLOOD WATERS.
- * ADDING 50 SY GEOSYNTHETIC FABRIC TO PREVENT EROSION CAUSED BY RAPIDLY FLOWING FLOOD WATERS.

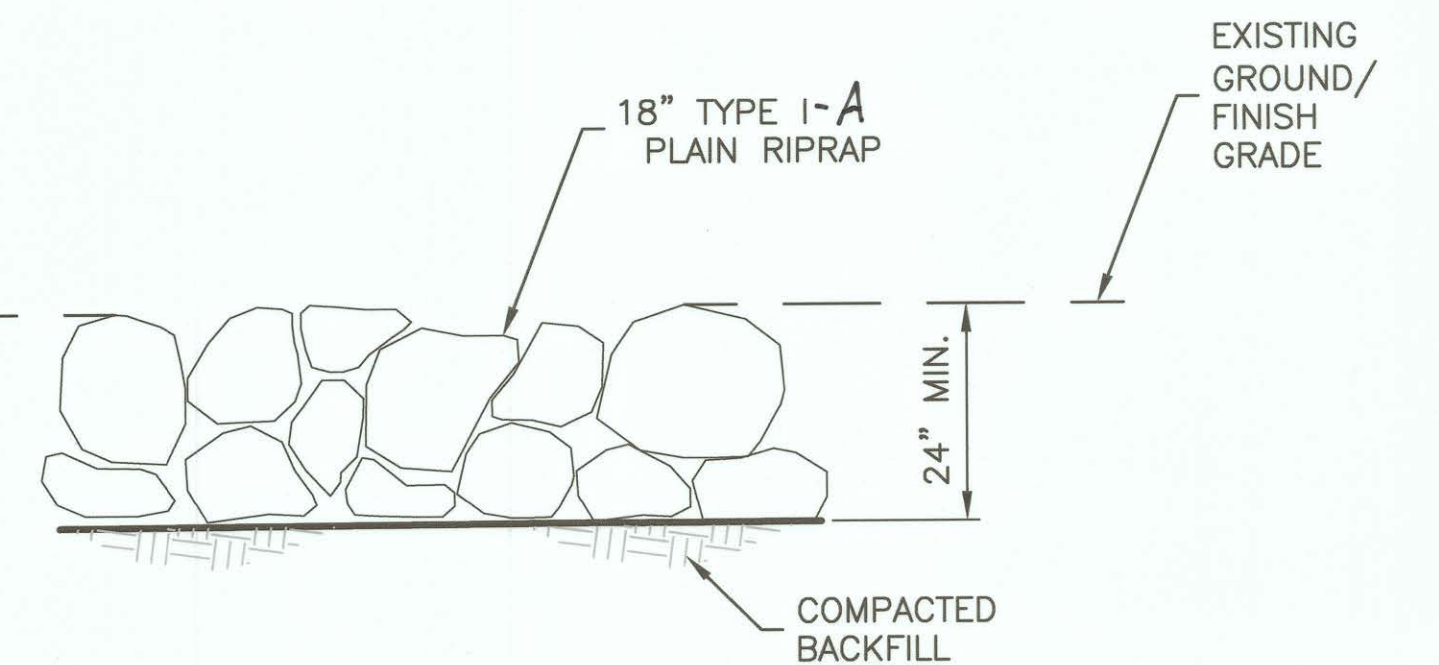
SITE PHOTO



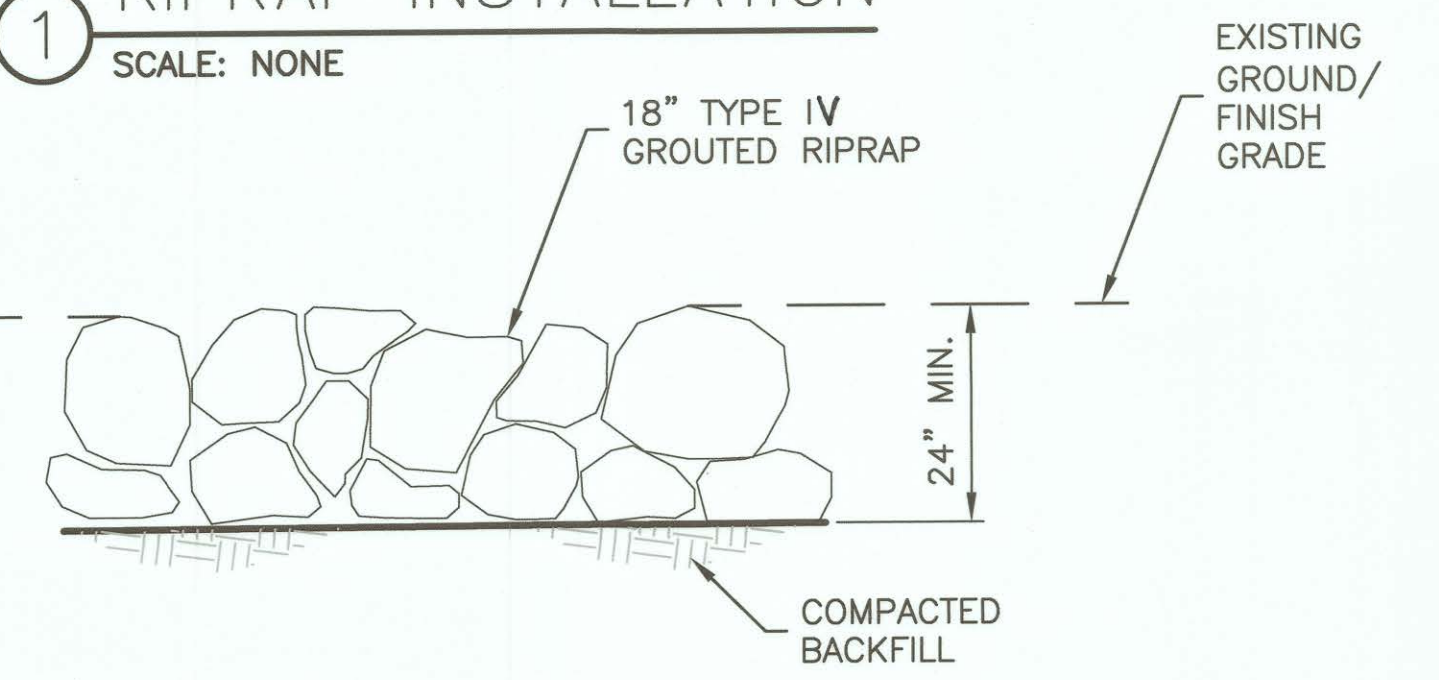
SITE PHOTO



Ryan Pierce
12/16/2020



1 RIPRAP INSTALLATION
SCALE: NONE



2 RIPRAP INSTALLATION
SCALE: NONE

LEGEND

FEMA SITE AREA



FEMA SITE 196

PROJECT #173120-T021-126335

DAMAGE #331110

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

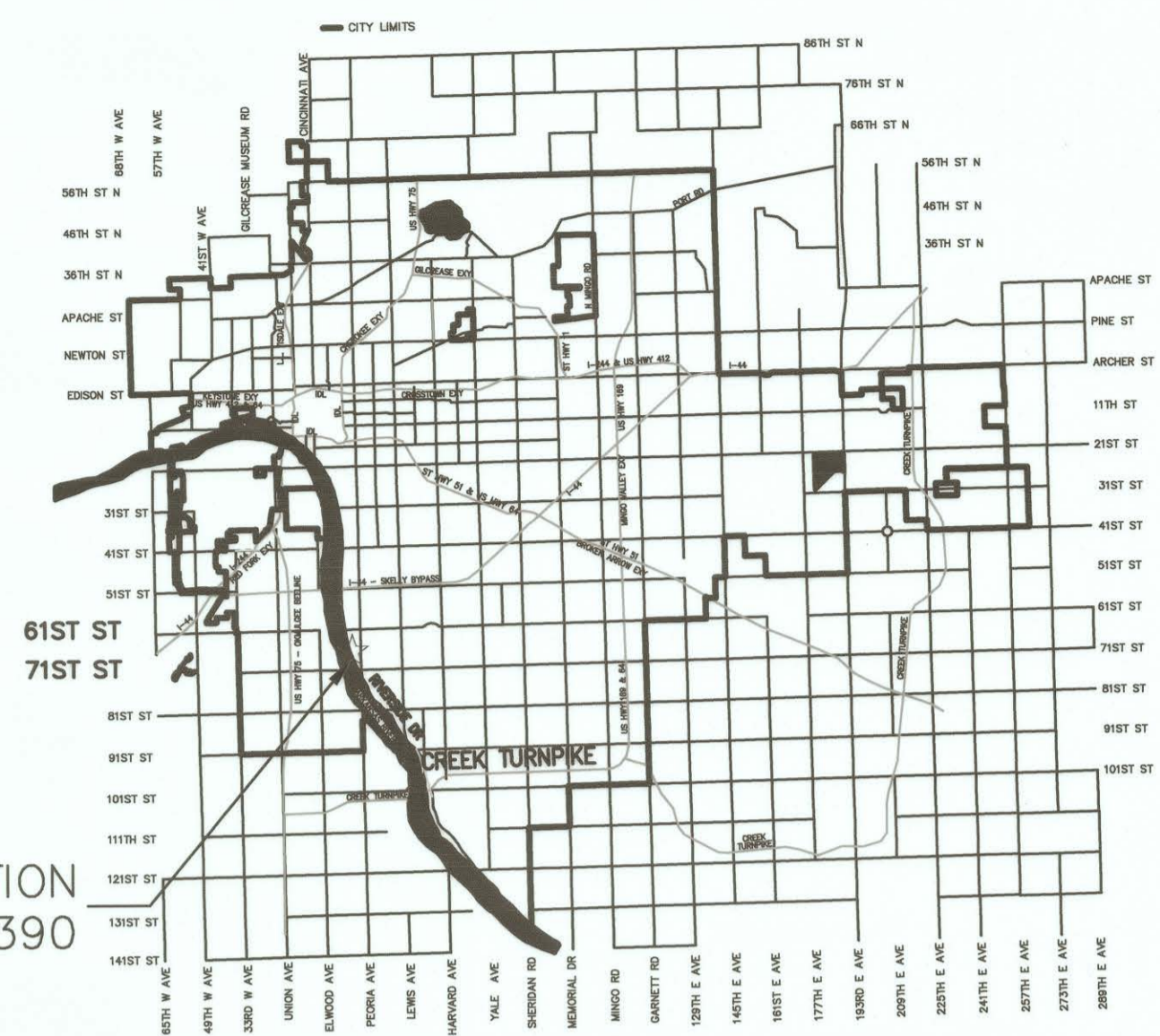
REVISION	BY	DATE	APPROVED:

PLAN SCALE	DRAWN	KRP	DATE
1" = ##	DESIGNED	RJP	05/20
	SURVEY	N/A	N/A
	PROJ. MGR.		
	LEAD ENGR.		
	FIELD MGR.		
	RECOMMENDED		
	DESIGN MANAGER		
	FILE:		
	DRAWING:		

ATLAS PAGE NO. 474
DATE: 12.18.20
SHEET 20 OF 26 SHEETS

PRINT DATE: 12/18/2020 M:\City of Tulsa\17710\03_On-Call_Stormwater_Services_2017\TO_21_FEMA_Flood_Damage_Design\126335\Working\126335\Damage_331110.dwg

CITY OF TULSA, OKLAHOMA



★ SITE LOCATION
SITE 390

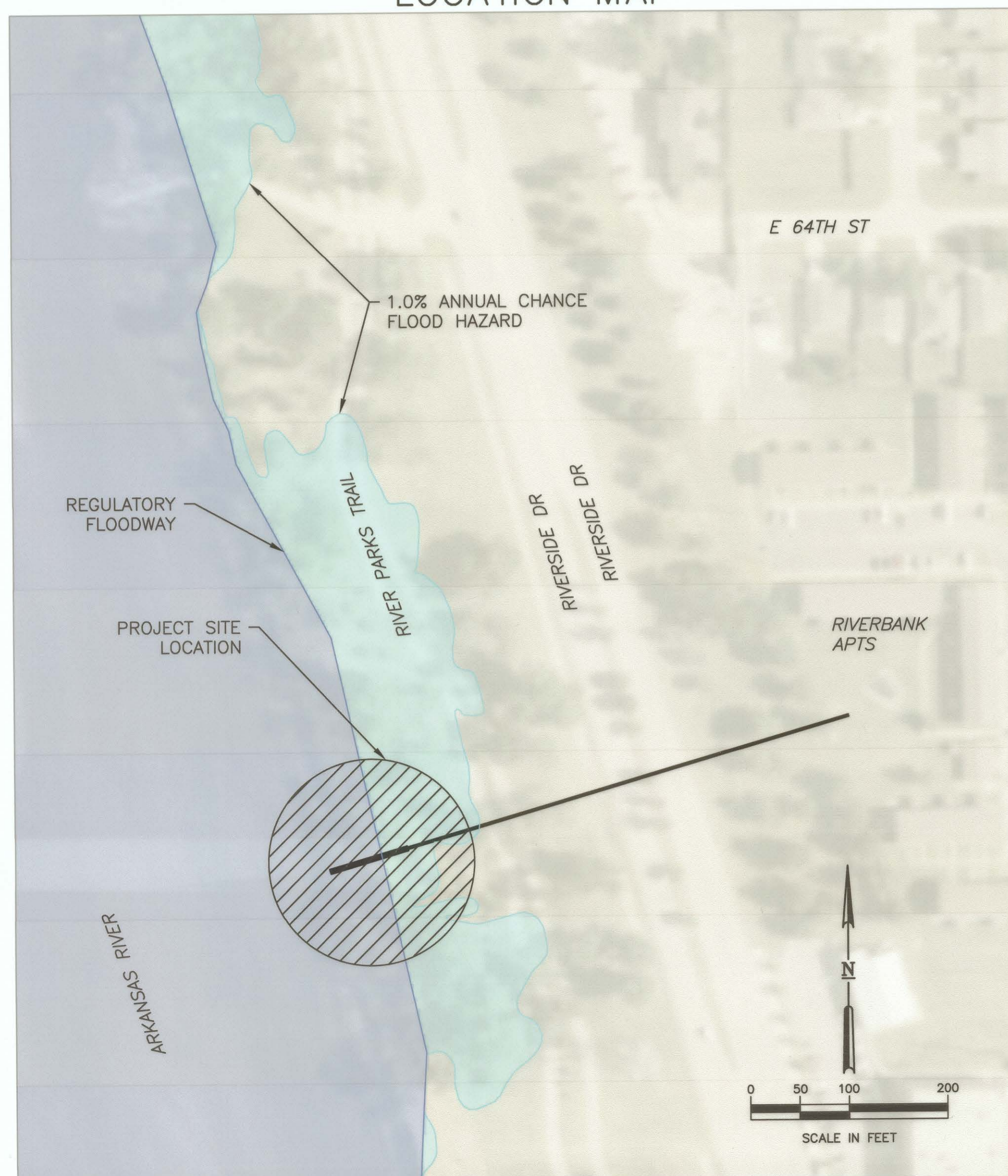
SITE 390 - (36.06920, -95.98170)

CONSTRUCTION NOTES:

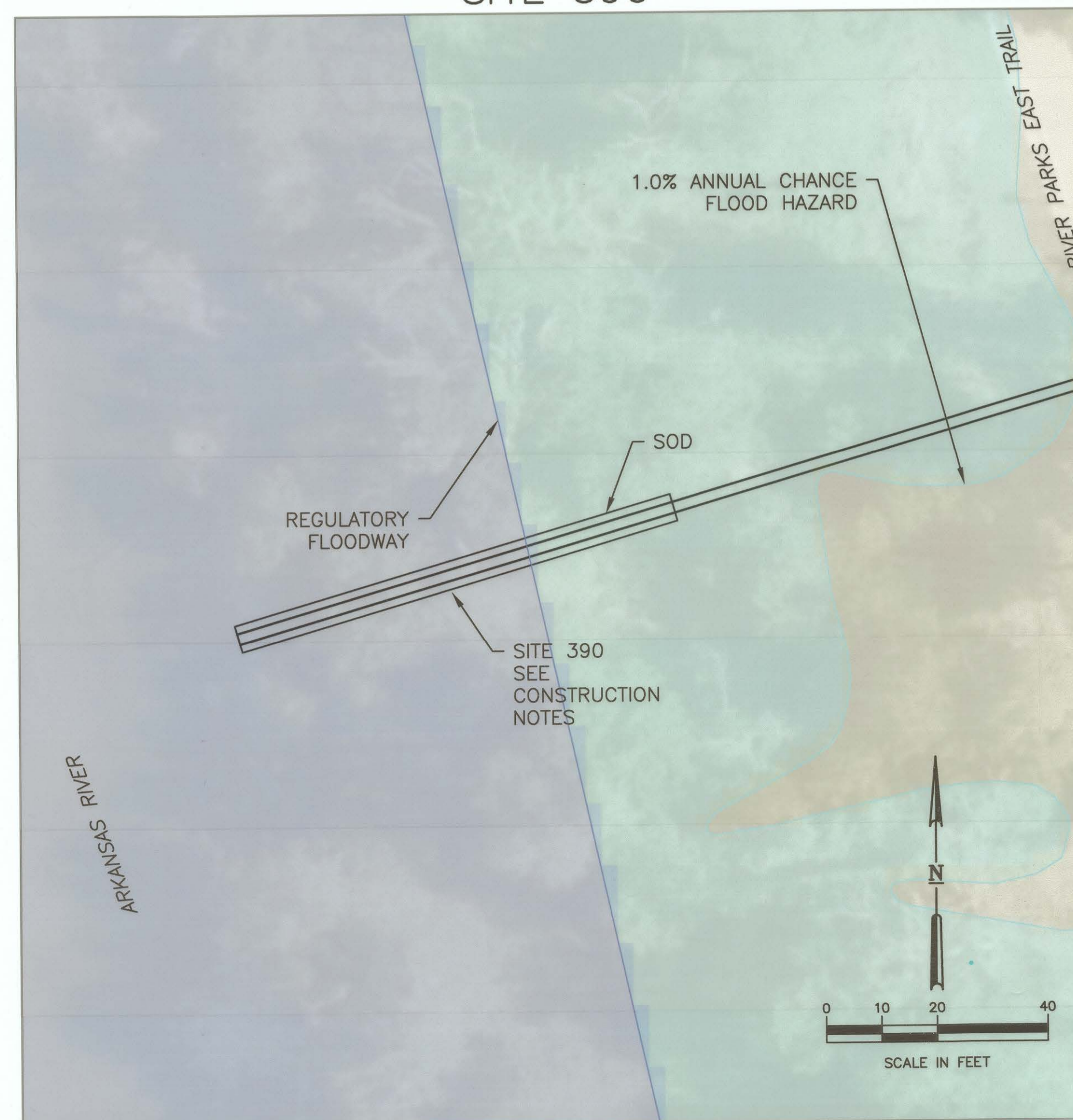
- * STORM DRAIN, RCP - 82 FT LONG X 24 IN IN DIAMETER, SURFACE WATER FLOODING CAUSED JOINT SEPARATIONS.

D# 331110 - SITE 390					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	46.00
613(A)	0492	24" R.C.P.I.PE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	82.00

LOCATION MAP



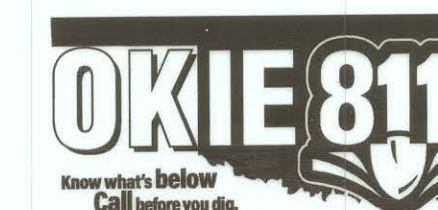
SITE 390



12/16/2020

LEGEND

FEMA SITE AREA



FEMA SITE 390

PROJECT #173120-T021-126335

DAMAGE #331110

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			1" = #'	DESIGNED	RJP	05/20	 CITY ENGINEER DATE: 1-08-21 SHEET 21 OF 26 SHEETS
				SURVEY	N/A	N/A	
			PROFILE SCALE	PROJ. MGR.	1/21	1/21	
			HORIZONTAL:	LEAD ENGR.	006	1/21	
			N/A	FIELD MGR.	006	1/21	
			VERTICAL:	RECOMMENDED	HA	1-21	
			N/A	DESIGN MANAGER			
			FILE:	DRAWING:			
			ATLAS PAGE NO. 474				

STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: DAMAGE INVENTORY #331199 SITES ALONG THE EAST SIDE OF THE ARKANSAS RIVER INCLUDING: SITE 385, SITE 389, SITE 393 AND SITE 403. ALL APPROXIMATELY LOCATED IN THE E/2 OF SECTION 20 AND NE/4 OF SECTION 29 OF OK T18N R13E. WITHIN THE CITY LIMITS OF TULSA, OKLAHOMA.

PROJECT DESCRIPTION: _____
SITE 385: INTERNAL BAND JOINT SEAL
SITE 389: REPLACE PIPE
SITE 393: EXTERNAL BAND JOINT SEAL
SITE 403: REPLACE PIPE

SUGGESTED SEQUENCE OF EROSION CONTROL ACTIVITIES:
1. TEMPORARY EROSION CONTROL.
2. PERMANENT EROSION CONTROL.

SOIL TYPE: VERY FINE SANDY LOAM, SILT LOAM, LOAMY FINE SAND

TOTAL AREA OF THE CONSTRUCTION SITE: LESS THAN 1 ACRE COMBINED

ESTIMATED AREA TO BE DISTURBED: LESS THAN 1 ACRE COMBINED

OFFSITE AREA TO BE DISTURBED: _____
 (FOR CONTRACTOR USE)

TOTAL IMPERVIOUS AREA PRE-CONSTRUCTION: 0.09 ACRES

TOTAL IMPERVIOUS AREA POST-CONSTRUCTION: 0.18 ACRES

POST-CONSTRUCTION RUNOFF COEFFICIENT OF THE SITE: X.X

LATITUDE & LONGITUDE OF CENTER OF PROJECT: N36° 00' 47.9", W95° 56' 50.6" N36° 01' 53.8", W95° 57' 16.2" N36° 00' 51.5", W95° 56' 56.0" N36° 01' 32.5", W95° 57' 03.2"

PROJECT WILL DISCHARGE TO:

NAME OF RECEIVING WATERS: ARKANSAS RIVER

SENSITIVE WATERS OR WATERSHEDS: YES NO

303 IMPAIRED WATERS: YES NO

IF YES, LIST IMPAIRMENT: ENTEROCOCCUS, TURBIDITY

LOCATED IN A TMDL: YES NO

LAKE THUNDERBIRD TMDL: YES NO

MS4 ENTITY YES NO

IF YES, LOCATION: TULSA COUNTY

NOTE:
 THIS SHEET SHOULD BE USED IN CONJUNCTION WITH A DRAINAGE MAP THAT ILLUSTRATES THE DRAINAGE PATTERNS/PATHWAYS AND RECEIVING WATERS FOR THIS PROJECT. THIS SHEET SHOULD ALSO BE USED WITH THE EROSION CONTROL SUMMARIES, PAY ITEMS, & NOTES.

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:

- TEMPORARY SEEDING
- PERMANENT SODDING, SPRIGGING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION BLANKET
- PRESERVATION OF EXISTING VEGETATION

NOTE: TEMPORARY EROSION CONTROL METHODS MUST BE USED ON ALL DISTURBED AREAS WHERE CONSTRUCTION ACTIVITIES HAVE CEASED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

STRUCTURAL PRACTICES:

- STABILIZED CONSTRUCTION EXIT
- TEMPORARY SILT FENCE
- TEMPORARY SILT DIKES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ROCK FILTER DAMS
- TEMPORARY SLOPE DRAIN
- PAVED DITCH W/ DITCH LINER PROTECTION
- TEMPORARY DIVERSION CHANNELS
- TEMPORARY SEDIMENT BASINS
- TEMPORARY SEDIMENT TRAPS
- TEMPORARY SEDIMENT FILTERS
- TEMPORARY SEDIMENT REMOVAL
- RIP RAP
- INLET SEDIMENT FILTER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBAG BERMS
- TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:

- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPULIN
- EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER FROM THE BEGINNING OF CONSTRUCTION UNTIL AN ACCEPTABLE VEGETATIVE COVER IS ESTABLISHED. INSPECTION BY THE CONTRACTOR AND ANY NECESSARY REPAIRS SHALL BE PERFORMED ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED ON SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGEWAYS, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG WITH EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES THAT NEED TO BE INSPECTED.

WASTE MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIAL IS REQUIRED BY THE CONTRACTOR. MATERIALS INCLUDE STOCKPILES, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIALS HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONTROLS AND PRACTICES SHALL MEET THE REQUIREMENTS OF ALL FEDERAL, STATE AND LOCAL AGENCIES.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER'S RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO: PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:

A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IS REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE, CONFIRMED IN THE PRE-WORK MEETINGS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ). THE PLAN MUST BE KEPT CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE PROJECT MUST BE DOCUMENTED IN THE SWPPP, I.E., BORROW PITS, WORK ROADS, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. RUNOFF FROM CONSTRUCTION SITES HAS A POTENTIAL FOR POLLUTION DUE TO EXPOSED SOILS AND THE PRESENCE OF HAZARDOUS MATERIALS USED IN THE CONSTRUCTION PROCESS. THE PREVENTION OF SOIL EROSION, CONTAINMENT OF HAZARDOUS MATERIALS AND/OR THE INTERCEPTION OF THESE POLLUTANTS BEFORE LEAVING THE CONSTRUCTION SITE ARE THE BEST PRACTICES FOR CONTROLLING STORM WATER POLLUTION.

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:

- 103.05 BONDING REQUIREMENTS
- 104.10 FINAL CLEANING UP
- 104.12 CONTRACTOR'S RESPONSIBILITY FOR WORK
- 104.13 ENVIRONMENTAL PROTECTION
- 106.08 STORAGE AND HANDLING OF MATERIAL
- 107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
- 107.20 STORM WATER MANAGEMENT
- 220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
- 221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:

"ODEQ GENERAL PERMIT (OKR10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.

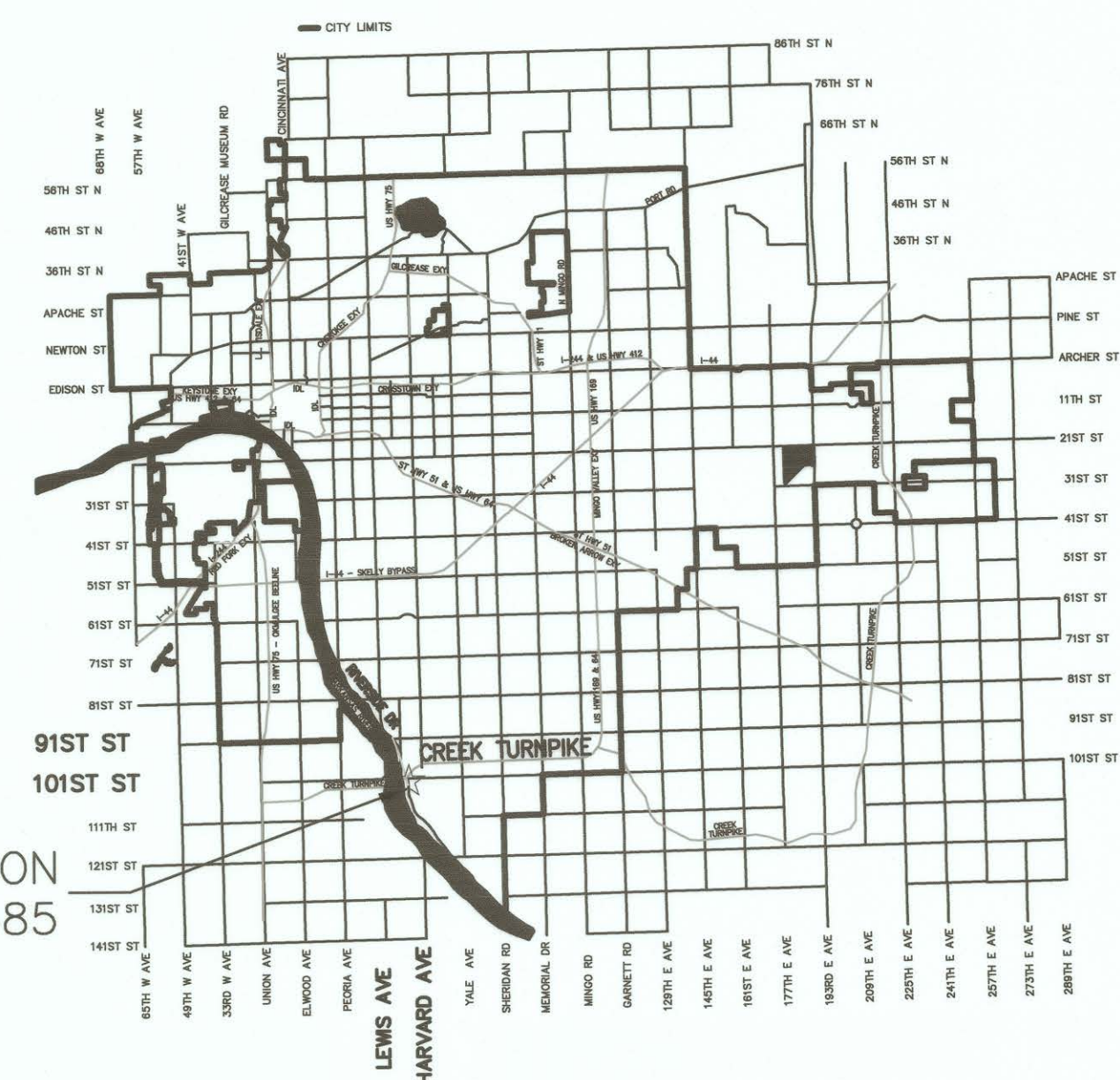


Ryan Pierce
 12/16/2020

STORM WATER MANAGEMENT PLAN			
PROJECT #173120-T021-126335			
DAMAGE #331199			
CITY OF TULSA, OKLAHOMA ENGINEERING SERVICES DEPARTMENT			
PLANS AND ESTIMATES PREPARED BY: Meshek & Associates, L.L.C. 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620			
REVISION	BY	DATE	APPROVED:
PLAN SCALE	DRAWN	KRP	05/20
DESIGNED	RJP		05/20
N/A	SURVEY	N/A	N/A
PROFILE SCALE	PROJ. MGR.	CA	1/11
HORIZONTAL:	LEAD ENGR.		11/21
N/A	FIELD MGR.		1/21
VERTICAL:	RECOMMENDED	HS	1/21
N/A	DESIGN MANAGER		
FILE:	DRAWING:		CITY ENGINEER
			DATE: 1-08-21
ATLAS PAGE NO. 1138, 1424			SHEET 22 OF 26 SHEETS

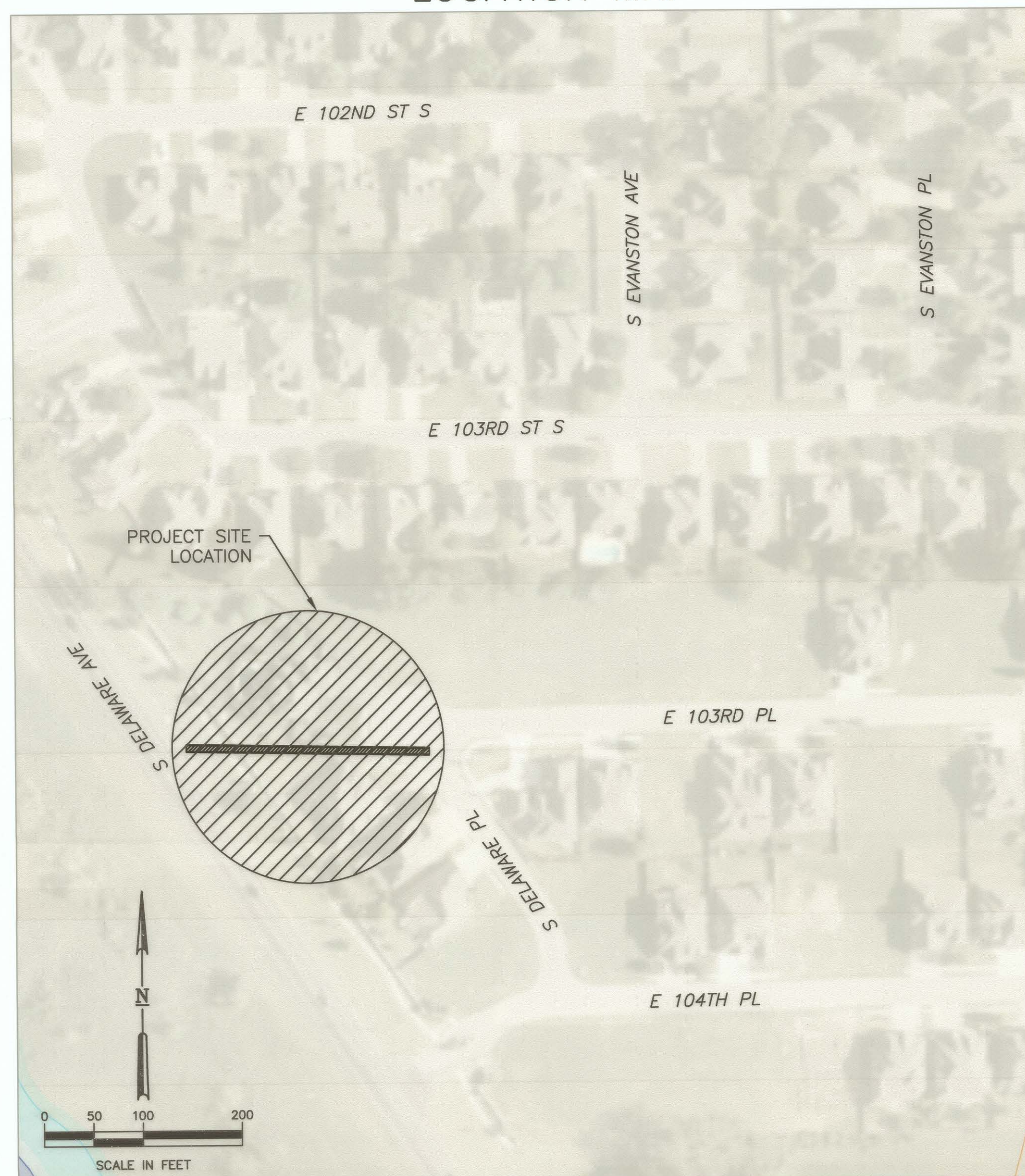
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CITY OF TULSA, OKLAHOMA



☆ SITE LOCATION
SITE 385

LOCATION MAP



SITE 385 - (36.01330, -95.94740)

CONSTRUCTION NOTES:

STORM DRAIN, RCP - 6 EACH OF 54 IN (DIA) RCP JOINTS, SURFACE WATER FLOODING CAUSED PIPE SEPARATIONS.

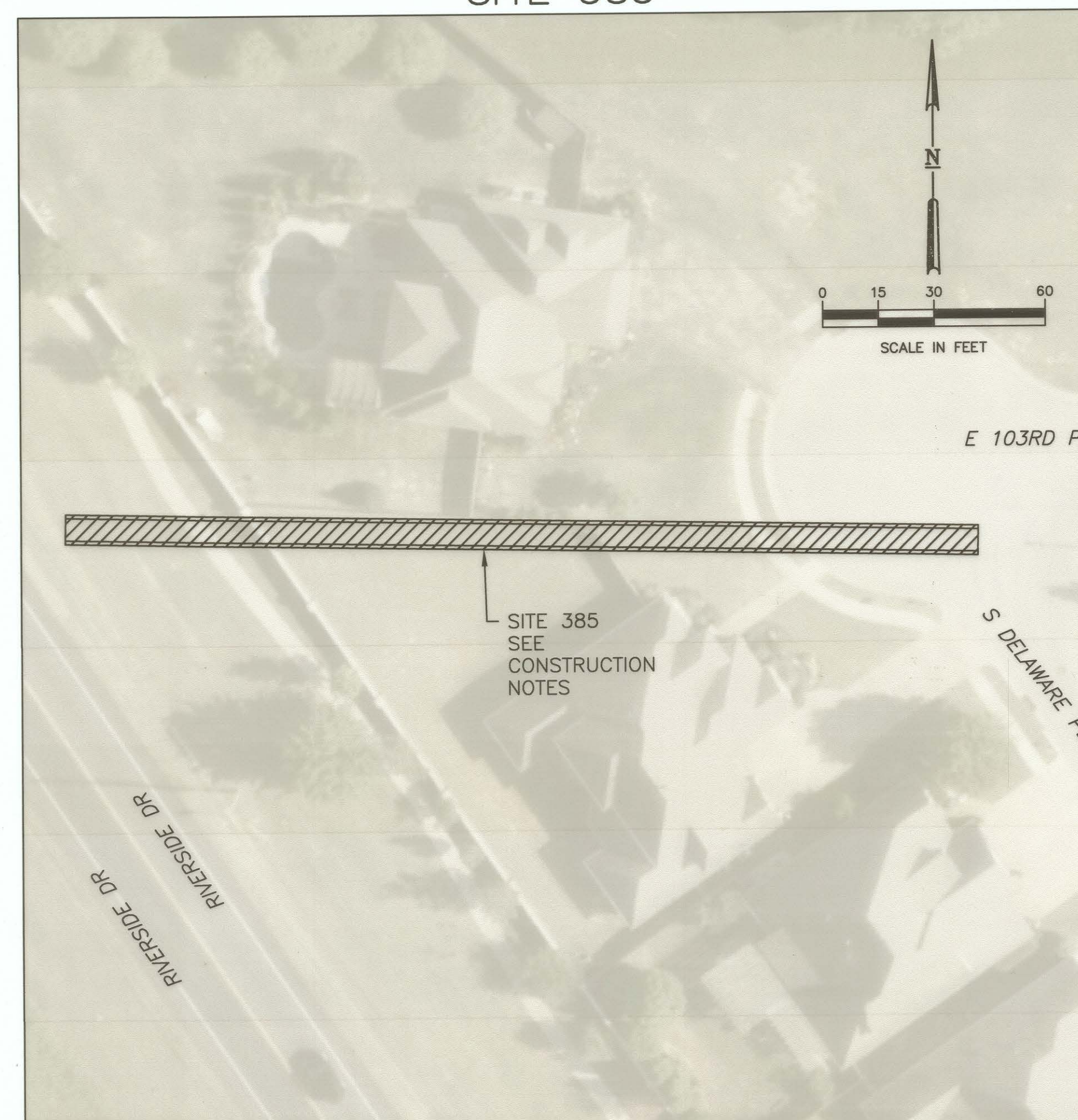
DI# 331199 - SITE 385

ITEM	ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
SPECIAL	INTERNAL BAND FOR 54" RCP JOINT SEAL		EA	6.00

SITE PHOTO

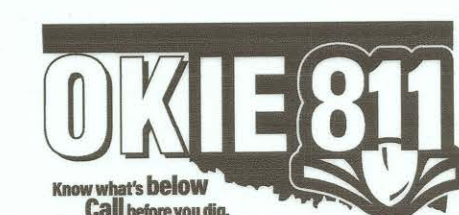


SITE 385



LEGEND

FEMA SITE AREA



FEMA SITE 385

PROJECT #173120-T021-126335

DAMAGE #331199

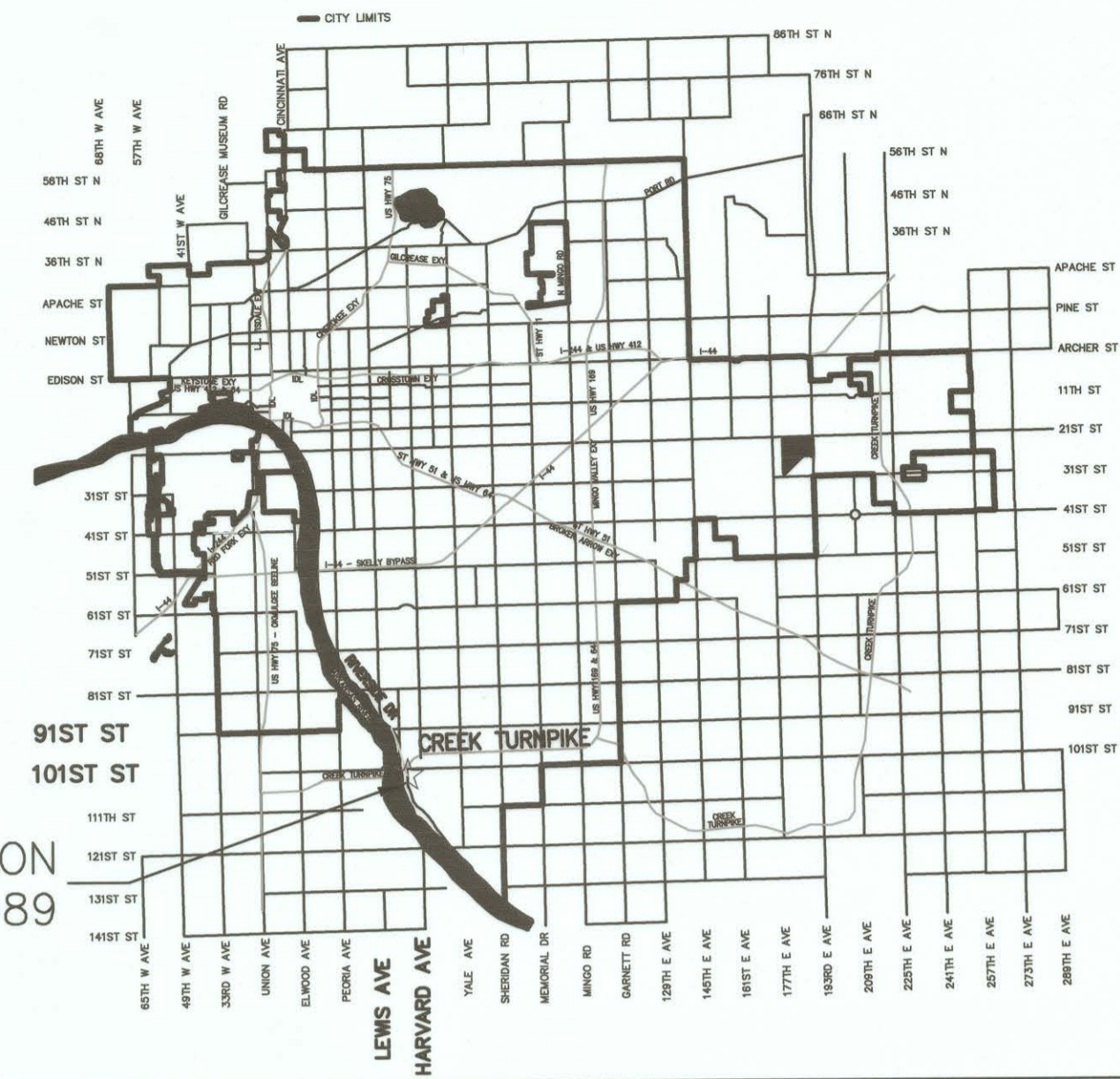
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			1" = #'	DESIGNED	RJP	05/20	 CITY ENGINEER DATE: 1-08-21 SHEET 23 OF 26 SHEETS
				SURVEY	N/A	N/A	
			PROFILE SCALE	PROJ. MGR.	1/16	1/21	
			HORIZONTAL:	LEAD ENGR.	1/16	1/21	
			N/A	FIELD MGR.	1/16	1/21	
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			N/A	DESIGN MANAGER			
			FILE:	DRAWING:			
			ATLAS PAGE NO. 1424				

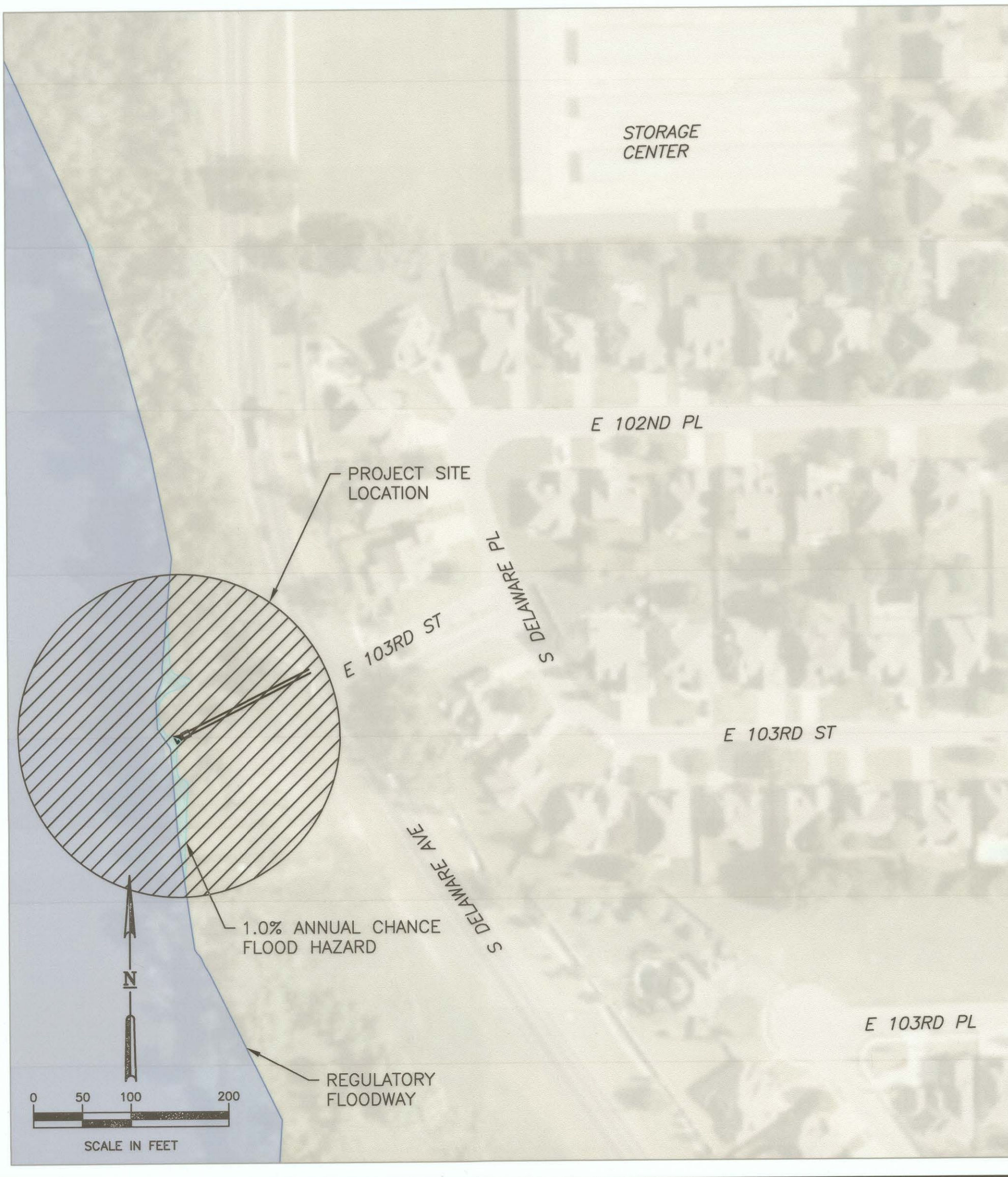
PRINT DATE: 12/18/2020 M:\City of Tulsa\1710\03-On-Call-Stormwater-Services-2017\TO-21_FEMA-Flood-Damage-Design\Working\126335 DAMAGE_331199.dwg

CITY OF TULSA, OKLAHOMA

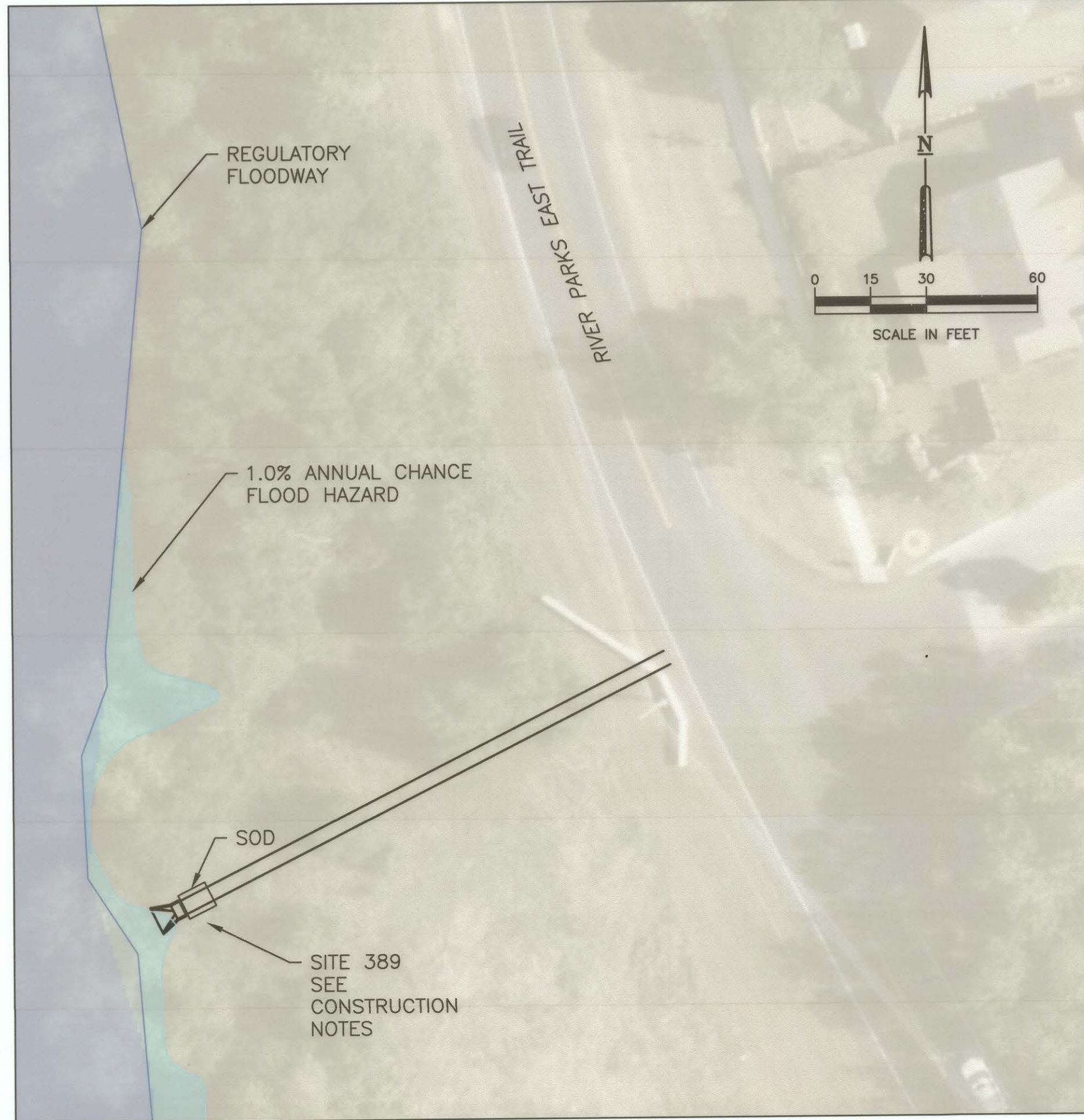


☆ SITE LOCATION
SITE 389

LOCATION MAP



SITE 389



SITE 389 - (36.01430, -95.94890)

CONSTRUCTION NOTES:

- * HEADWALL - 1 EACH OF HEADWALL, 9 FT LONG X 5 FT WIDE X 6 FT HIGH, SURFACE WATER FLOODING DETACHED HEAD WALL/PIPE END SECTION FROM STORM DRAIN.
- * STORM DRAIN, RCP - 8 FT LONG X 48 IN IN DIAMETER, SURFACE WATER FLOODING CAUSED PIPE SEPARATION.

DI# 331199 - SITE 389					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	7.00
613(A)	0496	48" R.C. PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	8.00
SPECIAL		RESET RCP END SECTION		EA	1.00

SITE PHOTO



LEGEND

FEMA SITE AREA



12/16/2020

FEMA SITE 389

PROJECT #173120-T021-126335

DAMAGE #331199

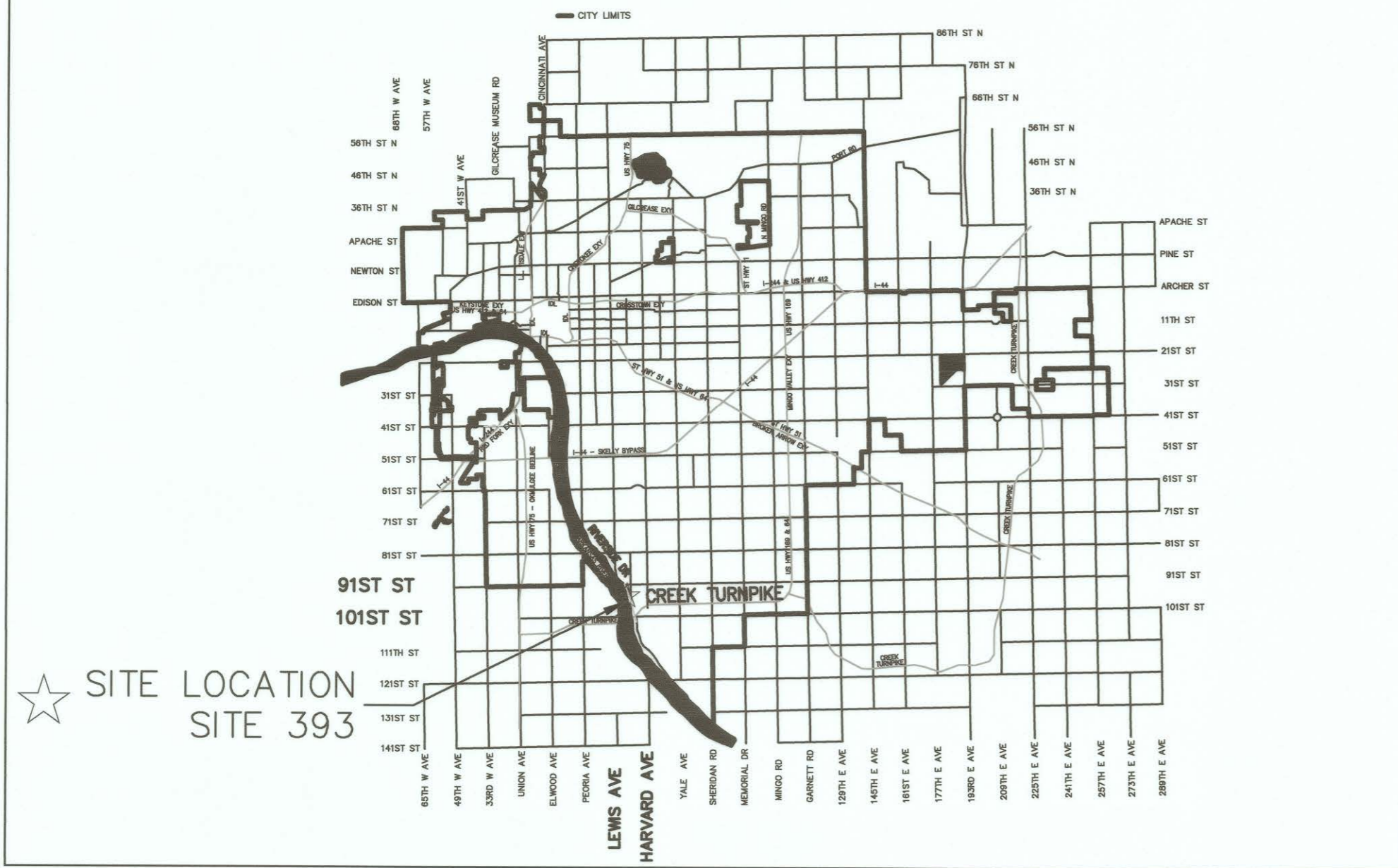
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

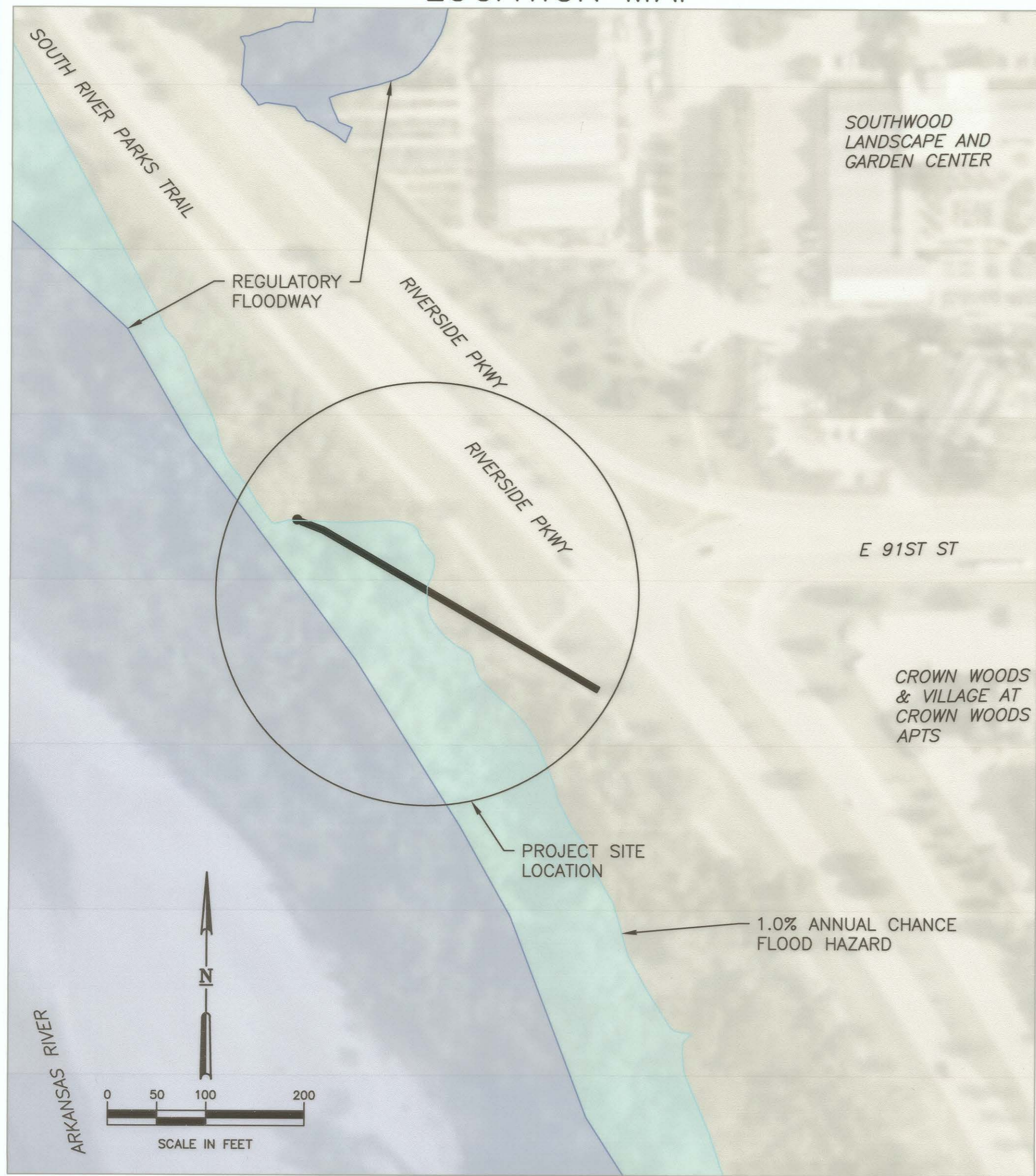
REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
1" = #"			DESIGNED	RJP		05/20	 CITY ENGINEER DATE: 1.08.21 SHEET 24 OF 26 SHEETS
			SURVEY	N/A		N/A	
PROFILE SCALE			PROJ. MGR.	Ch		1/21	
HORIZONTAL:			LEAD ENGR.	Bob		1/21	
N/A			FIELD MGR.	Bob		1/21	
N/A			RECOMMENDED	Bob		1.21	
N/A			DESIGN MANAGER	HAS		1.21	
FILE:			DRAWING:				
ATLAS PAGE NO. 1424							

PRINT DATE: 12/18/2020 M:\City of Tulsa\17TUL03_0p_Coil_Stormwater_Services_2017\TO_21_FEMA_Flood_Damage_2017\Design_Working\126335\Damage_331199\Damage_331199.dwg

CITY OF TULSA, OKLAHOMA



LOCATION MAP



SITE 393 - (36.03160, -95.95450)

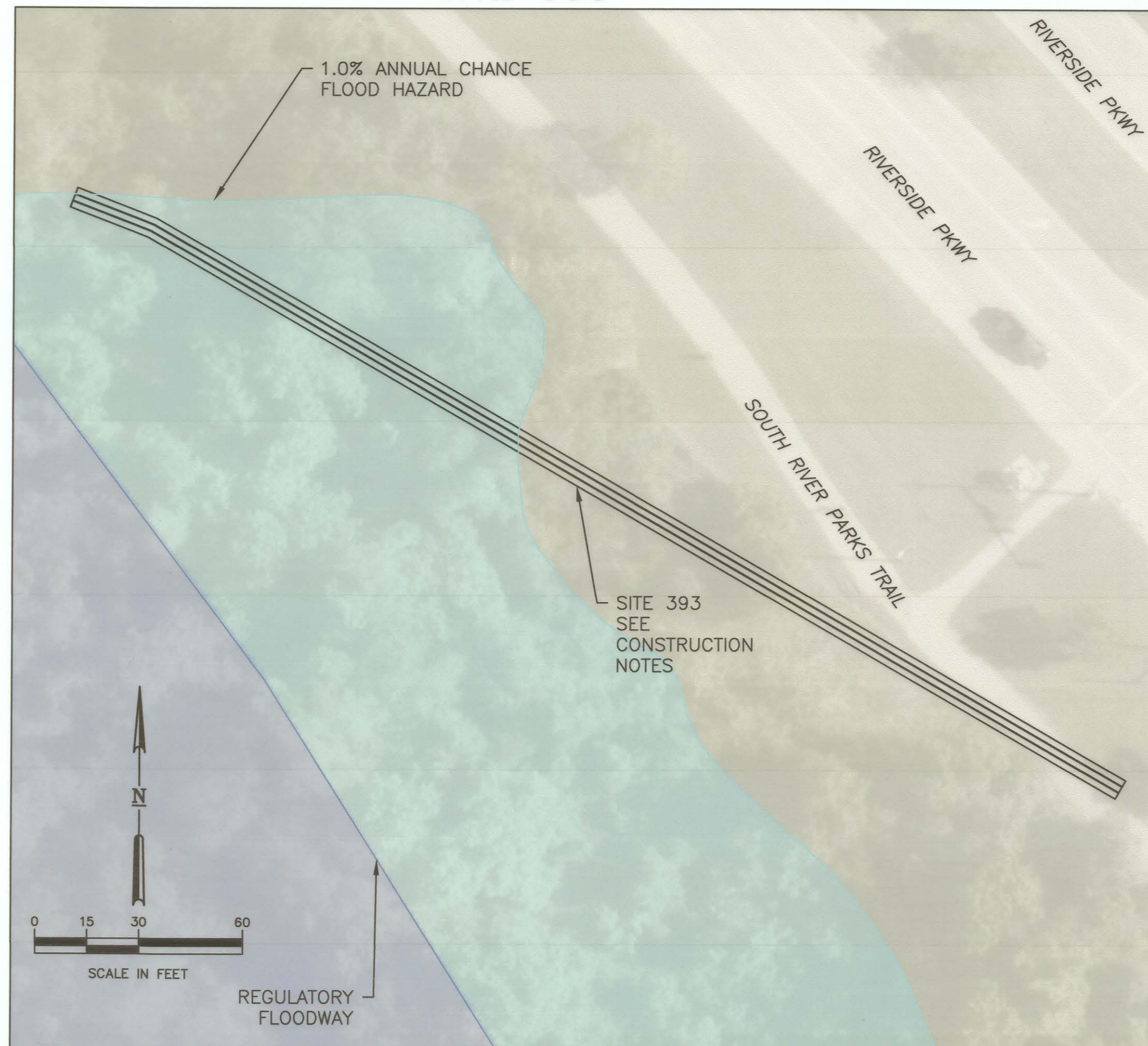
CONSTRUCTION NOTES:

- * STORM DRAIN, 1 EACH OF 24 IN (DIA) RCP JOINT, SURFACE WATER FLOODING RESULTED IN 1 JOINT SEAL TO BE REPLACED WITH EXTERNAL BAND..

DI# 331199 - SITE 393

ITEM	ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
SPECIAL	EXTERNAL BAND FOR 24" RCP JOINT SEAL		EA	1.00

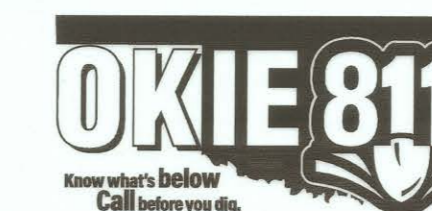
SITE 393



LICENSED PROFESSIONAL ENGINEER
 RYAN PIERCE
 27211
 OKLAHOMA
 12/16/2020

LEGEND

FEMA SITE AREA



FEMA SITE 393

PROJECT #173120-T021-126335

DAMAGE #331199

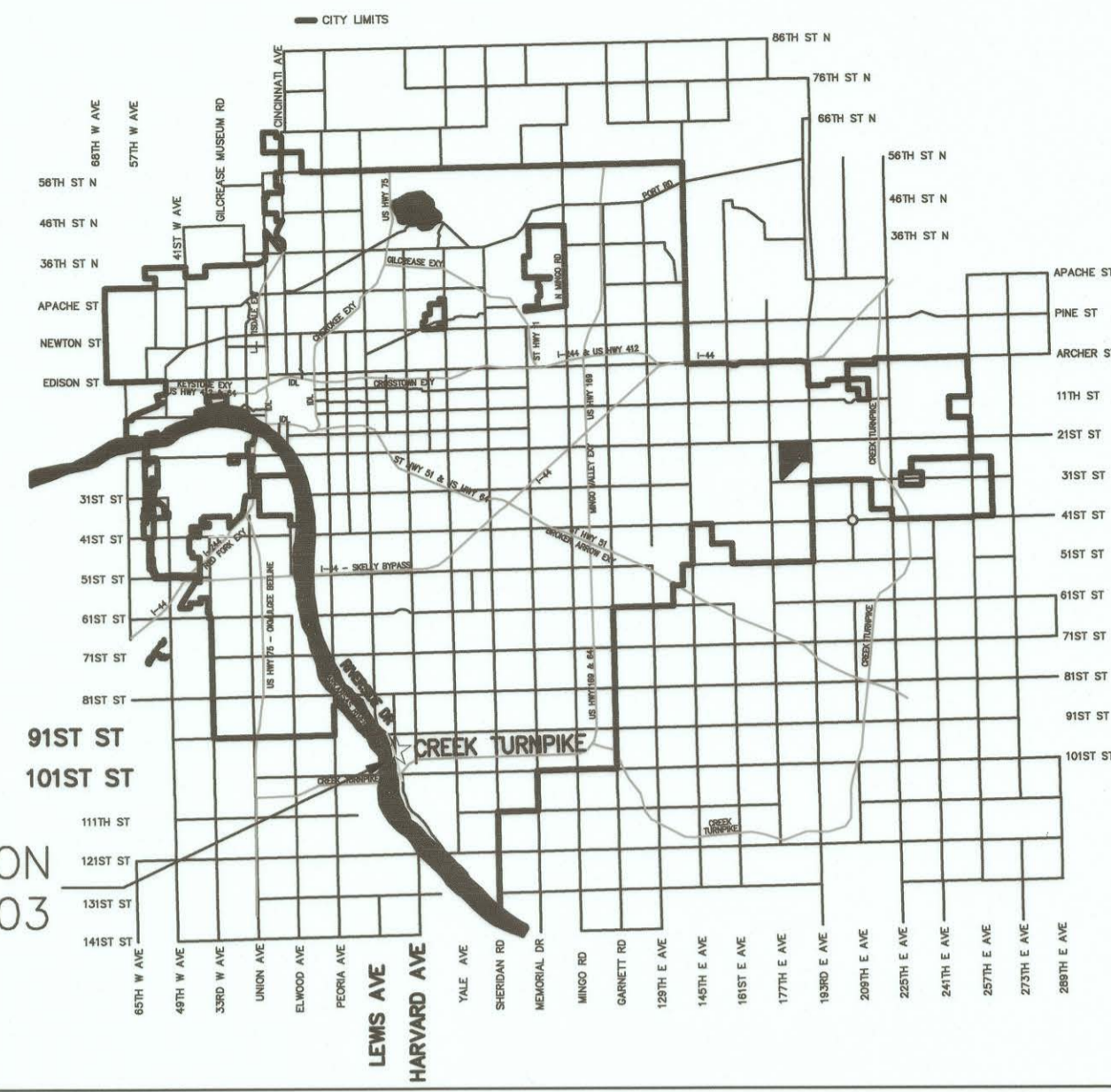
CITY OF TULSA, OKLAHOMA
 ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
 1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			1" = ##'	DESIGNED	RJP	05/20	 CITY ENGINEER DATE: 1-28-21 SHEET 25 OF 26 SHEETS
			PROFILE SCALE	PROJ. MGR.	CHG	1/21	
			HORIZONTAL:	LEAD ENGR.	Paul	1/21	
			VERTICAL:	FIELD MGR.	Paul	1/21	
				RECOMMENDED	Paul	1-21	
				DESIGN MANAGER			
			FILE:	DRAWING:			
			ATLAS PAGE NO. 1138				

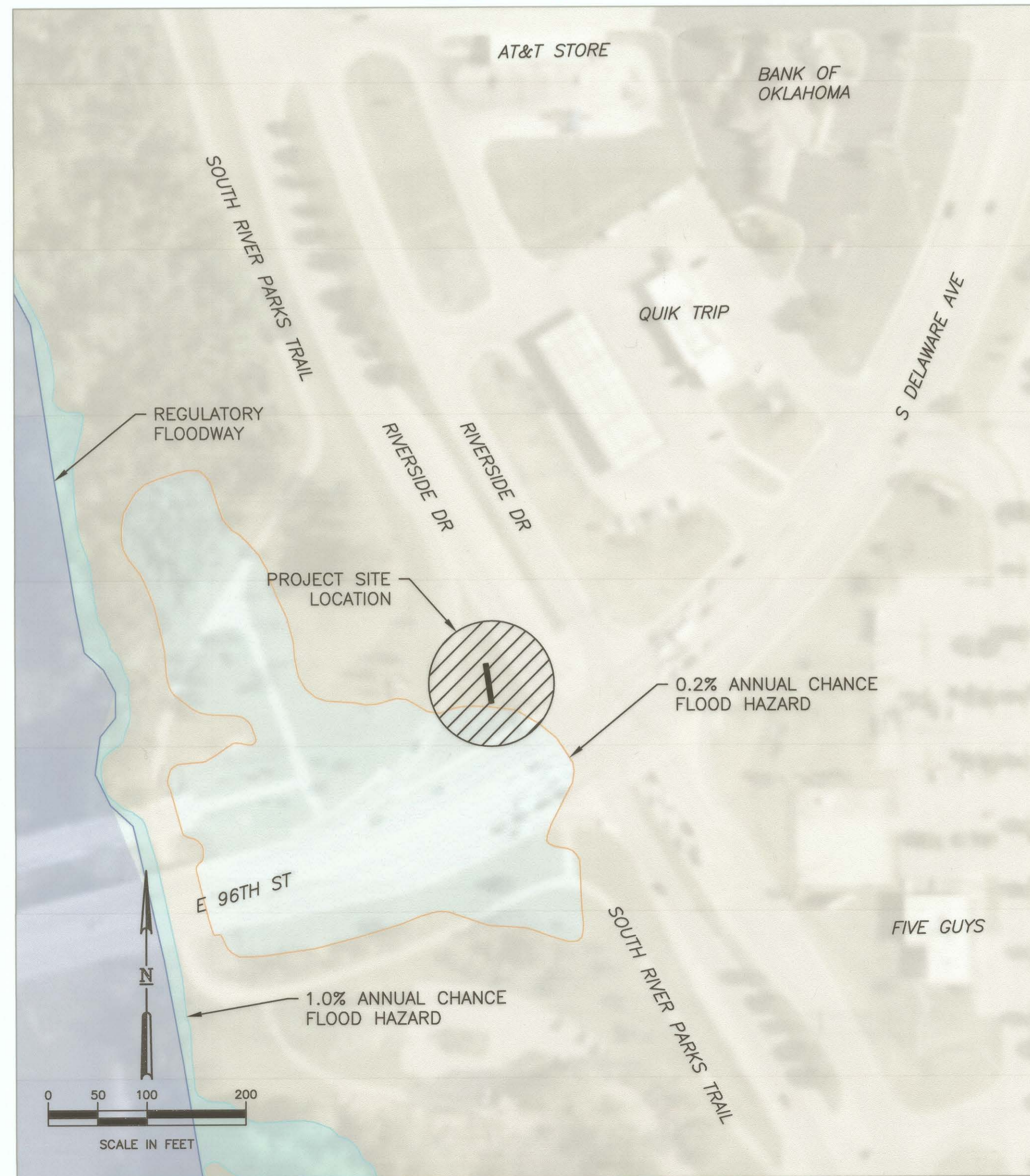
PRINT DATE: 12/18/2020 M:\City of Tulsa\171103_0n-Call_Stormwater_Services_2017\TO_21_FEMA_Flood_Damage_Design\Working\126335\Damage_331199\Damage_331199.dwg

CITY OF TULSA, OKLAHOMA

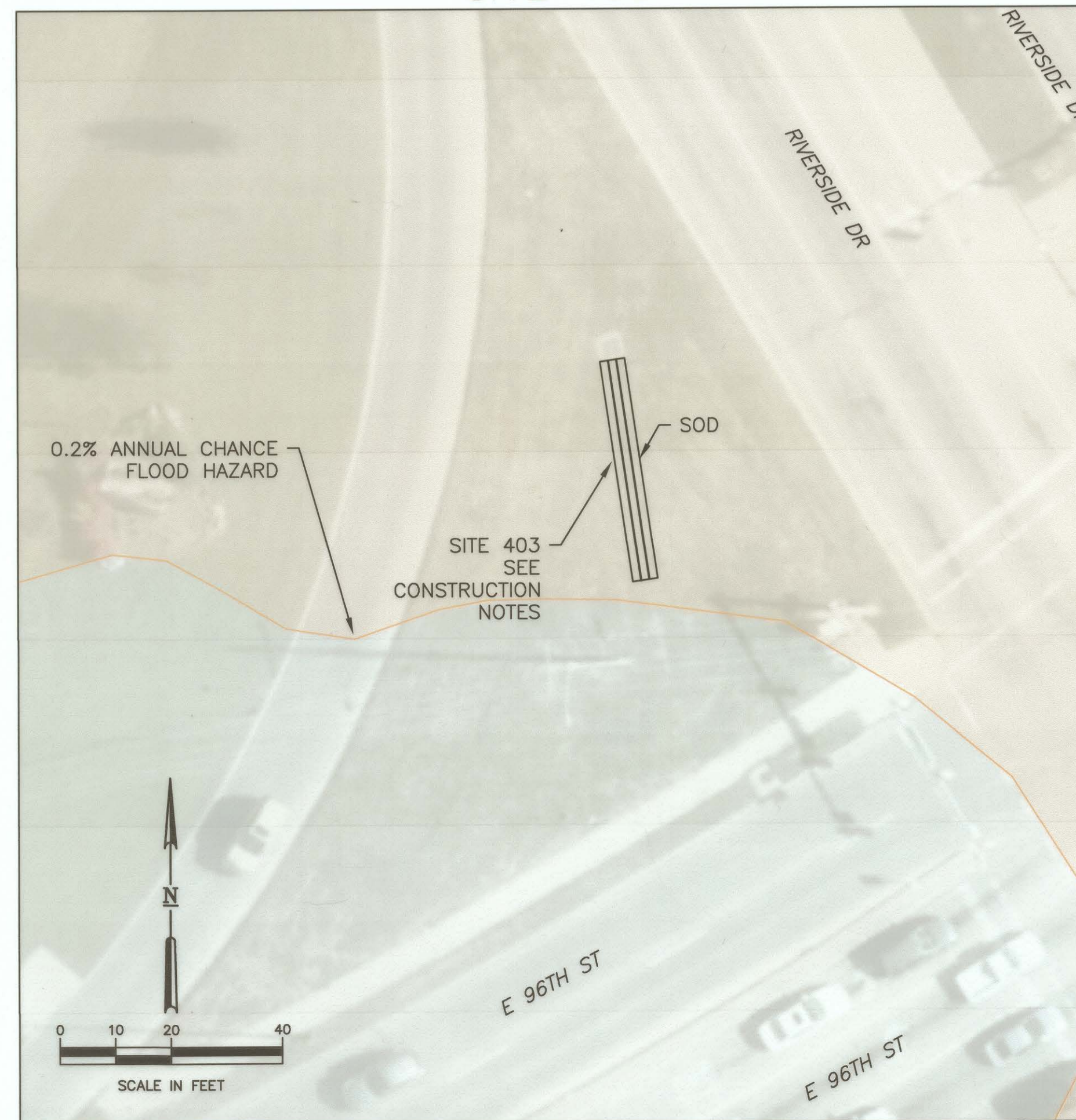


★ SITE LOCATION
SITE 403

LOCATION MAP



SITE 403



SITE 403 - (36.02570, -95.95090)

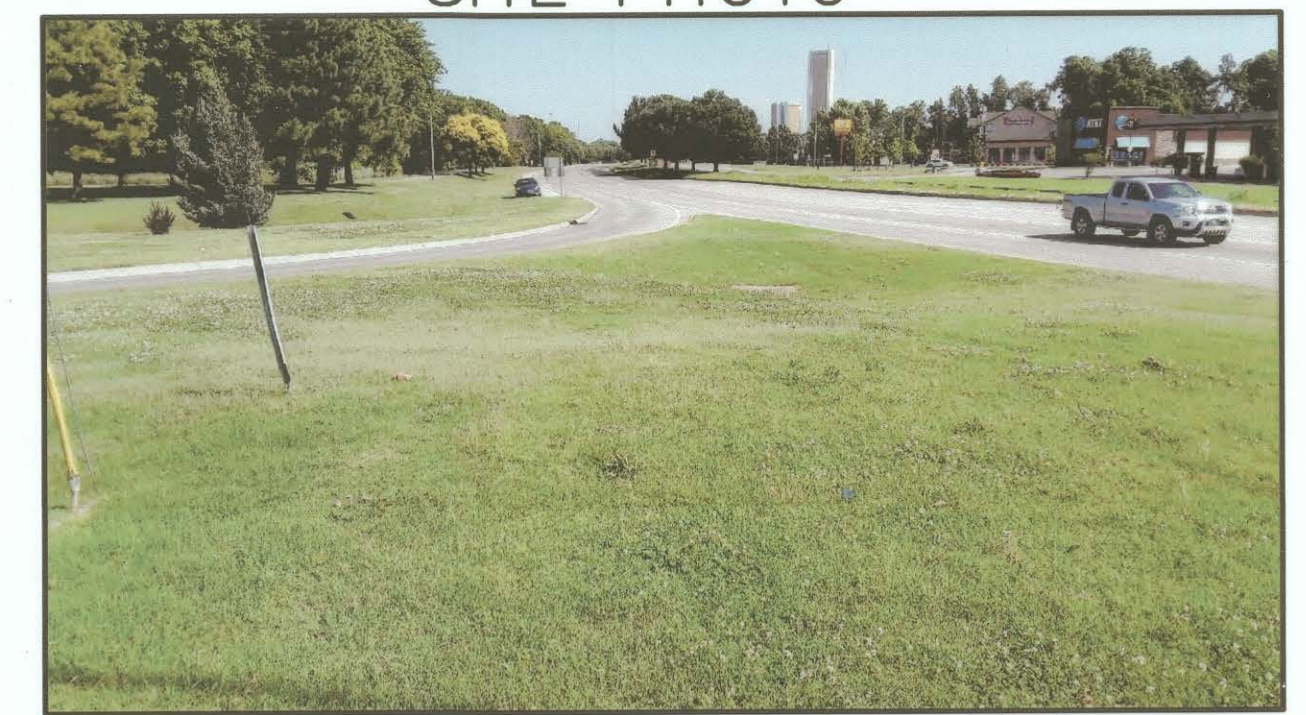
CONSTRUCTION NOTES:

- * STORM DRAIN, RCP - 40 FT LONG X 18 IN IN DIAMETER, SURFACE WATER FLOODING CAUSED JOINT SEPARATIONS.

SITE PHOTO



SITE PHOTO

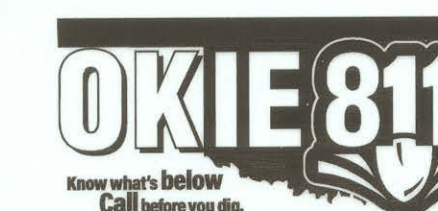


DI# 331199 - SITE 403					
ITEM		ITEM DESCRIPTION	NOTES	UNIT	QUANTITY
230(A)	2806	SOLID SLAB SODDING	E-10,11	SY	20.00
613(A)	0491	18" R.C.PIPE CLASS III (COMPLETE IN PLACE)	D-8,12,13 1	LF	40.00

12/16/2020

LEGEND

FEMA SITE AREA



FEMA SITE 403

PROJECT #173120-T021-126335

DAMAGE #331199

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND ESTIMATES PREPARED BY:
Meshek & Associates, L.L.C.
1437 S. Boulder Avenue, Suite 1550 Tulsa, OK 74119 (918)392-5620

REVISION	BY	DATE	PLAN SCALE	DRAWN	KRP	05/20	APPROVED:
			1" = #'	DESIGNED	RJP	05/20	 CITY ENGINEER DATE: 1-28-21 SHEET 26 OF 26 SHEETS
			PROFILE SCALE	PROJ. MGR.	LAG	1/21	
			HORIZONTAL:	LEAD ENGR.	BOE	1/21	
			N/A	FIELD MGR.	BOE	1/21	
			VERTICAL:	RECOMMENDED	HAS	1-21	
			N/A	DESIGN MANAGER			
			FILE:	DRAWING:			
			ATLAS PAGE NO. 1138				