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**Daily 31009 - Site 155**

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**Daily 31109 - Site 192**

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**Daily 31109 - Site 270**

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**Daily 31109 - Site 190**

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**Daily 31100 - Site 179**

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**General Construction Notes & Pay Items**

**Applicable City of Tulsa Standard Drawings and Details References:**

- **Project Sign**
- **Erosion Control Methods**
  - **STD No. 171** - Sediment and Silt Fence and Construction Entrance
  - **STD No. 204** - Standard Details: Pipe Sediment and Silt Fence
- **Payment Data for Utilities**
  - **STD No. 171** - Standard Details: Pipe Sediment and Silt Fence
- **Prefabricated Concrete Storm Water Inlets**
- **STD No. 766** - Standard Concrete Storm Water Inlets
- **STD No. 303** - Standard Concrete Storm Water Inlets

**Transportation Standards:**

- **DC-4-0** - Paved Ditches and Flumes
- **SSG-1-0** - Solid Slab Sodding
- **TSC-1-0** - Temporary Sediment Controls
- **TCS-1-1** - Construction Signs
- **TCS-1-1** - Traffic Control Standard Construction Signs
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 265, ALL APPROXIMATELY LOCATED IN THE SEAW OF SECTION 1 OF TULSA OKLAHOMA CITY LIMITS OF TULSA OKLAHOMA

PROJECT DESCRIPTION:
SITE 168: EROSION CONTROL, REPLACE PIPE AND CULVERT END SECTION
SITE 195: RESET HEADWALL
SITE 265: REPLACE PIPE

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

SOIL STABILIZATION PRACTICES:
- X TEMPORARY SEEDING
- X PERMANENT SEEDING, SPRINGING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION BLANKET
- X 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:
- X STABILIZED CONSTRUCTION EXIT
- X TEMPORARY SILT FENCE
- X TEMPORARY SILT DYES
- X TEMPORARY FIBER LOG
- X DIVERSION, INTERCEPTOR OR PERIMETER DYES
- X DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- X ROCK FILTER DAMS
- X TEMPORARY SLOPE DRAIN
- X PAVED DITCH W/ DITCH LINER PROTECTION
- X TEMPORARY DIVERSION CHANNELS
- X TEMPORARY SEDIMENT BASINS
- X TEMPORARY SEDIMENT TRAPS
- X TEMPORARY SEDIMENT FILTERS
- X TEMPORARY SEDIMENT REMOVAL
- X RIF RAP
- X INLET SEDIMENT FILTER
- X TEMPORARY BRUSH SEDIMENT BARRIERS
- X SANDBAG BARRIERS
- X TEMPORARY STREAM CROSSINGS

Erosion and Sediment Controls

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 NEAR THE CONSTRUCTION AREA. POTENTIAL INUNDATION AREAS, DRAINAGeways, MATERIAL STORAGE, STRUCTURAL DEVICES, CONSTRUCTION ENTRANCES AND EXITS ALONG CONSTRUCTION AND EROSION AND SEDIMENT CONTROL LOCATIONS ARE EXAMPLES OF SITES WHERE EROSION CONTROL MEASURES ARE REQUIRED.

WASTE MATERIALS:
PROPER MANAGEMENT AND DISPOSAL OF CONSTRUCTION WASTE MATERIALS IS REQUIRLED 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. CONTROL 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 CONFORMING TO ALL MANUFACTURER'S RECOMMENDATIONS, STATE AND FEARAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO PAVEMENT, ACESS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURBING,

COMPOUNDS AND CONTAMINATED SOILS

GENERAL NOTES:
A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIRED TO COMPLY WITH THE OKLAHOMA POLLUTION DISCHARGE ELIMINATION SYSTEM (OPDES) REGULATIONS. THIS PLAN IS INITIATED DURING THE DESIGN PHASE AND IS COMPLETELY DETAILED IN THE CONTRACT DOCUMENTS AND AVAILABLE ON THE JOB SITE ALONG WITH COPIES OF THE NOTICES OF INTENT (NOI) 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 PKT, WAREHOUSING, DISPOSAL SITES, ASPHALT/CONCRETE PLANTS. 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 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 CLEANUP REQUIREMENTS
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 AND CONTROL
221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:
"ODEQ GENERAL PERMIT (R904) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA" ODEQ WATER QUALITY DIVISION, SEPTEMBER 13, 2017

NOTES:

OFFSITE VEHICLE TRACKING:
- X HAUL ROADS DAMPENED FOR DUST CONTROL
- X LOADED Haul TRUCKS TO BE COVERED WITH TARPULIN
- X EXCESS DIRT ON ROAD REMOVED DAILY

NAME OF RECEIVING WATERS:
- ARKANSAS RIVER
- SENSITIVE WATERS OR WATERSHEDS: YES [ ] NO [X]
- 303 IMPAIRED WATERS: YES [X] NO [ ]
- IF YES, IMPAIRMENT: ENTROCCCUS
- LOCATED IN A TMDL: YES [X] NO [ ]
- LAKE THUNDERBIRD TMDL: YES [X] NO [ ]
- MSH ENTITY: YES [X] NO [ ]
- IF YES, LOCATION: TULSA COUNTY

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

REVISED 09/18/2017

STORM WATER MANAGEMENT PLAN
PROJECT #J31210-021-12635
DAMAGE #331099

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

APPENDIX B - 5/31/2017

STORM WATER MANAGEMENT PLAN

CODE OF REGULATIONS

REVISION DATE: 09/18/2017

CODE OF REGULATIONS

APPENDIX B - 5/31/2017

STORM WATER MANAGEMENT PLAN

REVISION DATE: 09/18/2017

APPENDIX B - 5/31/2017
**SITE 168**

- Backfill - 37 CY of unclassified fill, 20 FT LONG X 10 FT WIDE X 5 FT DEEP, SURFACE WATER FLOODING ERODED SOIL.
- Storm Drain, RCD - 20 FT LONG X 15 IN IN DIAMETER, SURFACE WATER FLOODING CAUSED PIPE SEPARATION.
- Storm Drain, RCP End Section - 6 FT LONG X 15 IN DIAMETER, SURFACE WATER FLOODING CAUSED SECTION DETACHMENT.
- Stone - 15 CY of RCP-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.

**SITE LOCATION**

**SITE 168**

**CITY OF TULSA, OKLAHOMA**

---

**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 SIDEWALK DITCHES (PROVIDED THE DESIGNED WIDTH OR DEPTH OF THE DITCH IS NOT INCREASED), OR COMMERCIAL MANUFACTURED 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 PITS, 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 CONSTRUCTION PROJECTS OR EXECUTE ORDERS PRIOR TO A SUBRECIPIENT OR THEIR CONTRACTOR COMMENCING EXCAVATION, CONSULTATION, AND PERMITTING MAY BE REQUIRED. NONCOMPLIANCE WITH THIS REQUIREMENT MAY JEOPARDIZE RECEIPT OF FEDERAL FUNDS. DOCUMENTATION OF BORROW SOURCES UTILIZED IS REQUIRED AT CLOSING.

3. ALL EXCAVATION DIMENSIONS ARE SHOWN IN THE DDD.
**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 FLOWING SEPARATED HEADWALL FROM PIPE.

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**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 COMMERCIAL PROCUREMENT 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 FIT, AGRICULTURAL FIELDS, ROAD ROW TYPE) 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 LAMPS 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 O.D.

**SITE PHOTO**

**FEMA SITE 195**

**PROJECT #173120-1021-126335**

**FEMA #531099**

**CITY OF TULSA, OKLAHOMA**

**ENGINEERING SERVICES DEPARTMENT**

**PLANS AND ESTIMATES PREPARED BY**

Menhacket & Associates, LLC.

**SCALE IN FEET**

---

**LEGEND**

FEMA SITE AREA

**SITE LOCATION**

SITE 195

---

**LOCATION MAP**

1.5% ANNUAL CHANCE FLOOD HAZARD

INCL. ADEQUATE FLOOD RESISTANCE

REGULATORY FLOODWAY

SITE 195

SEE CONSTRUCTION NOTES

---

**SITE PHOTO**

---

**FEMA SITE 195**

**PROJECT #173120-1021-126335**

**FEMA #531099**

**CITY OF TULSA, OKLAHOMA**

**ENGINEERING SERVICES DEPARTMENT**

**PLANS AND ESTIMATES PREPARED BY**

Menhacket & Associates, LLC.

**SCALE IN FEET**

---

**LEGEND**

FEMA SITE AREA

**SITE LOCATION**

SITE 195

---

**LOCATION MAP**

1.5% ANNUAL CHANCE FLOOD HAZARD

INCL. ADEQUATE FLOOD RESISTANCE

REGULATORY FLOODWAY

SITE 195

SEE CONSTRUCTION NOTES

---

**SITE PHOTO**

---

**FEMA SITE 195**

**PROJECT #173120-1021-126335**

**FEMA #531099**

**CITY OF TULSA, OKLAHOMA**

**ENGINEERING SERVICES DEPARTMENT**

**PLANS AND ESTIMATES PREPARED BY**

Menhacket & Associates, LLC.

**SCALE IN FEET**

---

**LEGEND**

FEMA SITE AREA

**SITE LOCATION**

SITE 195

---

**LOCATION MAP**

1.5% ANNUAL CHANCE FLOOD HAZARD

INCL. ADEQUATE FLOOD RESISTANCE

REGULATORY FLOODWAY

SITE 195

SEE CONSTRUCTION NOTES

---

**SITE PHOTO**

---
SITE 386 – (26.00740, -95.98110)

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

PROJECT NOTES:
1. SITE ESTIMATES FOR WORK TO BE COMPLETED HERE GENERATED USING RS MEANS.
2. ALL BORROW OR FILL MATERIAL MUST COME FROM PRE-EXISTING STOCKPLACES, MATERIAL RECLAIMED FROM MAINTAINED ROADSIDE DITCHES (PROVIDED THE DESIGNED WIDTH OR DEPTH OF THE DITCH IS NOT INCREASED), OR COMMERCIAL 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 FIRM, 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 DDO.

SITE PHOTO

LOCATION MAP

FEMA SITE AREA

PLANS AND DESIGNS PREPARED BY:

SHEPHERD & ASSOCIATES, LLC

1404 S. SHAW, SUITE 200
TULSA, OK 74120

1-918-776-7711
www.shepherdassoc.com

OKIE 811

1-800-919-1953
www.okie811.org

FEMA SITE 386

PROJECT #173120-1021-126335

DAMAGE #331099

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND DESIGNS PREPARED BY:

SHEPHERD & ASSOCIATES, LLC

1404 S. SHAW, SUITE 200
TULSA, OK 74120

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OKIE 811

1-800-919-1953
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FEMA SITE 386

PROJECT #173120-1021-126335

DAMAGE #331099

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLANS AND DESIGNS PREPARED BY:

SHEPHERD & ASSOCIATES, LLC

1404 S. SHAW, SUITE 200
TULSA, OK 74120

1-918-776-7711
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OKIE 811

1-800-919-1953
www.okie811.org

FEMA SITE 386

PROJECT #173120-1021-126335

DAMAGE #331099

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT
STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: DAMAGE INVENTORY #351101 SITES ALONG THE EAST SIDE OF THE ARKANSAS RIVER INCLUDING SITE 170 AND SITE 181, ALL APPROXIMATELY LOCATED IN THE NE 1/4 OF SECTION 12 OF T1N R18E 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 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.

EROSION AND SEDIMENT CONTROLS

STRUCTURAL PRACTICES:
- STABILIZED CONSTRUCTION EXIT
- TEMPORARY SILT FENCE
- TEMPORARY SILT DIKES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- DIVERSION, INTERCEPTOR OR PERIMETER SHAKES
- ROCK FILTER RAMPS
- TEMPORARY SLOPE DRAIN
- PAVED DITCH W/ DITCH LINER PROTECTION
- TEMPORARY DIVERSION CHANNELS
- TEMPORARY SEDIMENT BASINS
- TEMPORARY SEDIMENT TRAPS
- TEMPORARY SEDIMENT FILTERS
- TEMPORARY SEDIMENT REMOVAL
- INFILTRATION FILTER
- INLET SEDIMENT FILTER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBAG BARRIERS
- TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:
- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARPaulin
- 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 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 OUTSIDE, 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 MATERIAL HANDLING, SUMP PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE, BUT NOT LIMITED TO, PAINTS, ACIDS, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS, AND CONTAMINATED SOILS.

HAZARDOUS MATERIALS:

PROPER MANAGEMENT AND DISPOSAL OF HAZARDOUS WASTE MATERIALS IS REQUIRED. THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING MANUFACTURER RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SUMP PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE, BUT 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 PREWORK 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 CONSTRUCTION. TREATMENT 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
106.06 STORAGE AND HANDLING OF MATERIAL
107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
127.20 STORM WATER MANAGEMENT
220 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:
"OOGD GENERAL PERMIT (OKD8) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." OOGD, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.

REVISED 08/19/2017

STORM WATER MANAGEMENT PLAN

PROJECT #173120-1021-126355

NAME OF RECEIVING WATERS: ARKANSAS RIVER

SENSITIVE WATERS OR WATERSHEDS: YES NO X

303 IMPARED WATERS: YES X NO

LOCATED IN A TMDL: YES NO X

LAKE THUNDERBIRD TMDL: YES NO X

MS4 ENTITY: YES X NO

IF YES, LOCATION: TULSA COUNTY

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

[Signature]
SITE 181 - (36.06060, -95.97760)

CONSTRUCTION NOTES:
* BACKFILL - 148 CY OF UNCLASSIFIED FILL, 50 FT LONG X 10 FT WIDE X 8 FT DEEP, SURFACE WATER FLOODED EXCEEDS SOIL.
* DITCH - 1 EACH OF CONCRETE DITCH APRON, 50 FT LONG X 2 FT WIDE X 6 IN THICK, SURFACE WATER FLOODED UNDERMINED A SECTION OF APRON RESULTING IN CRACKING/COLLAPSE.
STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION


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

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.

PROJECT WILL DISCHARGE TO:
NAME OF RECEIVING WATERS: ARKANSAS RIVER
SENSITIVE WATERS OR WATERSHEDS:
303 IMPAIRED WATERS:

IF YES, LIST IMPAIRMENT: TURBIDITY

LOCATED IN A TMDL:
LAKE THUNDERBIRD TMDL:
M3A ENTITY:

IF YES, LOCATION:

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 SEEDING, SPROUING OR SEEDING
- VEGETATIVE MULCHING
- SOIL RETENTION Blanket
- PRESERVATION OF EXISTING VEGETATION

STRUCTURAL PRACTICES:
- STABILIZED CONSTRUCTION EXIT
- TEMPORARY SILT FENCE
- TEMPORARY SILT DYES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DYES
- 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
- R.I.P RAMP
- INLET SEDIMENT CHIPPER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBOX BARRIERS
- TEMPORARY STREAM CROSSINGS

OFFSITE VEHICLE TRACKING:
- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED HAUL TRUCKS TO BE COVERED WITH TARP
- EXCESS DIRT ON ROAD REMOVED DAILY

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 EVERY 7 CALENDAR DAYS AND WITHIN 24HOURS AFTER ANY STORM EVENT GREATER THAN 0.3 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED AT POTENTIALLY ERODIBLE AREAS, DRAINAGeways, MATERIAL STORAGE, STRUCTURES, 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 MATERIAL HANDLING, SPILL PREVENTION AND CLEANUP MEASURES. CONSTRUCTIONS 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 MANUFACTURERS RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPILL PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE BUT ARE NOT LIMITED TO PAMPA, CLEANING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENRAL 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 AND MUST BE UPDATED AND CURRENT WITH UP-TO-DATE AMENDMENTS DURING THE PROGRESSION OF THE PROJECT. ALL CONTRACTOR OR OFF-SITE OPERATIONS ASSOCIATED WITH THIS PROJECT MUST BE DOCUMENTED IN THE SWPPP. ADDITIONAL REGULATIONS APPLICABLE TO ASPHALT/CONCRETE PLANTS, ETC. THE BASIC GOAL OF STORM WATER MANAGEMENT IS TO IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES. SWPPP 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, CONTAMINATION 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 2006 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:
103.05 BONDING REQUIREMENTS
104.10 FINAL CLEANUP
104.12 CONTRACTORS 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:
"ODEG GENERAL PERMIT (OK-10) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA," ODEG, WATER QUALITY DIVISION; SEPTEMBER 13, 2017.

REVISED: 06/19/2017
**SITE 191 - (-36.08290, -95.88490)**

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

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ITEM DESCRIPTION</th>
<th>NOTES</th>
<th>UNIT</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>A100</td>
<td>5000</td>
<td>SLOPE SAN DRAINAGE</td>
<td>R-GS-L1</td>
<td>SY</td>
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<tr>
<td>A102</td>
<td>5004</td>
<td>90° T-C Portal Class III Composite In Place</td>
<td>D-P123.315</td>
<td>LF</td>
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</tbody>
</table>

**LOCATION MAP**

**SITE 191**

**FEMA SITE 191**

**PROJECT #331105**

**DAMAGE #331105**

**OKIE 811**

**CITY OF TULSA, OKLAHOMA**

**ENGINEERING SERVICES DEPARTMENT**

**PLAN AND ENGINEERING SERVICES**

**Wenzel & Associates, LLC**

**SHEET 1 OF 20 SHEETS**
CONSTRUCTION NOTES:
* STORM DRAIN, RCP - 55FT LONG X 18 FT DIAMETER, SURFACE WATER FLOOING CAUSED PIPE SEPARATIONS.
SITE 270 - (36.07900, -95.8460)

CONSTRUCTION NOTES:
* BACKFILL = 78 CY OF UNCLASSIFIED FILL, 35 FT LONG X 30 FT WIDE X 2 FT DEEP, SURFACE WATER FLOORING ERODED SOIL.

<table>
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<th>ITEM</th>
<th>ITEM DESCRIPTION</th>
<th>UNIT</th>
<th>QUANTITY</th>
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</thead>
<tbody>
<tr>
<td>200CY</td>
<td>UNCLASSIFIED FILL</td>
<td>CY</td>
<td>78.00</td>
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<tr>
<td>300CY</td>
<td>UNCLASSIFIED FILL</td>
<td>CY</td>
<td>35.00</td>
</tr>
</tbody>
</table>

SITE LOCATION

SITE 270

LOCATION MAP

200CY UNCLASSIFIED FILL

1.0% ANNUAL CHANCE FLOOD HAZARD

SITE 270

REGULATORY FLOODWAY

SITE LOCATION

E 57TH ST

REGULATORY FLOODWAY

REGULATORY FLOODWAY

SITE 270

CONSTRUCTION NOTES

FEMA SITE 270

PROJECT #175120-1021-126335

DAMAGE #351105

CITY OF TULSA, OKLAHOMA

ENGINEERING SERVICES DEPARTMENT

OKIE 811

FEMA ENGINEER

MONS & ASSOCIATES, LLC

FEMA SITE AREA

LEGEND

JOHNSON PARK

RIVERFRONT PARK

S 57TH PL

E 56TH PL

E 57TH PL

E 57TH ST

FEMA\'S NEXT GENERATION GIS PLATFORM
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 APPROPRIATELY LOCATED IN THE NEA OF SECTION 36 OF TQ 11 R12, 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 STABILIZATION METHODS:
- PERMANENT SEEDING
- PERMANENT SOIL RETENTION
- SOIL RETENTION BLANKET
- PERMANENT SODDING, SEEDING OR SEEDING
- VEGETATIVE MULCHING
- PRESERVATION OF EXISTING VEGETATION

EROSION AND SEDIMENT CONTROLS

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 SUMMARY REPORTS SHALL BE PERFORMED EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY OTHER EVENT THAT EXCEEDS 0.5 INCH AS RECORDED BY A NON-FREEZING RAIN GAUGE TO BE LOCATED WITHIN A POTENTIALLY ERODIBLE AREAS. DRANSFIELDS, 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, PROPRIETARY 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 MANUFACTURERS 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-CONSTRUCTION PHASE. A SITE PLAN MUST BE SUBMITTED TO OCS WITH COPY OF THE NOTICE OF INTENT (NOI) FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY. PHOTOGRAPHS OF ALL CONSTRUCTION PHASE MUST BE UP TO DATE AT THE TIME OF COMPLETION OF THE PROJECT. ALL CONTRACTOR OFF-SITE OPERATIONS ASSOCIATED WITH THE CONSTRUCTION PROCESS MUST BE IN ACCORDANCE WITH THE SWPPP. THE TARGET FOR ALL EROSION AND SEDIMENT 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 CDOT 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
108.08 Storage and Handling of Material
110.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
110.20 Storm Water Management
220.00 Management of Erosion, Sedimentation and Storm Water Pollution Prevention and Control
221.10 Temporary Sediment Control

IN ADDITION:
\"ODDQS PERMIT (OK-101) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA\" ODOE, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.

Offsite Vehicle Tracking:
- HAUL ROADS DAMPENED FOR DUST CONTROL
- LOADED Haul TRUCKS TO BE COVERED WITH TARP
- EXCESS DIRT ON ROAD REMOVED DAILY

Notes:

1. 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, etc. notes.

Revised 09/18/2017

15J/02/2020

STORM WATER MANAGEMENT PLAN
PROJECT #173120-1021-126335
DAMAGE #331109

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

Mesh & Associates, LLC

2017.09.18 04:04:35 PM
Rev 1.0 - Page 1 of 1

CITY OF TULSA, OKLAHOMA

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.

HAZARD MITIGATION PROPOSAL (HMP) SCOPE OF WORK:
* ADDING 25.42 CY RPR RAP TO OTHERWISE UNPROTECTED AREAS TO MITIGATE DAMAGE FROM RAPIDLY FLOWING FLOOD WATERs.
* ADDING 100 SQ FEET SYNTHETIC FABRIC TO OTHERWISE UNPROTECTED AREAS TO PREVENT EROSION CAUSED BY RAPIDLY FLOWING FLOOD WATER.

HMP SCOPE NOTE:
1. THE MITIGATION PROPOSAL ESTIMATES WERE GENERATED USING RS MEANS.

SITE PHOTO

SITE PHOTO

ITEM
00201
0084
2008
2009
9008
9018
0999
101
DATE
08/12
108/03
108/09
08/05
26/90
12/03
12/09
NOTES
UNLOAD CONTAINER
LOAD SHORT DUGGINGS
LOAD SHORT DUGGINGS
SAND STEM REINFORCEMENT
TYPE 1A PLANT RIPRAP
DG. 18.251 3835 COMPLETE IN PLACE
DG. 12.315 3353
UNIT
CY
SY
SY
SY
CY
CY
LT
QUANTITY
178.40
106.89
106.89
25.90
12.00

LOCATION MAP

PROJECT SITE LOCATION
1.0% ANNUAL CHANCE FLOOD HAZARD

SITE 178
1.0% ANNUAL CHANCE FLOOD HAZARD

E 53RD ST
REGULATORY FLOODWAY

E 53RD PL

E 54TH ST
REGULATORY FLOODWAY

ARROWHEAD PARK EAST BANK
WATER PARKS PARK
AVERAGE DEF
AVERAGE DEF

LEGEND
FEMA SITE AREA

FEMA SITE 178
PROJECT #173120-TO21-126335
DAMAGE #331109
OKIE 811
CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT
PLANS AND ESTIMATES PREPARED BY: R. A. Menbeck & Associates, LLC.
1402 S. Boulder Avenue, Tulsa, OK 74120-1111

SPECIAL INDEX SHEET


SHEET SIZE: 12" X 18"

SHEET TITLE: SITE 178

SHEET TITLE: SITE 178

SHEET TITLE: SITE 178

SHEET TITLE: SITE 178

SHEET TITLE: SITE 178

SHEET TITLE: SITE 178

SHEET TITLE: SITE 178

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SHEET TITLE: SITE 178

SHEET TITLE: SITE 178

SHEET TITLE: SITE 178

SHEET TITLE: SITE 178
SITE 190 - (36.38500, -95.85000)

- 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 10 FT 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 36.219356, -95.830182 (SOLID WASTE PERMIT NO. 3727043). IF THE SILT DESTINATION CHANGES, THE APPLICANT MUST NOTIFY FEMA AND THE RECIPIENT PRIOR TO DELIVERING TO THE NEW LOCATION.

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LEGEND

- FEMA SITE AREA

OKIE 811

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

FEMA SITE 190

PROJECT #173120-1021-126335
DAMAGE #351109

PLANS AND SPECIFICATIONS PREPARED BY:
Meshack & Associates, LLC

1:1 = BF

RIN: 1-1-01071-1021-1-000-0000-0000

FILE: 135-1-1-1

PAGE NO.: 1/3
STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION


PROJECT DESCRIPTION:
SITE 178, EROSION CONTROL AND INTERNAL SAND JUXTAPOSED
SITE 196, EROSION CONTROL AND REPLACE PIPE

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

EROSION AND SEDIMENT CONTROLS

SOIL STABILIZATION PRACTICES:
- TEMPORARY SEEDING
- PERMANENT SEEDING, SPRINGING 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 DYES
- TEMPORARY FIBER LOG
- DIVERSION, INTERCEPTOR OR PERIMETER DYES
- 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
- INFILL SEDIMENT FILTER
- TEMPORARY BRUSH SEDIMENT BARRIERS
- SANDBAR BERRING
- TEMPORARY STREAM CROSSINGS

OFFSITE WATER TRACKING:
- HALLWAY, RAMPS PAVED FOR DUST CONTROL
- LOADED HALL, TRUCKS TO BE COVERED WITH TARP AGAIN
- EXCESS DIRT ON ROAD REMOVED DAILY

NOTES:

THE CONTRACTOR SHALL 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 AT SITE. POTENTIALLY ERODIBLE AREAS, DRAINAGeways, MATERIAL STORAGE, STRUCTURES, 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 MATERIALS 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, SPLIT 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 MANUFACTURERS RECOMMENDATIONS, STATE AND FEDERAL REGULATIONS TO ENSURE CORRECT HANDLING, DISPOSAL, SPLIT PREVENTION AND CLEANUP MEASURES. EXAMPLES INCLUDE, BUT ARE NOT LIMITED TO, PAINTS, ACIDS, CLEARING SOLVENTS, CHEMICAL ADDITIVES, CONCRETE CURING COMPOUNDS AND CONTAMINATED SOILS.

GENERAL NOTES:

THE FOLLOWING SECTIONS OF THE 2009 ODOT STANDARD SPECIFICATIONS SHOULD BE NOTED:
103.05 BONDING REQUIREMENTS
104.10 FINAL CLEANING UP
104.15 CONTRACTORS RESPONSIBILITY FOR WORK
104.13 ENVIRONMENTAL PROTECTION
105.08 STORAGE AND HANDLING OF MATERIAL
107.01 LAWS, RULES AND REGULATIONS TO BE OBSERVED
107.20 STORM WATER MANAGEMENT
200.20 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
221 TEMPORARY SEDIMENT CONTROL

IN ADDITION:
"ODOO GENERAL PERMIT (OK010) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA." ODEO, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.
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 GROUTED 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.
**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 RPS - RAP, 15 FT LONG X 10 FT WIDE X 2 FT DEEP, SURFACE WATER CAUSED CRACKING/GAPS/UNDERMINING.

**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**

**EXISTING GROUND/FINISH GRADE**

**RIPRAP INSTALLATION**
- SCALE: NONE
- 18" TYPE IV GROUTED RIPRAP

**RIPRAP INSTALLATION**
- SCALE: NONE
- 18" TYPE IV GROUTED RIPRAP

**LEGEND**
- FEMA SITE AREA

**FEMA SITE 196**

**PROJECT #173120-TO21-126335**

**DAMAGE #331110**

**CITY OF TULSA, OKLAHOMA**

**ENGINEERING SERVICES DEPARTMENT**

**PLANS AND DRAWINGS PREPARED BY:**

Menbeck & Associates, LLC

**OKIE 811**

**Legend**
- FEMA SITE AREA

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**Location Map:**

- PROJECT SITE LOCATION
- REGULATORY FLOODWAY
- E 68TH PL
- MEADOWS OAKS
- RIVERSBANK PARK
- RIVERSBANK DRIVE

**Site 196 Construction Notes:**

- 1.01% ANNUAL CHANCE FLOOD HAZARD

**Site 196**

- REGULATORY FLOODWAY
- SITE 196 SEE CONSTRUCTION NOTES
CITY OF TULSA, OKLAHOMA

SITE 390

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

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FEMA SITE 390

PROJECT #173120-1021-126335
DAMAGE #331110

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

Melnick & Associates, LLC

SCALE IN FEET
STORM WATER MANAGEMENT PLAN

SITE DESCRIPTION

PROJECT LIMITS: DAMAGE INVENTORY #331199 SITES ALONG THE EAST SIDE OF THE ARKANSAS RIVER INCLUDING SITE 385, SITE 386, SITE 389 AND SITE 403, ALL APPROXIMATELY LOCATED IN THE E2Q OF SECTION 20 AND NW1/4 OF SECTION 29 OF OK TBE N14E, WITHIN THE CITY LIMITS OF TULSA, OKLAHOMA.

PROJECT DESCRIPTION:
SITE 385: INTERNAL BAND JOINT SEAL
SITE 386: REPLACE PIPE
SITE 389: INTERNAL BAND JOINT SEAL
SITE 403: REPLACE PIPE

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

SOIL STABILIZATION PRACTICES:
- TEMPORARY SEEDING
- PERMANENT SEEDING, SPRINGING 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_OCCURRED FOR OVER 14 DAYS. METHODS USED WILL BE AS SHOWN ON PLANS, OR AS DIRECTED BY THE ENGINEER.

EROSION AND SEDIMENT CONTROLS

THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:

MAINTENANCE AND INSPECTION:
ALL EROSION AND SEDIMENT CONTROL 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 ERODOBLE AREAS, DRAINS/CONVEYERS, 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 STOCKPILING, SURPLUS, DEBRIS AND ALL OTHER BY-PRODUCTS FROM THE CONSTRUCTION PROCESS. PRACTICES INCLUDE DISPOSAL, PROPER MATERIAL 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 BY THE CONTRACTOR RESPONSIBLE FOR FOLLOWING MANUFACTURERS 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 (COPDES) 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. NO FORM AND PERMIT CERTIFICATE THAT HAVE BEEN FILED WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY (DOEQ). 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, CONTAMINATION 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 DCOF 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
210.02 MANAGEMENT OF EROSION, SEDIMENTATION AND STORM WATER POLLUTION PREVENTION AND CONTROL
221.02 TEMPORARY SEDIMENT CONTROL

IN ADDITION:
"DOEQ GENERAL PERMIT (OHR-1) FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES WITHIN THE STATE OF OKLAHOMA," DOEQ, WATER QUALITY DIVISION, SEPTEMBER 13, 2017.

NOTES:

STORM WATER MANAGEMENT PLAN

PROJECT #171520-1021-126335

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

PLAN AND DESIGN PROJECT MANAGER: A. MABSON
ENGINEER OF RECORD: B. L. IVERSON

STORM WATER MANAGEMENT PLAN

REVISED 08/19/2017

Arkansas County

303 IMPAIRED WATERS:

LOCATED IN A TMDL:

LAKE THUNDERBIRD TMDL:

MS4 ENTITY:

IF YES, LOCATION:

IF YES, LIST IMPAIRMENT:

ENTROCCOCUS TURBIDITY

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.
SITE 389 - (36.0143, -95.9480)

CONSTRUCTION NOTES:

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

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LEGEND
- FEMA SITE AREA

FEMA SITE 389
PROJECT #173120-TO21-128335
DAMAGE #331199

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT

FEMA SITE 389
PROJECT #173120-TO21-128335
DAMAGE #331199

CITY OF TULSA, OKLAHOMA
ENGINEERING SERVICES DEPARTMENT
SITE 393 - (36.03180, -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.

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**LEGEND**
- FEMA SITE AREA

**FEMA SITE 393**

**PROJECT #173120-1021-126355**

**DAMAGE #331199**

**OKIE 811**

**FLUSH AND DETECT SERVICES COMPANY**

**Moenbeck & Associates, L.L.C.** 1460 S. May Ave., Suite 401, Oklahoma City, OK 73105
SITE 403 - (36.02579, -95.99090)

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

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LOCATIONS MAP

0.2% ANNUAL CHANCE FLOOD HAZARD

FEMA SITE AREA

FEMA SITE LOCATION

SITE 403